Cardiac Anesthesia Subcommittee Minutes
December 16, 2024
11:00am – 12:00pm EST
Zoom

Addo, Henrietta (MPOG)	Mathis, Mike (MPOG)
Barrios, Nicole (MPOG)	McCaughan, Michael (University of Michigan Health)
Billings, Josh (Vanderbilt)	Mirizzi, Kam (MPOG)
Brown, Morgan (Boston Children's)	Muehlschlegel, J. Danny (Johns Hopkins)
Buehler, Kate (MPOG)	Negele, Judy (Trinity Health)
Calabio, Mei (MPOG)	O'Conor, Katie (Johns Hopkins)
Cassidy, Ruth (MPOG)	Pantis, Rebecca (MPOG)
Finch, Kimberly (Henry Ford Health)	Pennington, Bethany (WUSTL)
Goatley, Jackie (Michigan)	Riggar, Ronnie (MPOG)
Geube, Mariya (Cleveland Clinic)	Sanders, Joseph (Henry Ford Health)
Heiter, Jerri (Trinity)	Schonberger, Rob (Yale)
Janda, Allison (MPOG)	Shah, Nirav (MPOG)
Kertai, Miklos (Vanderbilt)	Stumpf, Rachel (MPOG)
Kinney, Daniel (Yale)	Wade, Meridith (MPOG)
Lopacki, Kayla (Trinity Health)	Wilkens, Eric (Temple)
Malenfant, Tiffany (MPOG)	Zittleman, Andrew (MPOG)

1. **Agenda**
   a. Introduction & announcements
   b. Unblinded Review of measures:
      i. ABX-02-C
      ii. ABX-03-C
      iii. ABX-04-C
      iv. ABX-05-C

> > > v. AKI-02-C
> c. Summary and Next Steps

2. **Introductions**
    a. ASPIRE Quality Team
        i. Allison Janda, MD – MPOG Cardiac Anesthesia Subcommittee Lead
        ii. Michael Mathis, MD – MPOG Director of Research
        iii. Kate Buehler, MS, RN – Clinical Program Manager
    b. Cardiac Anesthesiology Representatives joining us from around the US!

3. **Measure Review Process**
    a. Review literature for given measure topic and provide review using MPOG Measure Review Template
    b. Present review of literature and recommendations at Cardiac Subcommittee meetings
    c. Reviewers' names will be added to measure specifications as well as MPOG Measure Reviewer website

4. **Upcoming Cardiac-Focused Measure Reviews**

Measure	Review Date	Reviewers
TEMP-06-C: Hypothermia Avoidance	February 2025	Mariya Geube, Cleveland Clinic
TEMP-07-C: Hyperthermia Avoidance	February 2025	Ashan Grewal, UMaryland
GLU-06-C: Hyperglycemia Management	June 2026	Josh Billings, Vanderbilt
GLU-07-C: Hypoglycemia Management	June 2026	Rob Schonberger, Yale
GLU-08-C: Hyperglycemia Treatment	June 2026	Josh Billings, Vanderbilt

    a. Thank you in advance for ensuring MPOG Cardiac-specific measures remain relevant & consistent with published recommendations
    b. Contact Allison with any questions: ajanda@med.umich.edu

5. **Unblinded Data Review: Antibiotic Compliance Measures**

    a. Reminders
        a. Per the terms and conditions outlined during the registration process:
            i. A culture of openness and trust are critical to the development of such a collaborative effort to improve quality; and a commitment for confidentiality is required to further the goals of ASPIRE.
        b. The following examples are to be considered privileged and confidential information and should be discussed within the confines of the Cardiac Subcommittee Meeting
            i. Any and all patient information
            ii. Andy and all patient identifiers/information which are considered privileged and protected health information as defined by current HIPAA laws

iii. Any specific MPOG QI registry case information

iv. Any reference to a specific MPOG site result or analysis

v. All anesthesiology data presented including but not limited to outcome reports

vi. Taking screenshots, pictures or videos of data slides is prohibited

c. Site Participation

i. All sites that perform > 75 open cardiac procedures annually are presented on the slides to follow

ii. This is a closed meeting: registration required to receive the Zoom link

iii. Only those sites who have a participant on the cardiac subcommittee are unblinded – goal for 2025 to reach out to those sites that do not have a representative on the subcommittee to see if they want to nominate someone to join moving forward

iv. Cardiac Anesthesia Champions were notified that unblinded data would be shared and were given the opportunity to opt out

v. No sites emailed us to express desire to be excluded from this review

6. **ABX-02 Antibiotic Timing, Open Cardiac**

a. Description:

a. Percentage of adult patients undergoing open cardiac surgery with antibiotic administration initiated within the appropriate time frame before incision (see specification for timing expectations per agent)

b. Timing:

a. 120 minutes prior to Surgery Start through Surgery Start

c. Success Criteria:

a. Documentation of antibiotics administered before surgery start time

d. Inclusions:

a. Adult patients undergoing open cardiac surgical procedures (determined by the Procedure Type Cardiac: value code 1)

e. Exclusions:

a. Age < 18 years

b. ASA 6 including Organ Procurement

c. Patients already on scheduled antibiotics or had a documented infection prior to surgery, as determined by ABX Notes Phenotype (value code 2)

d. Non-cardiac, Transcatheter/Endovascular, EP/Cath groups and Other Cardiac cases as determined by the Procedure Type: Cardiac phenotype

e. Procedure Type: Lung Transplant

f. **Unblinded site data shared** – removed from slides that are published to the website for confidentiality reasons.

g. Discussion:

<ol type="a">
Allison Janda (MPOG Cardiac Subcommittee Chair): One of the great things about the unblinded review session is that it can bring to light opportunities that may have not been identified prior to the meeting. Would encourage sites to dig into their local data as a follow-up to this meeting and reach out to us with any questions.
Rob Schonberger (Yale): If an infusion that is initiated but not completed by the time of incision count as passing?
Allison Janda (MPOG Cardiac Subcommittee Chair): Yes – just needs to be initiated before surgical incision to pass the measure.
Mike Mathis (MPOG Research Director): Updating data quality is also a great byproduct of these measures!

<ol type="a" start="8">
<mark>**Next Steps:**</mark>
<ol type="a">
No changes to ABX-02 – sites encouraged to assess their local performance by reviewing cases in their dashboard.

7. **ABX-03 Antibiotic Re-dosing, Open Cardiac**

<ol type="a">
Description:
<ol type="a">
Percentage of adult patients undergoing open cardiac surgery with an antibiotic re-dose initiated within 3-4 hours after initial antibiotic administration (cephalosporins only)

Timing:
<ol type="a">
120 minutes prior to Anesthesia Start through Surgery End. If Surgery End is not available, then Anesthesia End.

Success Criteria:
<ol type="a">
Documentation of cephalosporin re-dose within 165-255 minutes after each cephalosporin administration (max: 3 doses)

Inclusions:
<ol type="a">
Adult patients undergoing open cardiac surgical procedures (determined by procedure Type: Cardiac: value code 1) **and** receiving antibiotic prophylaxis with a cephalosporin

Exclusions:
<ol type="a">
Age < 18 years
ASA 6 including Organ Procurement
Cases where Surgery End time is before re-dose (less than 4 hours and 15 minutes after cephalosporin dose)
Cases without administration of a cephalosporin for antibiotic prophylaxis
Patients already on scheduled antibiotics or had a documented infection prior to surgery, as determined by <u>ABX Notes Phenotype</u> (value code 2)
Non-cardiac, Transcatheter/Endovascular, EP/Cath groups and Other Cardiac cases as determined by the <u>Procedure Type: Cardiac</u> phenotype
<u>Procedure Type: Lung Transplant</u>

Attribution:

      a) All anesthesia providers signed in at time of each re-dose (if not given 255 minutes after initial cephalosporin dose, and/or if not given: 255 minutes after the first re-dose)

g. Notes:
      a) Ceftriaxone & Cefotetan are excluded due to extended half-lives compared to more commonly used cephalosporins. Redosing not recommended
      b) Cefoxitin excluded: non-standard antibiotic for cardiac cases with short half-life.

h. Recent Updates:
      a) Infusions now considered (start time determines re-dose window). If still running at time of re-dose=pass
      b) If re-dose within 255 minutes before surgery end = pass, if not = excluded

i. **Unblinded site data shared** – removed from slides that are published to the website for confidentiality reasons.

j. Discussion:
      a) Some cases are re-dosed just prior to surgical incision in an effort to achieve optimal blood concentration levels at time of incision. These cases flag as 'Re-dosed too early' currently. Is this appropriate?
            i. 2:49:00 PM CEFUROXIME 1.5 GM
            ii. 3:10:00 PM Anesthesia Start
            iii. 3:50:00 PM CEFUROXIME 1.5 G Flagged: Re-dose too early
            iv. 4:50:00 PM Procedure Start
            v. 7:51:00 PM CEFUROXIME 1.5 GM
            vi. 8:48:00 PM Procedure End
            vii. 9:02:00 PM Anesthesia End
      b) *Allison Janda (MPOG Cardiac Subcommittee Chair):* If there are multiple doses prior to incision (procedure start), should we only consider the most recent dose and ignore earlier doses? Not a common reason for flagging this measure but can adjust to account for this if advised by the subcommittee.
      c) *Rob Schonberger (Yale):* I have no objections to this. It makes sense

k. **Next steps:**
      a) Update ABX-03 to only consider the most recent dose prior to surgical incision as the initial dose.

ABX-04 Antibiotic Selection, Open Cardiac Procedures

a. Description:
      i. Percentage of adult patients undergoing open cardiac surgery with the recommended antibiotic agents administered for surgical site infection prophylaxis

b. Timing:
      i. 120 minutes prior to Anesthesia Start through Anesthesia End

b) Attribution:
      i. All anesthesia providers signed in at the time of Anesthesia Start Time

c) Inclusions:
   i. Adult patients undergoing open cardiac surgical procedures
d) Exclusions:
   i. Age < 18 years
   ii. ASA 6 including Organ Procurement
   iii. Patients already on scheduled antibiotics or had a documented infection prior to surgery, as determined by "Patient on Scheduled Antibiotics/Documented Infection" (value: 2) of the ABX Notes phenotype
   iv. Non-cardiac, Transcatheter/Endovascular, EP/Cath groups and Other Cardiac cases as determined by the Procedure Type: Cardiac phenotype
   v. Lung Transplant cases as determined by the Procedure Type: Lung Transplant phenotype
e) Acceptable antibiotic combinations for Open Cardiac Procedures:
   A. Vancomycin + Cephalosporin
   B. Vancomycin + Aminoglycoside
   C. Cephalosporin Only
f) Cases will be assigned one of the following result reasons:
   A. Passed – Vancomycin + Cephalosporin
   B. Passed – Vancomycin + Aminoglycoside
   C. Passed – Cephalosporin Only
   D. Flagged – Non-standard antibiotic selection
   E. Flagged – Prophylactic antibiotic not administered (Not documented in MAR)
   F. Flagged – Antibiotic not ordered/indicated per surgeon
   G. Flagged – Not administered for medical reasons
   H. Excluded – Scheduled antibiotics/documented infection
g) **Unblinded site data shared** – removed from slides that are published to the website for confidentiality reasons.
h) Discussion:
   i. Should vancomycin + 'any antibiotic with gram-negative' coverage = pass?
      A. *Mariya Guebe (Cleveland Clinic):* We at Cleveland Clinic administer aztreonam and vancomycin which provides adequate gram-negative coverage even though it's considered non-standard per some guidelines. This comes from the surgeons and is per policy that was approved by the infectious disease committee here.
         a. *Bethany Pennington (WashU) via chat*: antibiogram at each institution may also guide gram negative choice
      B. *Allison Janda (MPOG Cardiac Subcommittee Chair):* We initially designed this measure based on the STS Guidelines but wanted to bring this here to see if we wanted to consider adding vancomycin + any gram-negative coverage as passing criteria.

C. *Mike Mathis (MPOG Research Director):* I would be interested to hear the decision made by Cleveland Clinic and what evidence was used for their protocols. Also interested in how this measure handles allergies.

    a. *Allison Janda (MPOG Cardiac Subcommittee Chair):* It's difficult to capture allergies as an exclusion from a data perspective. That's a limitation of this measure. Those would result as flagged if one of the other antibiotic combinations was not given.

    b. *Bethany Pennington (WashU):* ASHP guidelines even recommend vancomycin + fluoroquinolone. With allergies these days, even though vancomycin + aminoglycoside is recommended, many organizations are not administering that combination due to risk of renal toxicity. Can see where aztreonam is the selection of choice over aminoglycosides for that reason.

D. *Mariya Guebe (Cleveland Clinic):* I think it would be better to leave it more broad to ensure there is gram positive and gram negative coverage. Aminoglycosides are

    a. *Danny Muehlschlegel (Johns Hopkins):* There are gray areas here and I tend to agree with Mariya here. Overall goal should be to administer antibiotics in a broader sense and not adhere to a particular recipe, especially since there is limited evidence of one over another.

E. *Mike Mathis (MPOG Research Director):* If we want to move forward with different pass reason for vancomycin + gram negative coverage, I think it's important to break out the different reasons for passing

F. *Mariya Geube (Cleveland Clinic):* Is Cleveland Clinic the only site administering aztreonam + vancomycin?

G. *Allison Janda (MPOG Cardiac Subcommittee Chair):* Cleveland Clinic has the highest rate of aztreonam + vancomycin use but there are other institutions administering them as well.

H. *Bethany Pennington (WashU):* WashU uses aztreonam + vancomycin for PCN Allergies

I. *Joseph Sanders (Henry Ford Detroit):* Henry Ford Detroit also uses aztreonam + vancomycin for PCN allergies as well.

==i) Next Steps:==

    ==a) **Update measure to separate passing reasons for each of the antibiotic combinations**==

    ==b) **Add new passing criteria for vancomycin + any gram-negative antibiotic**==

ABX-05: Composite Antibiotic Compliance for Open Cardiac

a. Description:
  a. Percentage of adult patients undergoing open cardiac surgery with appropriate antibiotic selection, timing, and re-dosing administered for surgical site infection prophylaxis
b. Timing:
  a. 120 minutes prior to Anesthesia Start Time through Anesthesia End Time
c. Attribution: Departmental Only
  a. Case level attribution, viewable on the dashboard at the case level, not provided to individual clinicians
d. Success Criteria:
  a. Case must pass all antibiotic prophylaxis for open cardiac procedure measures for which the case is not excluded for open cardiac
     i. ABX-02-C / ABX-03-C / ABX-04-C
e. Inclusions: Adult patients undergoing open cardiac surgical procedures
f. Exclusions:
  a. Age < 18 years
  b. ASA 6 including Organ Procurement
  c. Patients already on scheduled antibiotic or had a documented infection prior to surgery, as determined by "Patient on Scheduled Antibiotics/Documented Infection" (value: 2) of the ABX Notes phenotype
  d. Non-cardiac, Transcatheter/Endovascular, EP/Cath groups and Other Cardiac cases as determined by the Procedure Type: Cardiac phenotype
  e. Lung Transplant cases as determined by the Procedure Type: Lung Transplant phenotype
  j) Cases will be assigned one of the following result reasons:
     i. Passed – Antibiotic Prophylaxis Standards Met
     ii. Flagged – Timing, Re-dosing, & Selection Not Met (ABX-02-C, ABX-03-C, & ABX-04-C flagged)
     iii. Flagged – Timing & Selection Not Met (ABX-02-C & ABX-04-C flagged)
     iv. Flagged – Re-dosing & Selection Not Met (ABX-03-C & ABX-04-C flagged)
     v. Flagged – Timing & Re-dosing Not Met (ABX-02-C & ABX-03-C flagged)
     vi. Flagged – Antibiotic not administered on time (ABX-02-C flagged)
     vii. Flagged – Antibiotic not appropriately re-dosed (ABX-03-C flagged)
     viii. Flagged – Non-standard antibiotics selection (ABX-04-C flagged)
     ix. Excluded – Scheduled antibiotics/documented infection
  k) *Cases must be included and passed for at least one of the antibiotic measures to be included for ABX-05. If any measure is flagged, ABX-05 will be flagged
l. **Unblinded site data shared** – removed from slides that are published to the website for confidentiality reasons.
m. **Discussion:**
  a) None

   a) No changes to ABX-05 although the changes that will be added to ABX-03 and ABX-04 will impact ABX-05 performance scores.

Acute Kidney Injury – Open Cardiac Surgery

A. AKI-02-C: Acute Kidney Injury in patients undergoing Open Cardiac Surgery (reported as an inverse measure)
   a. Description:
      i. Percentage of patients undergoing an open cardiac procedure with a baseline creatinine increase of more than 1.5 times within 7 postoperative days or baseline creatinine level increases by $\geq$ 0.3 mg/dL within 48 hours postoperatively
   b. Inclusion:
      i. Adult patients undergoing open cardiac surgical procedures (determined by Procedure Type: Cardiac value code:1)
   c. Success:
      i. The creatinine level does not go above 1.5x the baseline level within 7 days post-op
      ii. The creatinine level does not increase $\geq$ 0.3 mg/dL obtained within 48 hours after Anesthesia End
   d. Exclusions:
      i. ASA 6 (including CPT:01990)
      ii. Cases where a baseline creatinine is not available within 60 days preoperatively
      iii. Cases where a creatinine lab is not available within 7 postoperative days.
      iv. Patients with more than one case in a 7-day period. The first case will be excluded if a postop creatinine is not documented for that first case. For example, a patient that has surgery twice in a 7-day period, the first surgery is excluded if a creatinine is not drawn in between cases
      v. Patients with pre-existing renal (stage 4 or 5) failure based upon BSA-Indexed EGFR < 30 mL/min/1.73m^2 determined by Preop EGFR (most recent) or MPOG Complication - Acute Kidney Injury value code -2.
      vi. Open cardiac procedures performed in conjunction with procedures affecting the kidney, bladder, or ureter (specific anesthesia and surgical CPT codes).
      vii. Liver Transplants
B. **Unblinded site data shared** – removed from slides that are published to the website for confidentiality reasons.
C. Discussion:
   a. *Josh Billings (Vanderbilt):* Would like to make a new threshold that is attainable but lower than the published 30% rate in the literature, which is high for all cardiac surgery. Maybe something like 20%. 10% is not attainable with KDIGO stage 1 criteria.

b. *Mike Mathis (MPOG Research Director):* Would agree with that but would add that I don't know if we want a uniform threshold given the variation in procedure type and the fact that there are opportunities for the anesthesia, perfusion, and surgeon teams to work on in improving this measure.

c. *Allison Janda (MPOG Cardiac Subcommittee Chair):* Any objection to 20%?

d. *Rob Schonberger (Yale):* No objection. What do we think about a risk adjusted measure for AKI-02-C much like we've developed for AKI-01?

e. *Allison Janda (MPOG Cardiac Subcommittee Chair):* That could certainly be a goal for 2025 if we want that to be one of our new measures next year.

D. <mark>Next Steps:</mark>

    a. Update AKI-02 threshold to 20%.

E. Acute Kidney Injury in Cardiac Surgery Toolkit

    a. Acute Kidney Prevention Toolkit for Cardiac Surgery has been updated!

    b. [2023 STS/SCA/AmSECT Clinical Practice Guidelines for the Prevention of Adult Cardiac Surgery-Associated AKI](#) now included:

        i. [MPOG CS-AKI Toolkit](#)

    c. Contact Allison with any feedback: ajanda@med.umich.edu

Summary/Next Steps:

a. New measure development – plan to share prelim data at next meeting:

    a. Transfusion ratios (1:1:1)

    b. Hypotension (anesthesia start – procedure start)

b. Next meeting:

    a. February 2025

    b. June 2025

    c. November 2025

c. Thank you for using the [forum](#) for discussion between meetings

d. *Rob Schonberger (Yale):* Can we add perfusionists to provider feedback emails?

    a. *Allison Janda (MPOG Cardiac Subcommittee Chair):* We can add them to the cardiac subcommittee meeting invites if you send them to me but to add them to provider feedback emails – we'll need to have an internal discussion at MPOG regarding the technical requirements needed to do that before we formally add to the next meeting agenda. I'll get back to you offline. Thanks!

Meeting adjourned: 1200pm EST