Cardiac Anesthesia Subcommittee Minutes

Sep 20, 2023

10:00am – 11:00am EST

Zoom

Addo, Henrietta (MPOG)		Malenfant, Tiffany (MPOG)
Barrios, Nicole (MPOG)		Mathis, Mike (MPOG)
Brown, Morgan (Boston Children's)		Meuhlshlegel, J. Danny (Johns Hopkins)
Buehler, Kate (MPOG)		Munoz-Acuna, Ronny (Yale)
Coleman, Robert (MPOG)		Nieter, Don (U. Michigan)
Geube, Mariya (Cleveland Clinic)		Notarianni, Andrew (Yale)
Ghaly, Tammer (Yale)		Payne, Patrick (U. Vermont)
Griffin, Greg (U. North Carolina)		Schonberger, Rob (Yale)
Guruswamy, Jayakar (Jay) (Henry Ford)		Smiatacz, Frances Guida (MPOG)
Heiter, Jerri (Trinity Health)		Sturmer, David (U. Michigan)
Janda, Allison (MPOG)		Theurer, Patty (MSTCVS Registry)
Johnson, Rebecca (Corewell West)		Toonstra, Rachel (Corewell West)
Kertai, Miklos (Vanderbilt University)		Wade, Meridith (MPOG)
Kumar, Vikram (MGH)		Welle, Erin (U. Michigan)
Lacca, Tory (MPOG)		Zittleman, Andrew (MPOG)
Lou, Sunny (WUSTL)		

Meeting Summary

1. **Upcoming Cardiac Focused Measure Reviews**
    - **a.** We are seeking one or two volunteers from different institutions, to review this measure and associated colloid use literature
        - **i.** Commitment:
            1. Present literature and suggestions at the October Quality Committee meeting

2. Reviewers name will be listed on the Measure Spec

ii. Template form

iii. Result of the review is to either: keep the measure as-is, revise the measure based on the reviewer assessment of the literature and discussion of the quality committee meeting, or retire the measure completely.

b. FLUID-01-C: Minimizing Colloid Use (Cardiac) - review in October 2023

i. Definition: Percentage of cardiac cases in which colloids were not administered intraoperatively

ii. Rationale: Lack of consistent evidence to suggest improved survival with the use of colloids as compared to crystalloids in the surgical population. Because colloids are more expensive than crystalloids, it is recommended that anesthesia providers avoid the use of colloids in most instances.

2. GLU-06: Hyperglycemia avoidance measure now available on cardiac dashboards!

a. Description: Percentage of patients, ≥18 years age, who undergo open cardiac surgical procedures under general anesthesia of 120 minutes case duration or longer for whom any blood glucose measure did not exceed 180 mg/dL (and not rechecked within 30-minutes and found to be </=180 mg/dL) was documented.

i. Note: open cardiac cases without ANY glucose values documented are flagged

3. GLU-07: Cardiac Hypoglycemia Avoidance Measure Discussion and Preliminary Data

a. Description: Percentage of adult patients, undergoing open cardiac surgery with any intraoperative blood glucose value < 70 mg/dL.

i. Note: open cardiac cases without ANY glucose values documented are flagged

b. Timing: Anesthesia Start to 15 minutes after Anesthesia End

c. Concepts Included:

i. 3361 POC - Glucose (Fingerstick)

ii. 3362 POC - Glucose (Unspecified Source)

iii. 3405 POC - Blood Gas - Glucose

iv. 5003 Formal Lab- Glucose, Serum/Plasma

v. 5036 Formal Lab - Blood Gas, Glucose

d. Attribution:

i. The provider signed in at the first blood glucose of <70 mg/dL.

ii. In the event that two or more providers in the same role are signed in, both will receive the feedback.

e. Inclusions:

i. All patients, 18 years of age or older, both with and without diabetes, who undergo open cardiac surgical procedures (as determined by Procedure Type: Cardiac phenotype) under general anesthesia of 120 minutes duration or longer.

f. Exclusions:

i. ASA 6

ii. Organ harvest (CPT: 01990)

iii. Non-cardiac cases as defined as those cases not meeting criteria for the cardiac case type phenotype

iv. Within the general cardiac case type phenotype, exclude: Transcatheter/Endovascular, EP/Cath groups and Other Cardiac

v. Cases with age <18

g. Considerations:

i. Evaluate each low glucose between anesthesia start and end:
    1. If blood glucose <70mg/dL is rechecked within 15 minutes and found to be <70mg/dL = flagged.
    2. If blood glucose <70 mg/dL is not rechecked within 15 minutes = flagged.
    3. Any case with a glucose <70mg/dL that was rechecked within 15 minutes and found to be >/=70mg/dL = pass.
    4. If no low glucose values <70 mg/dL are documented between anesthesia start and end, case is passed.
    5. If two blood glucose levels are documented in the same minute, the higher blood glucose will be considered for this measure (in the case of spurious values that were rechecked)
    6. If no blood glucose values are documented for a case, then the case will be flagged

ii. **Limitations:**
    1. Any glucose checks not entered into the EHR will not be captured

iii. **Remaining Questions:**
    1. Is the 15 minute recheck window appropriate?
    2. Should we amend GLU-06 to shorten the recheck window to 15 minutes as well? (currently 30 minute recheck window for GLU-06)

h. **Preliminary Data shared** - See presentation slides.

i. **DISCUSSION:**

i. *Rob Schonberger (Yale) via chat***.** Complex logic but seems to cover all the bases. Thanks for this!

ii. *Morgan Brown (Boston Children's) via chat***:** Is there a way to stratify these glucose measures based on a diagnosis code of diabetes yes or no? In our young adults, we have marginally high (180, 190) on CPB, but it drops with no intervention while still in OR who are non diabetics.
    1. *Allison Janda (MPOG Cardiac Subcommittee Chair)*: Would say that although we could do that stratification, the STS Guidelines don't specify whether the patient is diabetic or not - all patients should maintain BG >70 and <180 per their recommendations
    2. *Mike Mathis (MPOG Research Director)*: I wonder if there is an opportunity to review these flagged cases to identify if it's a documentation issue or are these true high-risk hypoglycemia episodes. HIgh-level could we determine when these failures are occurring - immediately after coming off the pump? Can we do that as the Coordinating Center at a future meeting?
    3. *Don Nieter (PERFORM Registry)*: Anecdotally, I typically only see hypoglycemia right after heparin is administered.

iii. *Don Nieter (PERForm registry) via chat*: Is there a way to identify if the % of hypoglycemia patients received insulin intraoperatively?
    1. *Allison Janda (MPOG Cardiac Subcommittee Chair)*: [answered later but added here for clarity] Yes, we have both the glucose values and insulin administration in MPOG.

iv. *Allison Janda (MPOG Cardiac Subcommittee Chair)*: Should the artifact recheck time frame be 15 minutes or 30 minutes?
    1. *Rob Schonberger (Yale)*: 15 minutes for hypoglycemia, 30 minutes for

hyperglycemia

2. *Morgan Brown (Boston Children's)*: 15 minutes for hypoglycemia, 30 minutes for hyperglycemia
3. *Erin Welle (University of Michigan):* I think most perfusionists are taught longer times for ABGs so I'd suggest 30
4. *Jay Guruswamy (Henry Ford Detroit)*: We do 30 minutes too for hyperglycemia.
5. *Mariya Geube (Cleveland Clinic):* Hypoglycemia is a life threatening event. I would advocate for 15 minutes

j. ACTION ITEM:

i. Conduct an analysis at the Coordinating Center to determine when flagged cases occur:

1. Pre-bypass
2. On-bypass
3. Post-bypass
4. No glucose checked
5. Was insulin infusion running at the time of low glucose value

ii. Flagged cases analysis: Identify diabetic vs. non-diabetic patients

4. GLU-08 Cardiac Hyperglycemia Treatment Measure Preliminary Data and Discussion

a. Description: Percentage of patients, ≥18 years age, who undergo open cardiac surgical procedures under general anesthesia of 120 minutes case duration or longer for whom any blood glucose measure >/=180mg/dL was either treated with insulin or rechecked and found to be <180mg/dL within 30 minutes.

i. Note: open cardiac cases without ANY glucose values documented are flagged

b. Timing: Anesthesia Start to 30 minutes after Anesthesia End

c. Concepts Included:

i. 3361 POC - Glucose (Fingerstick)
ii. 3362 POC - Glucose (Unspecified Source)
iii. 3405 POC - Blood Gas - Glucose
iv. 5003 Formal Lab- Glucose, Serum/Plasma
v. 5036 Formal Lab - Blood Gas, Glucose
vi. 10229 Insulin Aspart
vii. 10230 Insulin Glargine
viii. 10231 Insulin Novolin
ix. 10232 Insulin NPH
x. 10233 Insulin Regular
xi. 10659 Insulin - Unspecified

d. Attribution:

i. The provider signed in at the first blood glucose of >180mg/dL.
ii. In the event that two or more providers in the same role are signed in, both will receive the feedback.

e. Inclusions: All patients, 18 years of age or older, both with and without diabetes, who undergo open cardiac surgical procedures (as determined by Procedure Type: Cardiac phenotype) under general anesthesia of 120 minutes duration or longer.

f. Exclusions:

i. ASA 6
ii. Organ harvest (CPT: 01990)

iii. Non-cardiac cases as defined as those cases not meeting criteria for the cardiac case type phenotype
iv. Within the general cardiac case type phenotype, exclude: Transcatheter/Endovascular, EP/Cath groups and Other Cardiac
v. Cases with age <18

g. **Considerations:**
   i. Evaluate each high glucose between anesthesia start and end:
      1. For any blood glucose >/=180mg/dL, at least one of the following interventions are documented:
         a. Treatment with insulin within 30 minutes, or
         b. Glucose rechecked and found to be below 180mg/dL within 30 minutes
   ii. If two blood glucose levels are documented in the same minute, the lower blood glucose will be considered for this measure
h. **Limitations:**
   i. Any glucose checks not entered into the EHR will not be captured
i. **Remaining Questions:** Should the recheck window be shortened to 15 minutes?
j. **Preliminary Data shared** - See presentation slides.
k. **DISCUSSION:**
   i. *Patty Theurer (MSTCVS Program Manager)*: The STS hyperglycemia measure is intraop only: SEQ. #: 2320 Long Name: Highest Intra-op Glucose Short Name: HighIntraGlu Definition: Enter the highest glucose recorded in the operating room. Intent/Clarification: Typically documented in laboratory tests, anesthesia record, or perfusion record. The unit of measurement for Glucose is mg/dl.
   ii. *Allison Janda (MPOG Cardiac Subcommittee Chair)*: At U of M we do use high glucose cardioplegia but I think you make a great point that the communication between perfusionist and anesthesiologist is crucial and shouldn't go just by the lab. MPOG does not capture the type of cardioplegia administered
l. **ACTION ITEMS:**
   i. Flagged cases analysis: Identify diabetic vs. non-diabetic patients

5. **Progress and Next Steps**
   a. Build 1 cardiac-specific measure in 2021 (completed, published 12/2021)
      i. Post-bypass hypothermia avoidance (TEMP-06)
   b. Build 1 cardiac-specific measure in early 2022 (completed, published 11/2022)
      i. On-bypass hyperthermia avoidance (TEMP-07)
   c. Plan and build next measure in mid-2022 and publish in early 2023 (completed, published 4/2023)
      i. Hyperglycemia Avoidance (GLU-06) (completed, published 4/2023)
      ii. Hypoglycemia Avoidance (GLU-07)and refined hyperglycemia treatment measure (GLU-08) to be released soon
6. **Next measure? Previous suggested topics include:**
   a. Antibiotic selection and timing
   b. Neuromuscular blockade reversal
   c. Pulmonary complication avoidance
   d. Hypotension avoidance
   e. Acute kidney injury avoidance
   f. Handoffs

g. Transfusion
h. Other ideas?

7. **Antibiotic Selection and Timing**
   a. *Allison Janda (MPOG Cardiac Subcommittee Chair)*: Antibiotic selection and timing has ranked very highly on all of our measure selection surveys so we've invited the authors of a recent publication regarding this to present their paper to give a summary of the current literature on this topic.
   b. Rob Schonberger (Yale) presented recent publication: Association of adherence to individual components of Society of Thoracic Surgeons cardiac surgery antibiotic guidelines and postoperative infections
   c. SCIP-01 adherence is high across the country, however, Yale team did assessment of MPOG data including 31 centers between 1/1/2014 - 12/31/2018 for non-cardiac surgery and high non-adherence rates were found when looking at timing, re-dose timing, selection, and dose amount.
   d. See presentation slides 24-31.
   e. **DISCUSSION:**
      i. *Mariya Geube (Cleveland Clinic):* I think antibiotic re-dosing measure would be very helpful. For vancomycin I would consider increasing the time frame
      ii. *Mike Mathis (MPOG Research Director) via chat*: Sounds like SCIP-1 result offers promise for improving the other components... look forward to MPOG helping coordinate this practice change
      iii. *Morgan Brown (Boston Children's)*: I think it is an interesting metric. We don't do redosing at regular intervals. Rather we redose on CPB and after off CPB. Although this is a pediatric style, we do this in our adult patients as well. So probably 100% of our cases will fail if you use a specific interval for dosing.
      iv. *Miklos Kertai (Vanderbilt):* Our institution is very interested in this metric. Very excited to hear this will be coming soon. It would be great to expand to non-cardiac patients as well.
         1. *Rob Schonberger (Yale)*: PCRC 203 (see the website) is non-cardiac and in process.
      v. *Allison Janda (MPOG Cardiac Subcommittee Chair)*: Thank you, Rob, for your excellent summary and to the group for a robust discussion. We'll proceed with developing the specifications for the antibiotic measures and we'll discuss the measures and preliminary data at our next meeting, which is targeted for early December.

8. **Cardiac Anesthesia Subcommittee Membership**
   a. Next meetings:
      i. April 2023
      ii. August 2023
      iii. Nov/Dec 2023
   b. Open to all anesthesiologists or those interested in improving cardiothoracic measures
      i. Do not have to practice at an active MPOG institution to participate
   c. Thank you for continued use of the Basecamp forum for discussion between meetings!

Meeting adjourned at 1102 am EST