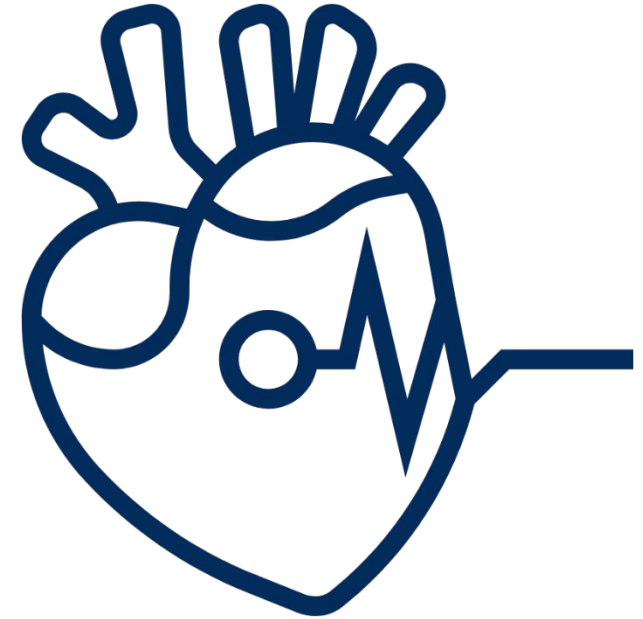




**MPOG Cardiac Anesthesia Subcommittee Meeting
February 12, 2021**

Agenda

- Welcome & interim updates
- Cardiac dashboard announcement
- Refresher on progress so far
- Literature review for hypothermia avoidance
- Discussion of measure exclusions
- Discussion of measure attribution
- Action items
- 2021 Plans & Goals
- Subcommittee Membership and Future Meeting Schedule



Introductions

- **ASPIRE Quality Team**
 - **Allison Janda, MD** – MPOG Cardiac Anesthesia Subcommittee Lead
 - **Nirav Shah, MD** – MPOG Director of Quality
 - **Michael Mathis, MD** – MPOG Director of Research
 - **Kate Buehler, MSN** – Clinical Program Manager

- Cardiac Anesthesiology Representatives joining us from around the US!

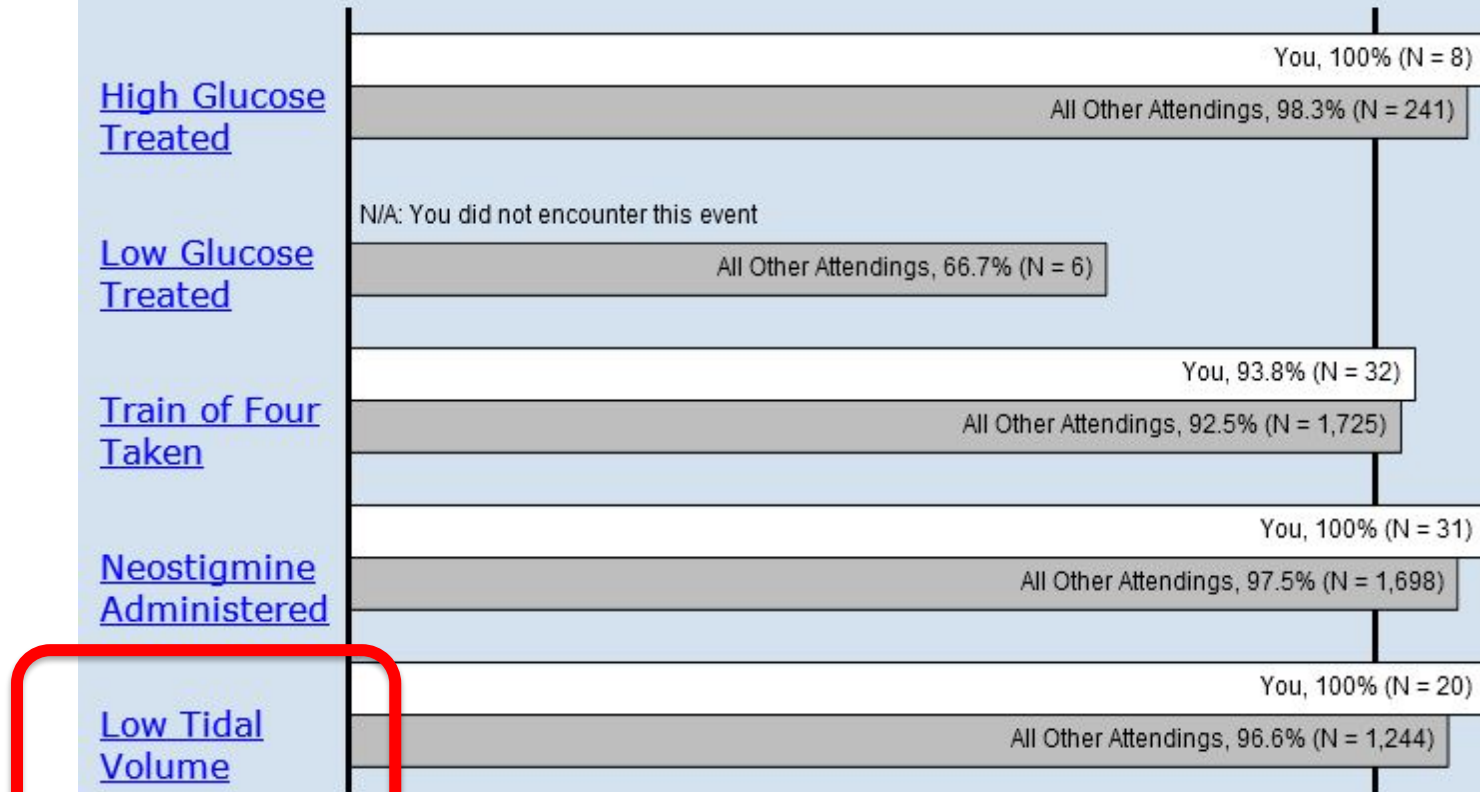
Basecamp

- We will be using Basecamp to communicate
- Please accept your Basecamp invitations (sent via email) to stay in the loop

The screenshot displays the Basecamp 2 user interface. At the top, the navigation bar includes the Basecamp 2 logo, a 'New stuff!' notification, and menu items for 'Projects', 'Calendar', 'Everything', 'Progress', 'Everyone', and 'Me'. A search bar on the right prompts the user to 'Jump to a project, person, label, or search...'. On the left, a vertical 'Help' button is visible. Below the navigation, there are options for 'New Project' (indicated by a green plus icon) and 'Templates'. The main content area is titled 'ALL PROJECTS' and features three project cards. The first card is for 'ASPIRE Forum', last updated Thursday at 9:17am, and shows a grid of colorful circular icons. The second card is for 'MPOG Cardiac Anesthesia QI Subcommittee', last updated 31 minutes ago, and also shows a grid of icons, including a profile picture. The third card is a placeholder for a 'Future Project'. At the bottom, a video thumbnail is labeled 'Watch a quick video about the Projects page'.

Individual Performance E-mails link to new QI Reporting Tool

Your Performance vs All Other Attendings



An asterisk (*) denotes that the difference between your performance and everyone else's was statistically significant.

- My Measure Performance
- Pediatric
- Obstetric
- Cardiac

Median Tidal Volume, 10 mL/kg PBW [More Info](#)

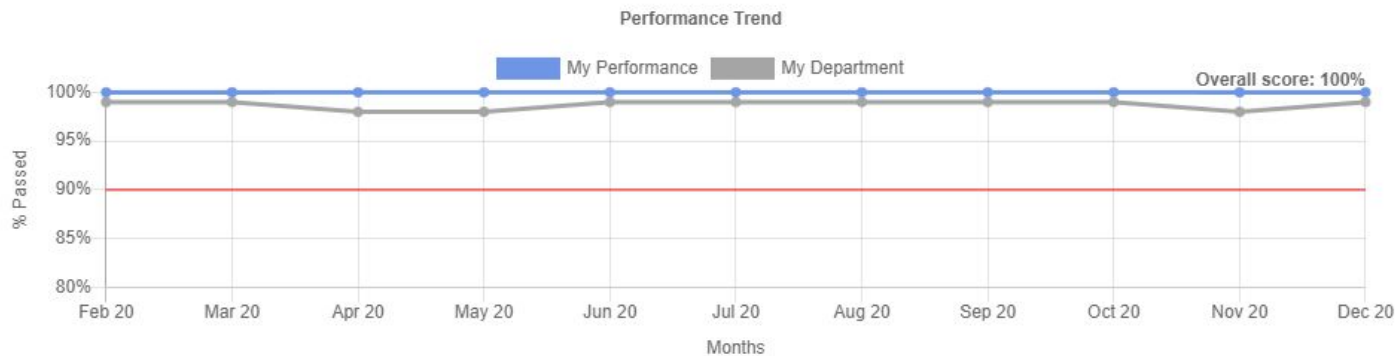


The number of cases with a tidal volume less than 10 mL/kg PBW



Result Counts

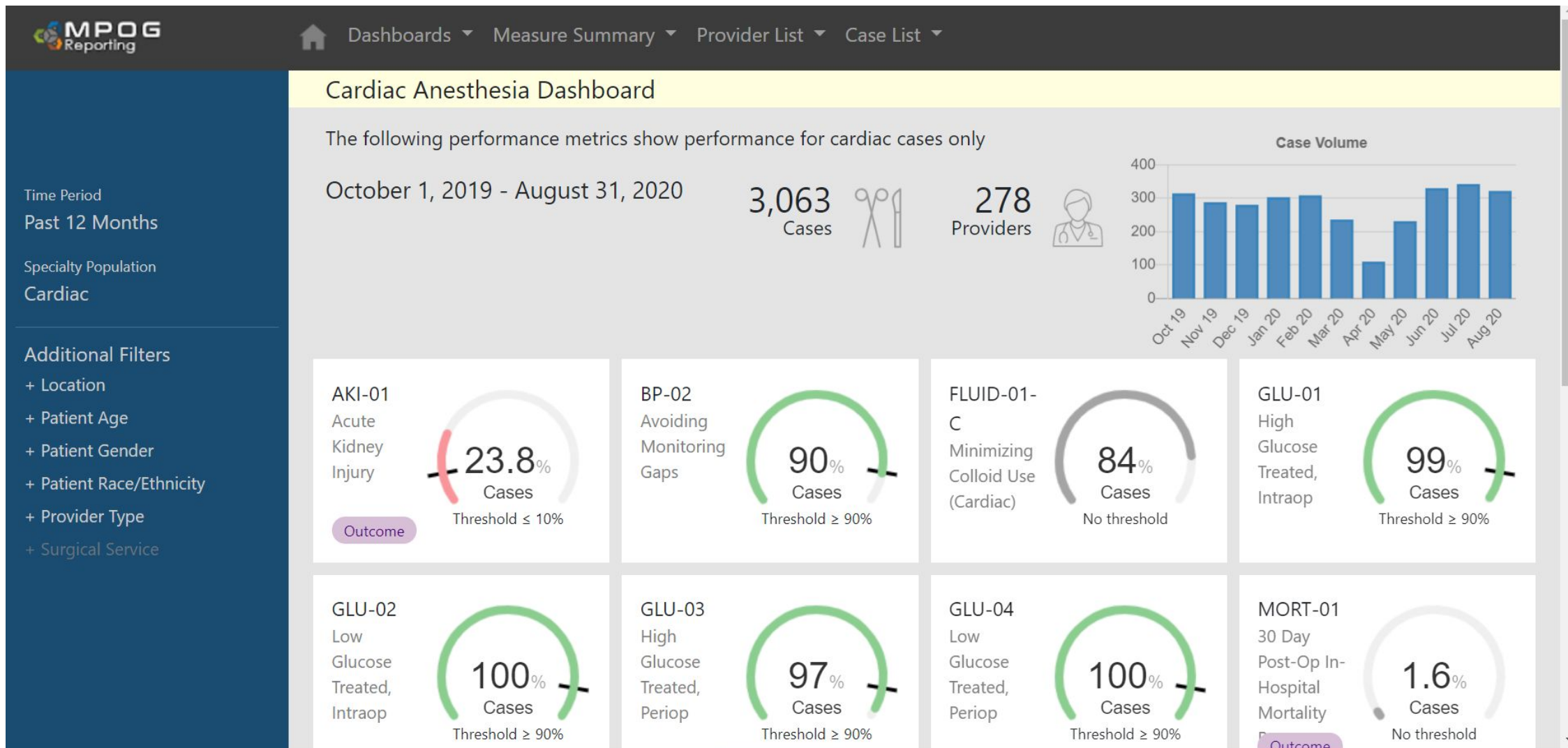
Result	Case Count
Passed	128
Excluded	225
Total	353



Result Reasons

Result	Reason	Case Count
Passed	Median Tidal Volume:Ideal Body Weight Ratio	128
Excluded	Endotracheal Tube Used	124
Excluded	Responsible Provider	55
Excluded	One Lung Ventilation Used	23
Excluded	Ventilation Duration (Minutes)	10
Excluded	Height	8
Excluded	ASA Class	5
Total		353

Cardiac-Specific Reporting Dashboard



Call for measure survey results overview

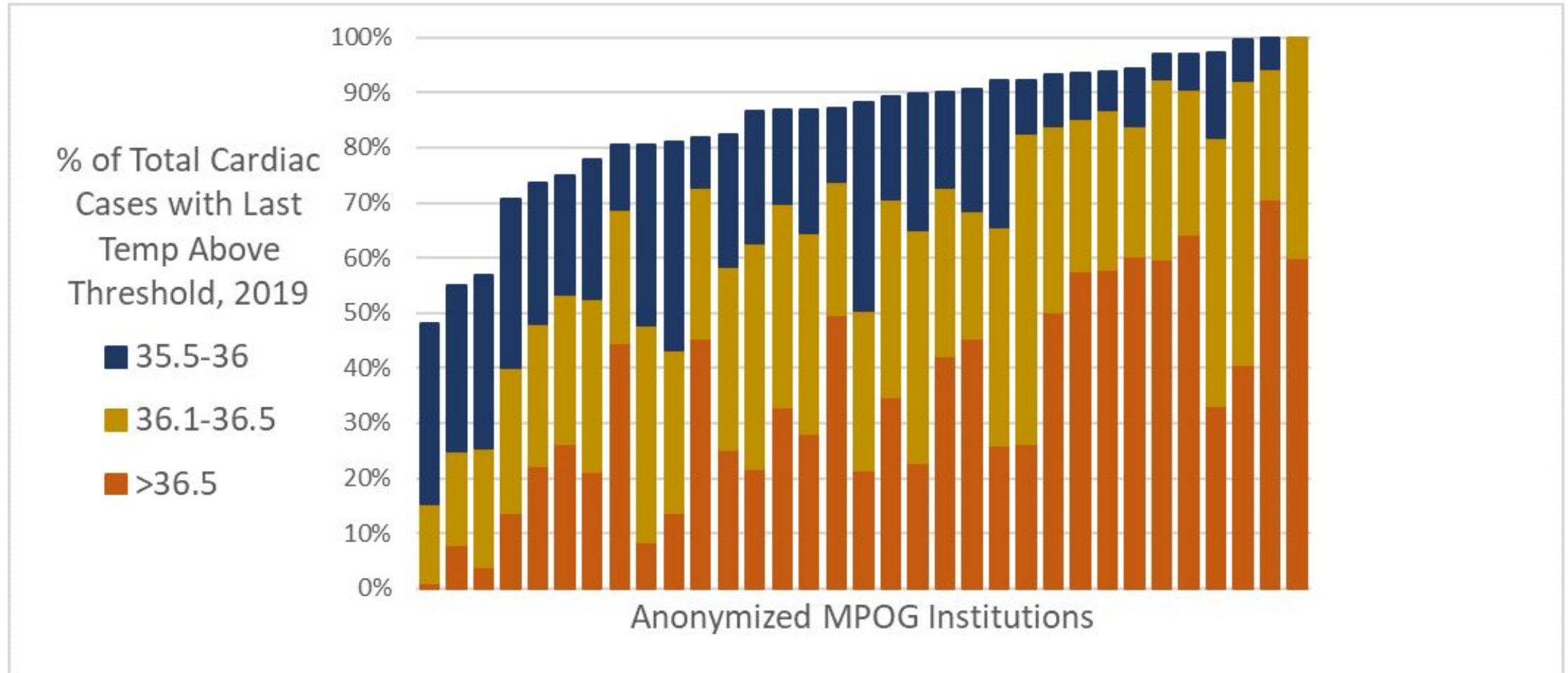
- 16 providers completed the survey – Thank you!
- Highest rated measures (no overwhelming consensus)
 - #1: Post-bypass hypothermia avoidance (62% listed in the top 3)**
 - #2: Glucose management (56% listed in the top 3)**
 - #3: Postoperative AKI avoidance (44% listed in the top 3)
 - #4: Hypotension avoidance (44% listed in the top 3)
 - #5: Antibiotic timing (38% listed in the top 3)
- FYI: MPOG data capture - measure limitations
 - 4 Hours before Anesthesia Start 6 hours after Anesthesia End

Post-bypass hypothermia avoidance

- Current TEMP-03 Measure:
 - % of patients, with procedures >60 minutes under GA/neuraxial, with at least one body temperature $\geq 36^{\circ}\text{C}$
 - Excludes cardiac surgeries
- Considerations in new measure development:
 - Threshold?
 - Timing (post-CPB)?
 - Exclusions for specific cardiac cases?
 - Attribution?



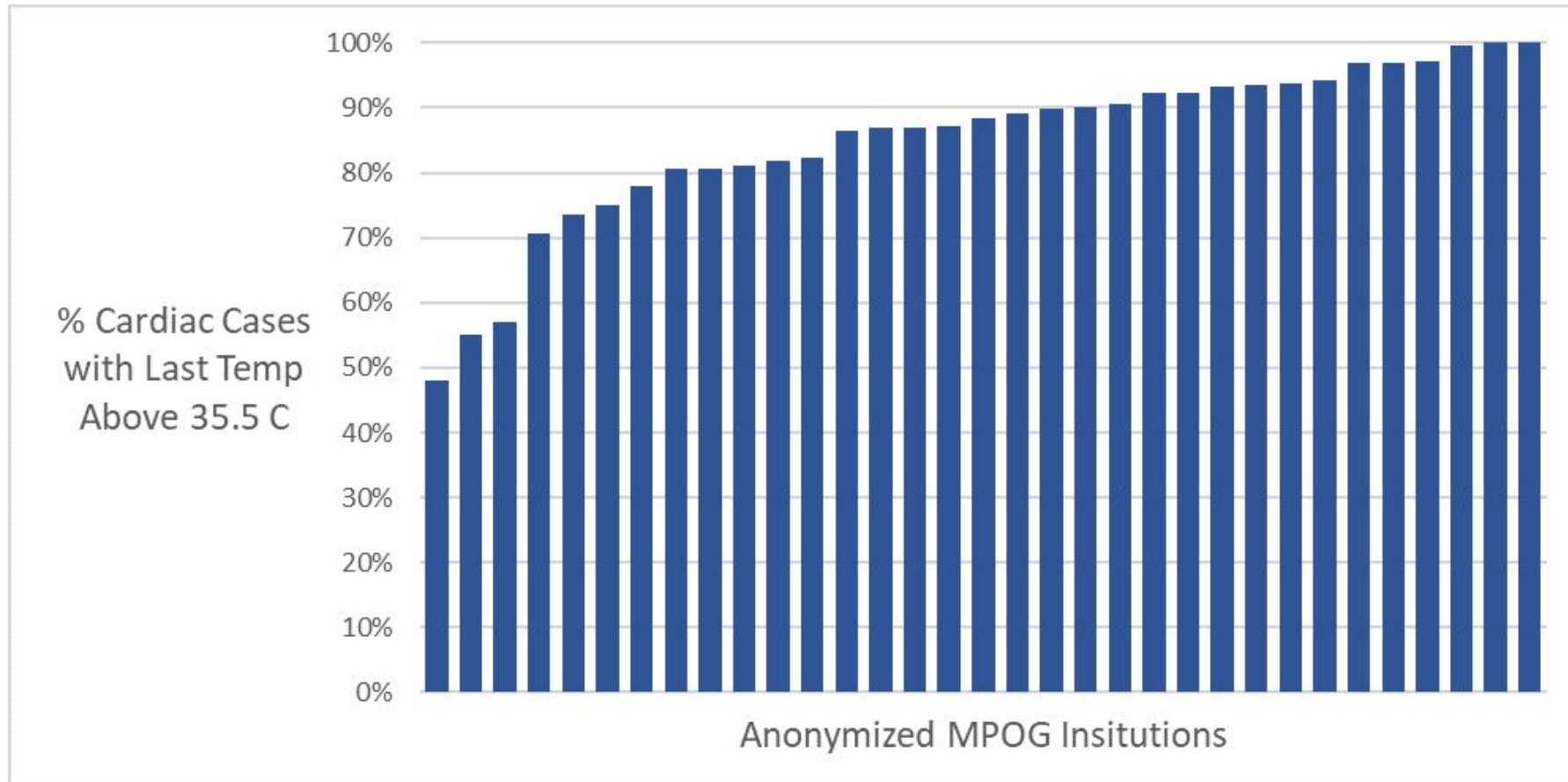
Variation data - post-bypass hypothermia avoidance



Variation data - post-bypass hypothermia avoidance >35.5 C



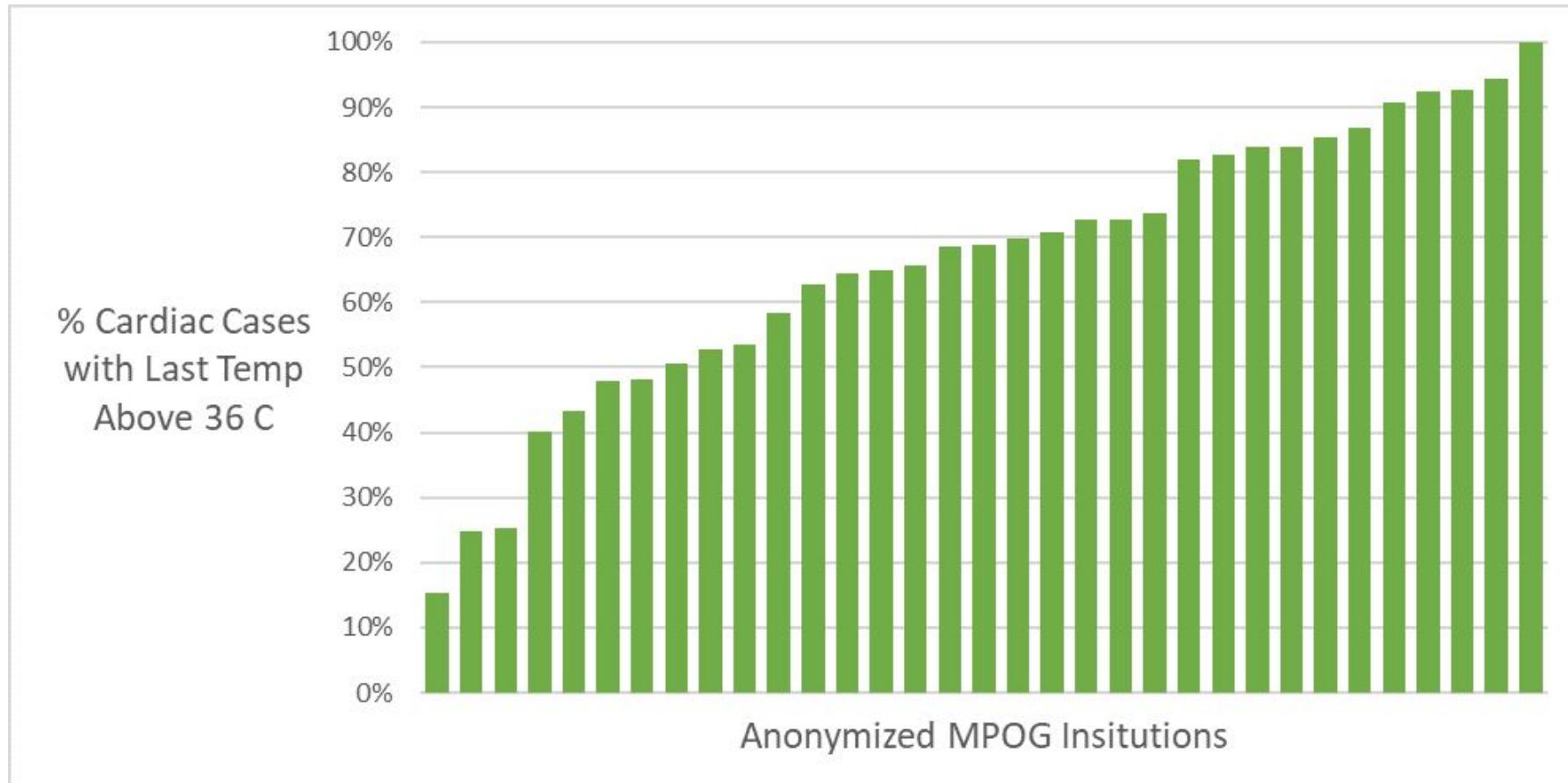
- Mean: 85%
- SD: 13%



Variation data - post-bypass hypothermia avoidance >36 C



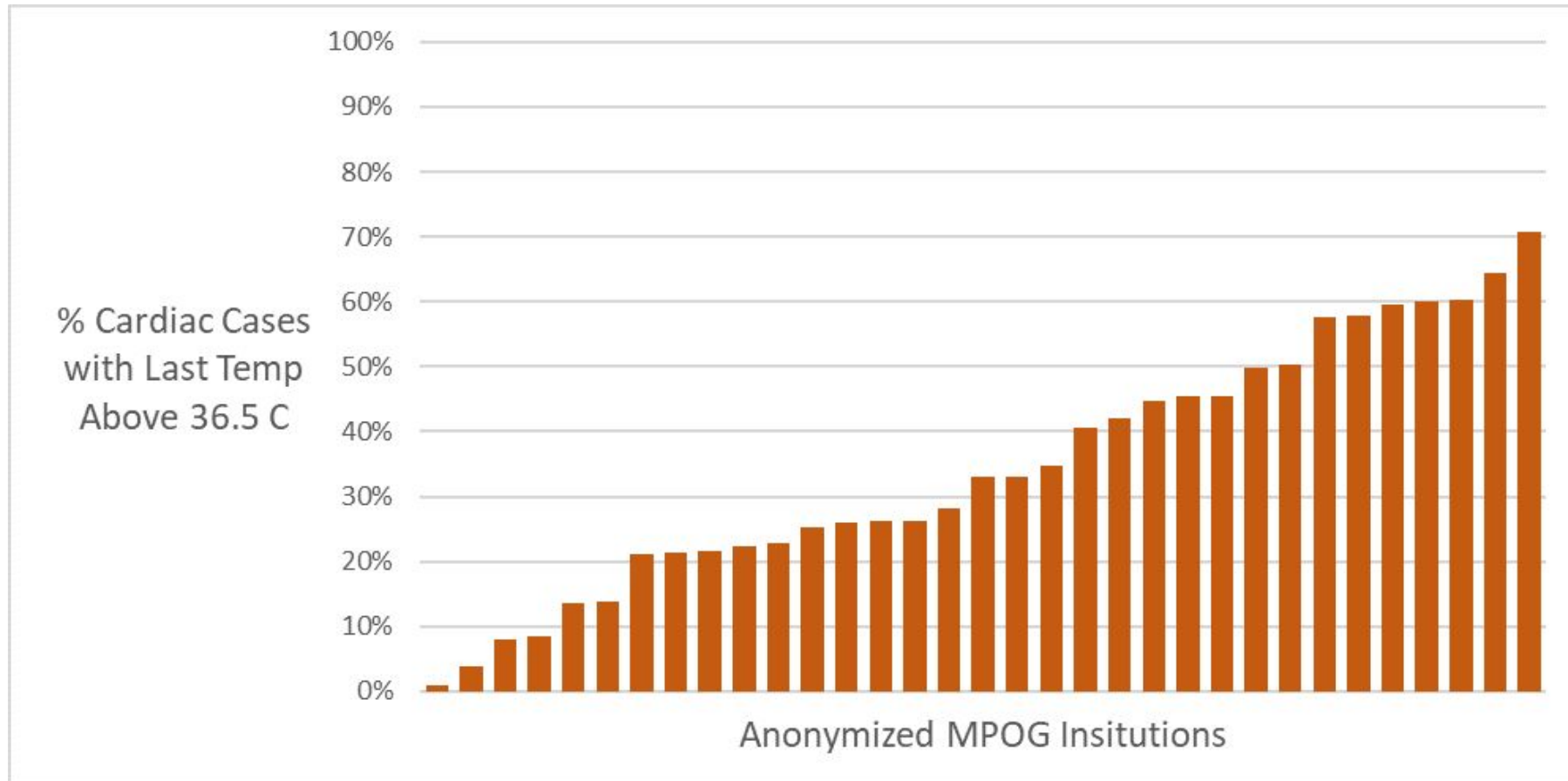
- Mean: 66%
- SD: 21%



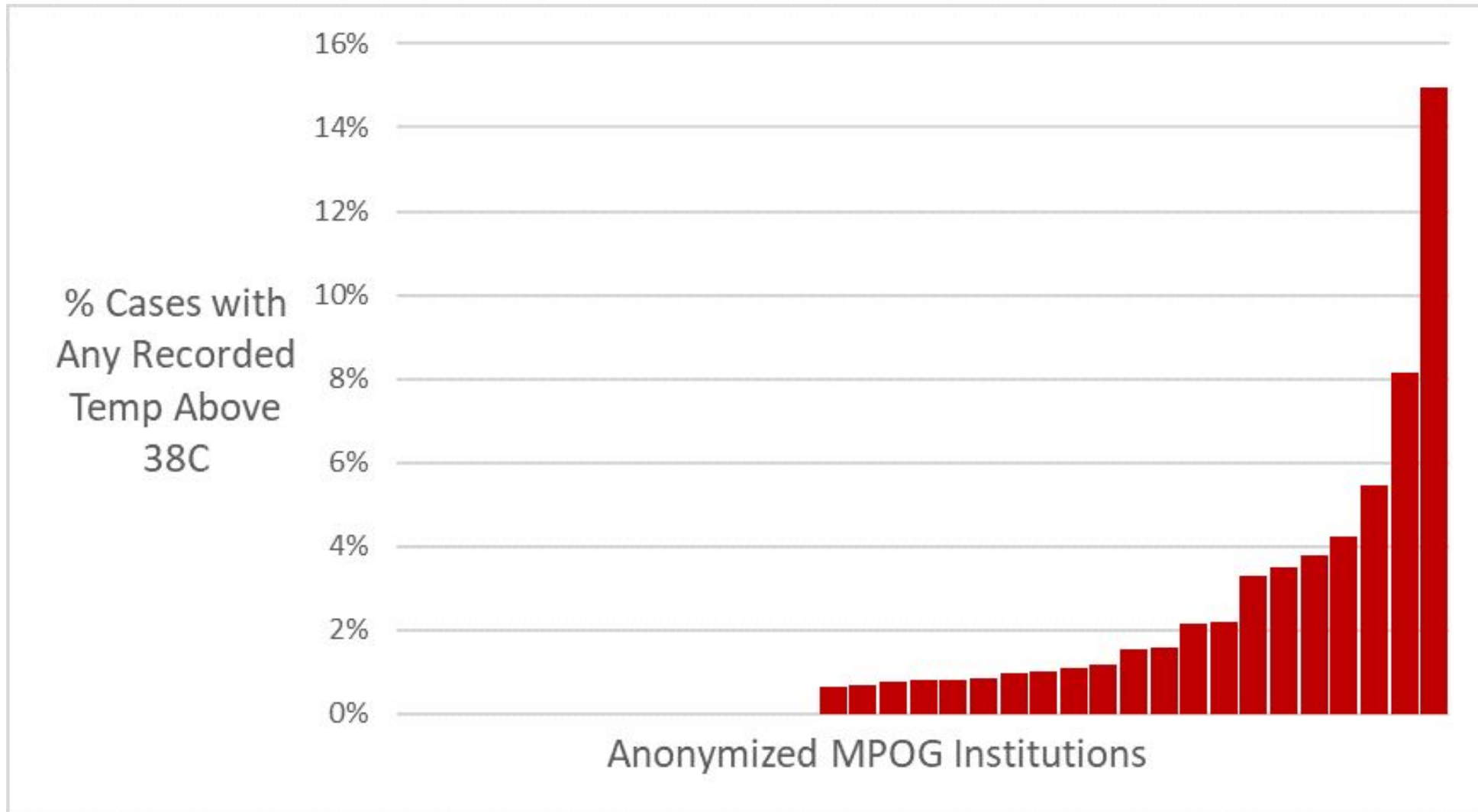
Variation data - post-bypass hypothermia avoidance >36.5 C



- Mean: 35%
- SD: 19%



Variation data - post-bypass hypothermia avoidance >38 C



Hypothermia Avoidance – Literature Review

- Current guidelines and consensus statements:
 - 2020 Updates from the Adult Cardiac Anesthesiology Section of STS ¹
 - Avoidance of temp >37 while on bypass
 - Avoidance of post bypass hypothermia and states that more work is needed to determine the full picture/impact on all organ function but summarizes that hypothermia has been associated with postop. bleeding, surgical site infections, increased hospitalizations and morbidity and also cites ERACS consensus statements and protocols
 - Guidelines for perioperative care in cardiac surgery: enhanced recovery after surgery recommendations ²
 - Avoid >37C for arterial outlet blood temperature while on bypass
 - Avoid hypothermia (defined as <36C) post bypass due to increased bleeding, infection, a prolonged hospital stay, and death



1. Del Rio JM, Abernathy JJ 3rd, Taylor MA, Habib RH, Fernandez FG, Bollen BA, Lauer RE, Nussmeier NA, Glance LG, Petty JV 3rd, Mackensen GB, Vener DF, Kertai MD: The Adult Cardiac Anesthesiology Section of STS Adult Cardiac Surgery Database: 2020 Update on Quality and Outcomes. *Anesth Analg* 2020 doi:10.1213/ANE.0000000000005093

2. Engelman DT, Ben Ali W, Williams JB, Perrault LP, Reddy VS, Arora RC, Roselli EE, Khoynzhad A, Gerdisch M, Levy JH, Lobdell K, Fletcher N, Kirsch M, Nelson G, Engelman RM, Gregory AJ, Boyle EM: Guidelines for Perioperative Care in Cardiac Surgery: Enhanced Recovery After Surgery Society Recommendations. *JAMA Surg* 2019 doi:10.1001/jamasurg.2019.1153

Hypothermia Avoidance – Literature Review

- Current guidelines and consensus statements:
 - STS Practice Guidelines for temperature management while on bypass³
 - Avoid >37C for arterial outlet blood temperature while on bypass
 - ERAS cardiac recommendations⁴
 - Avoid >37.9C while on bypass
 - Does not comment on the exact definition of hypothermia, but does state to avoid post-bypass hypothermia and references articles in the cardiac and non-cardiac realms which use a definition of <36C



3. Engelman R, Baker RA, Likosky DS, Grigore A, Dickinson TA, Shore-Lesserson L, Hammon JW: The Society of Thoracic Surgeons, The Society of Cardiovascular Anesthesiologists, and The American Society of ExtraCorporeal Technology: Clinical Practice Guidelines for Cardiopulmonary Bypass--Temperature Management During Cardiopulmonary Bypass. J Cardiothorac Vasc Anesth 2015; 29:1104–13

4. Gregory AJ, Grant MC, Manning MW, Cheung AT, Ender J, Sander M, Zarbock A, Stoppe C, Meineri M, Grocott HP, Ghadimi K, Gutsche JT, Patel PA, Denault A, Shaw A, Fletcher N, Levy JH: Enhanced Recovery After Cardiac Surgery (ERAS Cardiac) Recommendations: An Important First Step-But There Is Much Work to Be Done. J Cardiothorac Vasc Anesth 2020; 34:39–47

Hypothermia Avoidance – Literature Review

- Current guidelines and consensus statements:
 - Current non-cardiac **hypothermia** avoidance [MIPS measure](#)⁵
 - MIPS 424, uses 35.5C
 - Current cardiac **hyperthermia** avoidance [Anesthesia Quality Institute measure](#)⁶
 - AQI65, for cerebral hyperthermia avoidance defines hyperthermia as $\geq 37C$ while on bypass



5. https://qpp.cms.gov/docs/QPP_quality_measure_specifications/CQM-Measures/2019_Measure_424_MIPSCQM.pdf

6. <https://www.aqihq.org/files/MIPS/2020/2020%20QCDR%20Measure%20Book.pdf>

Hypothermia Avoidance – Literature Review

- Additional Literature:
 - Retrospective observational study in cardiac patients ⁷
 - Persistent hypothermia (<36) in the 1st 24h after surgery was associated with an increased risk of death after cardiac surgery (notably transient hypothermia was not associated with this finding)
 - Retrospective study evaluating the impact of hypothermia on morbidity and mortality after off-pump CAB surgery ⁸
 - Patients with either mild or moderate to severe hypothermia had significantly higher risk adjusted mortality, rates of respiratory failure and unplanned operations



7. Karalapillai D, Story D, Hart GK, Bailey M, Pilcher D, Cooper DJ, Bellomo R: Postoperative hypothermia and patient outcomes after elective cardiac surgery. *Anaesthesia* 2011; 66:780–4

8. Hannan EL, Samadashvili Z, Wechsler A, Jordan D, Lahey SJ, Culliford AT, Gold JP, Higgins RSD, Smith CR: The relationship between perioperative temperature and adverse outcomes after off-pump coronary artery bypass graft surgery. *J Thorac Cardiovasc Surg* 2010; 139:1568–75.e1

Hypothermia Avoidance – Literature Review

- Additional Literature:
 - RCT in non-cardiac surgery patients with cardiac comorbidities⁹
 - Decreased morbid cardiac events and VT with normothermia (temp >36C)
 - Systematic review of the impact of mild perioperative hypothermia on blood loss for non-cardiac surgery¹⁰
 - Mild hypothermia (<1 degree C) was associated with significantly increased blood loss by approximately 16% (4-26%) and increases the relative risk for transfusion by approximately 22% (3-37%)



9. Frank SM, Fleisher LA, Breslow MJ, Higgins MS, Olson KF, Kelly S, Beattie C: Perioperative maintenance of normothermia reduces the incidence of morbid cardiac events. A randomized clinical trial. JAMA 1997; 277:1127–34

10. Rajagopalan S, Mascha E, Na J, Sessler DI: The effects of mild perioperative hypothermia on blood loss and transfusion requirement. Anesthesiology 2008; 108:71–7

Hypothermia Avoidance

- Considerations in new measure development:
 - Threshold
 - Timing
 - Exclusions
 - Attribution



Hypothermia Avoidance

- Considerations in new measure development:
 - Threshold
 - Discussion in basecamp:
 - **$\geq 35.5C$**



Hypothermia Avoidance

- Considerations in new measure development:
 - Timing
 - Discussion in basecamp:
 - **Last non-artifact temperature documented, if more than one, preferentially use core temperature**



Hypothermia Avoidance

- Considerations in new measure development:
 - Exclusions for specific cardiac cases
 - Discussion today



Hypothermia Avoidance - Exclusions

- Limit to open cardiac cases?
 - Exclude EP and TAVRs for example
 - Exclude cases with a short duration (<120 minutes)
 - Exclude cases without an arterial line
 - Exclude sternal debridements (Anesthesia CPT 00550)
- Limit to bypass cases?
 - Exclude off-pump CABGs for example
- Exclude cases requiring circulatory arrest in light of hypothermia contributing to neuroprotection?
 - Exclude Anesthesia CPT 00563 (heart surgery with circulatory arrest)
 - Exclude if a lumbar drain is present



Hypothermia Avoidance

- Considerations in new measure development:
 - Attribution
 - Discussion today



Hypothermia Avoidance - Attribution

- Attending signed in for the most number of minutes following cardiopulmonary bypass end; if cardiopulmonary bypass not used, then attending signed in for the most number of minutes total

- OR-

- Attending signed in upon transport from OR

- OR-

- Attending signed in during the minute of the case which yielded the temperature used for the measure

- OR-

- Additional ideas?



Hypothermia Avoidance – Next Steps

- We will incorporate your feedback and draft a measure specification
- Apply the measure specification to past cases and test functionality
- Circulate the measure specification for approval
- Set up a meeting with SCA-STS leadership once we have a measure specification for them to comment on?



Goals

- Build 1 cardiac-specific measure in 2020/early 2021
 - Post-bypass **hypothermia** avoidance
- Build 2-3 cardiac-specific measures in 2021
 - Glucose management?
 - On-bypass **hyperthermia** avoidance?
 - Antibiotic timing?
- More discussion
 - Hypotension avoidance
 - AKI avoidance
- Opportunities for STS-merged outcome reports requires institutions to integrate with STS

Where to start?

- Consult the Surgical Registry page and the FAQ
 - Surgical Registry page: <https://mpog.org/surgicalregistries/>
 - Surgical Registry FAQ: <https://mpog.org/surgicalregistriesfaq/>



The screenshot shows the MPOG website homepage. At the top left is the MPOG logo (Multicenter Perioperative Outcomes Group). To the right of the logo are social media icons and buttons for 'Dashboard Login' and 'Dashboard Beta'. A navigation menu includes 'About', 'Join', 'Research', 'Quality', 'Tools', 'Downloads', and 'Events / News'. The main banner features the text 'MPOG 2020 Virtual Retrospective Registration is Open' and 'Friday, October 2, 2020', with a 'REGISTER NOW' button. A dropdown menu is open over the 'Join' link, listing options such as 'Funding Requirements Non-Michigan Hospitals', 'Recruitment and Funding (Michigan Hospitals)', 'Steps to Join', 'Minimum Data Requirements', 'Data Security Guidelines for Users', 'Database Security', 'Surgical Registry Integration (STS & NSQIP)', and 'Surgery Registries Frequently Asked Questions'.

Cardiac Anesthesia Subcommittee Membership

- Open to all anesthesiologists or those interested in improving cardiothoracic measures
 - Do not have to practice at an active MPOG institution
- Proposed 2020 – 2021 Meeting Schedule
 - Spring 2021 Meeting: April/May, 2021
 - Summer 2021 Meeting: July/August, 2021
 - Fall 2021 Meeting: October/November, 2021
 - Winter, 2022 Meeting: January/February, 2022
- Thank you for using the forum for discussion between meetings!

THANK YOU!

Allison Janda, MD

MPOG Cardiac Anesthesia
QI Subcommittee Lead

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