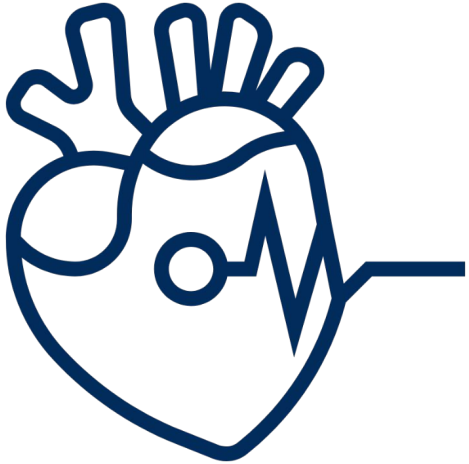
MPOG Cardiac Anesthesia Subcommittee Meeting
September 10, 2021

Agenda

- Welcome & quick summary of progress
- Cardiac procedure type phenotype update
- **Hypo**thermia avoidance (TEMP-06) update and
  review of validation/preliminary results
- **Hyper**thermia avoidance measures specification discussion
- Future measure discussion of survey results
- Next steps



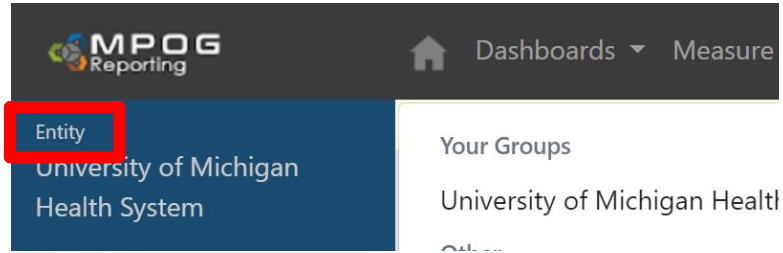
Introductions

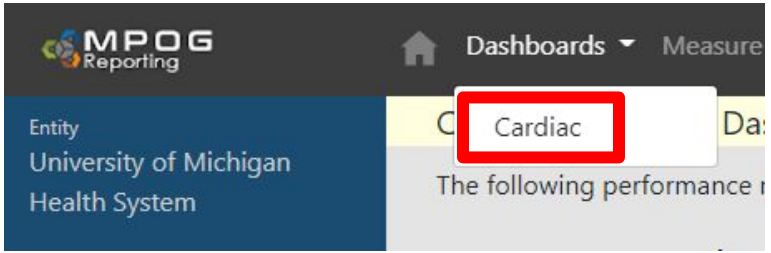
- **ASPIRE Quality Team**
  - **Allison Janda, MD** – MPOG Cardiac Anesthesia Subcommittee Lead
  - **Nirav Shah, MD** – MPOG Director of Quality
  - **Michael Mathis, MD** – MPOG Director of Research
  - **Kate Buehler, MSN** – Clinical Program Manager

- Cardiac Anesthesiology Representatives joining us from around the US!

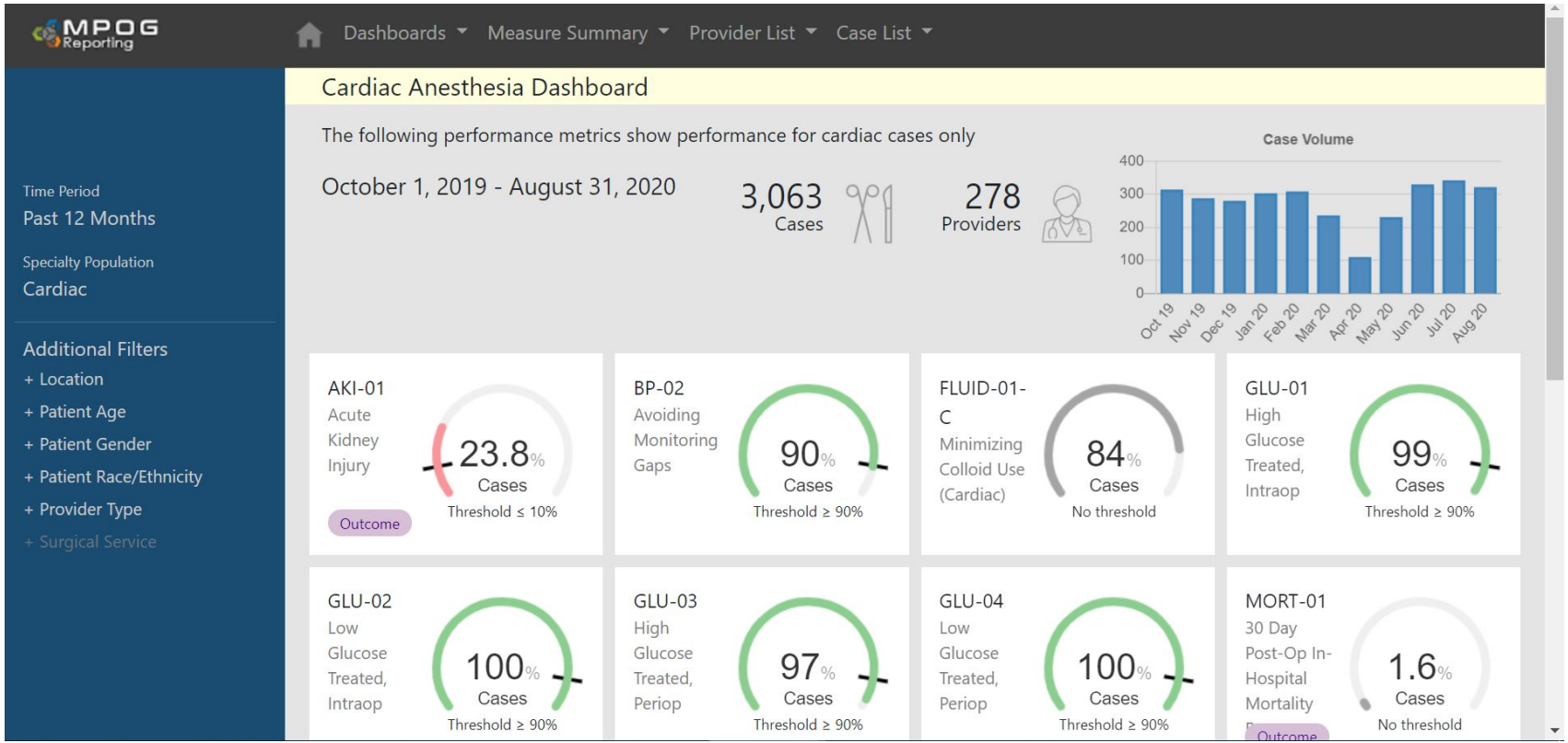
Cardiac Dashboard on MPOG QI Reporting Tool

- Cardiac Dashboard - Please reach out with any feedback!
- Steps to access Cardiac Departmental Dashboard
  - The default view when logging in from Provider Feedback Emails is your own performance for site-selected measures
  - Change ‘Entity’ in upper left corner to your institution
  - Choose ‘Dashboards’, then ‘Cardiac’ from banner along the top





Cardiac-Specific Reporting Dashboard



Cardiac Procedure Type Phenotype

- **New Categories:**
  - Open Cardiac
  - Transcatheter/Endovascular
  - EP/Cardiac catheterization
  - Other Cardiac
  - No/Non-cardiac
  - Missing/unknown/unable to determine

- **Data Elements Utilized:**
  - Surgical CPTs (if present)
  - Anesthesia CPTs
  - Procedural Service IDs
  - Cardiopulmonary bypass documentation phenotypes and concepts
  - Procedure text phrases

Cardiac Procedure Type Phenotype

- **Schema:**
  - Sequentially bins cases based on utilized fields if present
- **Current Status:**
  - Validation nearly complete - it is much better than the original version!
- **Questions for group:**
  - Pericardial windows
    - Binned as either cardiac open or cardiac other

Post-bypass Hypothermia Avoidance

- **Current** TEMP-03 Measure:
  - % of patients, with procedures >60 minutes under GA/neuraxial, with at least one body temperature ≥ 36^{o}C
  - Excludes cardiac surgeries
- **New** TEMP-06 Measure:
  - % of patients, ≥ 18 years age, who undergo open cardiac surgical procedures under general anesthesia of >120 minutes for whom last non-artifact body temperature prior to anesthesia end was ≥ 35.5^{o}C

TEMP-06 Measure Details

- **Timing:**
  - Last non-artifact temperature documented, if more than one, preferentially use core temperature
  - Look back period of 15 minutes
    - Use core temperature measure if present in the anesthesia record within 15 minutes of the last documented non-artifact body temperature
- **Core or Near Core Temperature Monitoring Includes:**
  - Pulmonary Artery Temperature
  - Distal Esophageal Temperature
  - Nasopharyngeal Temperature
  - Tympanic Membrane Temperature
  - Bladder Temperature
  - Rectal Temperature
  - Axillary Temperature (arm must be at patient side)
  - Oral Temperature
  - Zero-Flux Thermometer Temperature

TEMP-06 Measure Details

- **Artifact algorithm:**
  - Less than 32.0°C (89.6F)
  - Greater than 40.0°C (104.0F)
  - Any minute-to-minute jumps >0.5°C equivalent
  - Example: 0.125°C /15s, 0.25°C / 30s, 1°C / 2mins

- **Attribution:**
  - Any provider signed in for ≥40 minutes from bypass end until anesthesia end (or the provider signed in for the greatest number of minutes during this period, if this period is <40 minutes) per staff role.
  - If bypass was not used, the window would be expanded to any provider signed in for ≥40 minutes for the entire case

TEMP-06 Measure Details

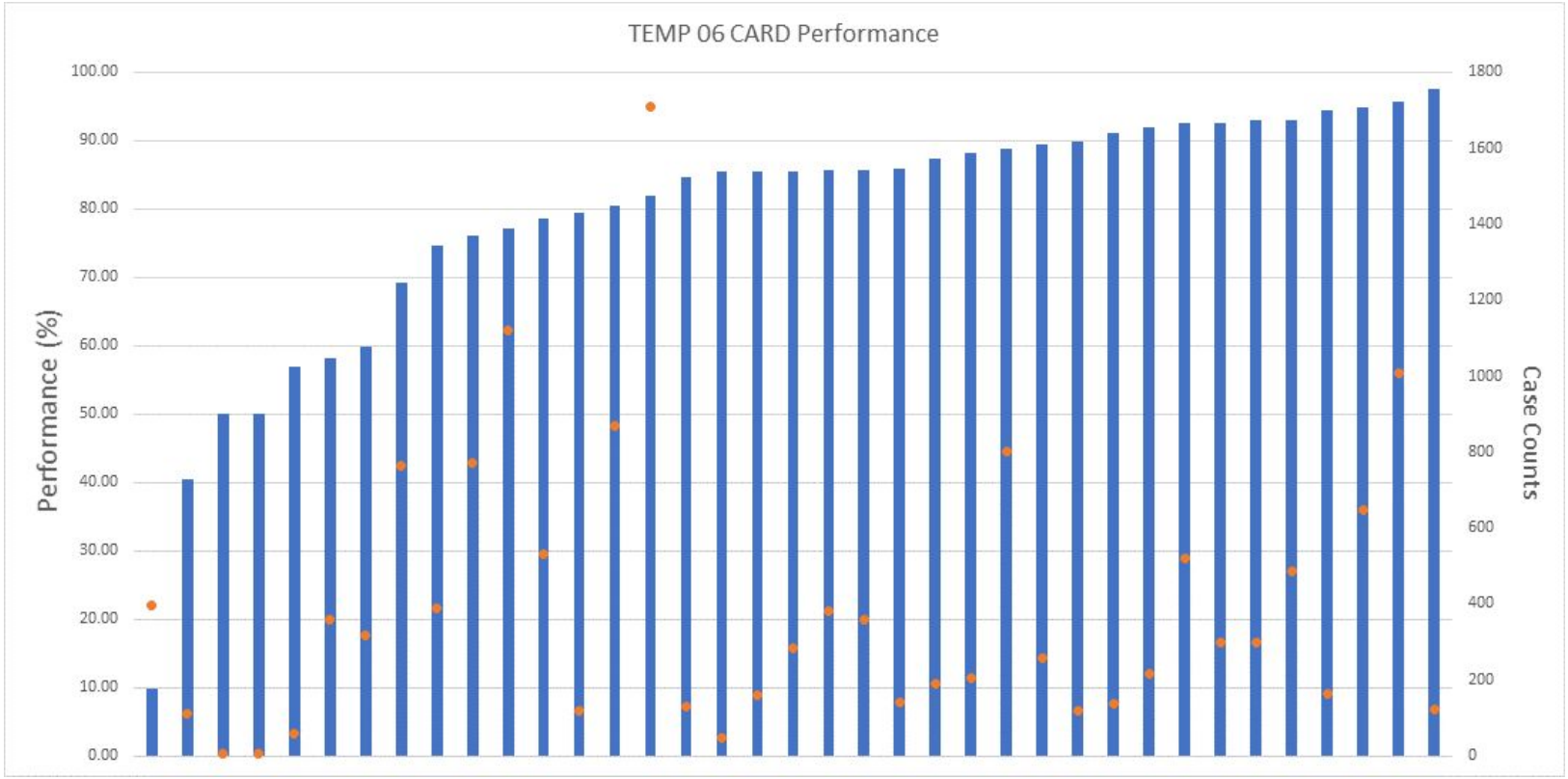
- **Inclusions:**
  - All patients, 18 years of age or older, who undergo open cardiac surgical procedures (as determined by Procedure Type: Cardiac Open phenotype) under GA of ≥120 minutes

- **Exclusions:**
  - Organ harvest (CPT: 01990)
  - Non-cardiac cases as defined as those cases not meeting criteria for the cardiac case type phenotype
  - Within the general cardiac case type phenotype, exclude: Transcatheter/Endovascular, EP/Cath groups and Other Cardiac
  - Invalid cases where Measure End results prior to Measure Start
  - Cases with age <18

TEMP-06 Measure Validation

- **Points to discuss:**
  - Core vs. “near core” temperatures
    - Add to current hierarchy?
  - Excluding myocardial temperatures
  - Look back period of 15 minutes
    - Is this long enough?

TEMP-06 Preliminary Performance (past 12 months)



TEMP-06 – Next Steps

- One additional round of validation
- Circulate the revised measure specification for approval
- Synergize efforts with SCA Quality & Safety Committee / CPI Subcommittees
- Goal to launch prior to October 8th MPOG Retreat
- Refining the measure will continue after we launch, please let us know if you see inappropriately flagged or passed cases on your dashboards!

Hyperthermia Avoidance – Literature Review

- 2020 Updates from the Adult Cardiac Anesthesiology Section of STS [1]
  - Avoidance of temp >37 while on bypass
- Guidelines for perioperative care in cardiac surgery: enhanced recovery after surgery recommendations [2]
  - Avoid >37C for arterial outlet blood temperature while on bypass
- STS Practice Guidelines for temperature management while on bypass [3]
  - Avoid >37C for arterial outlet blood temperature while on bypass

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, Khoynezhad 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
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

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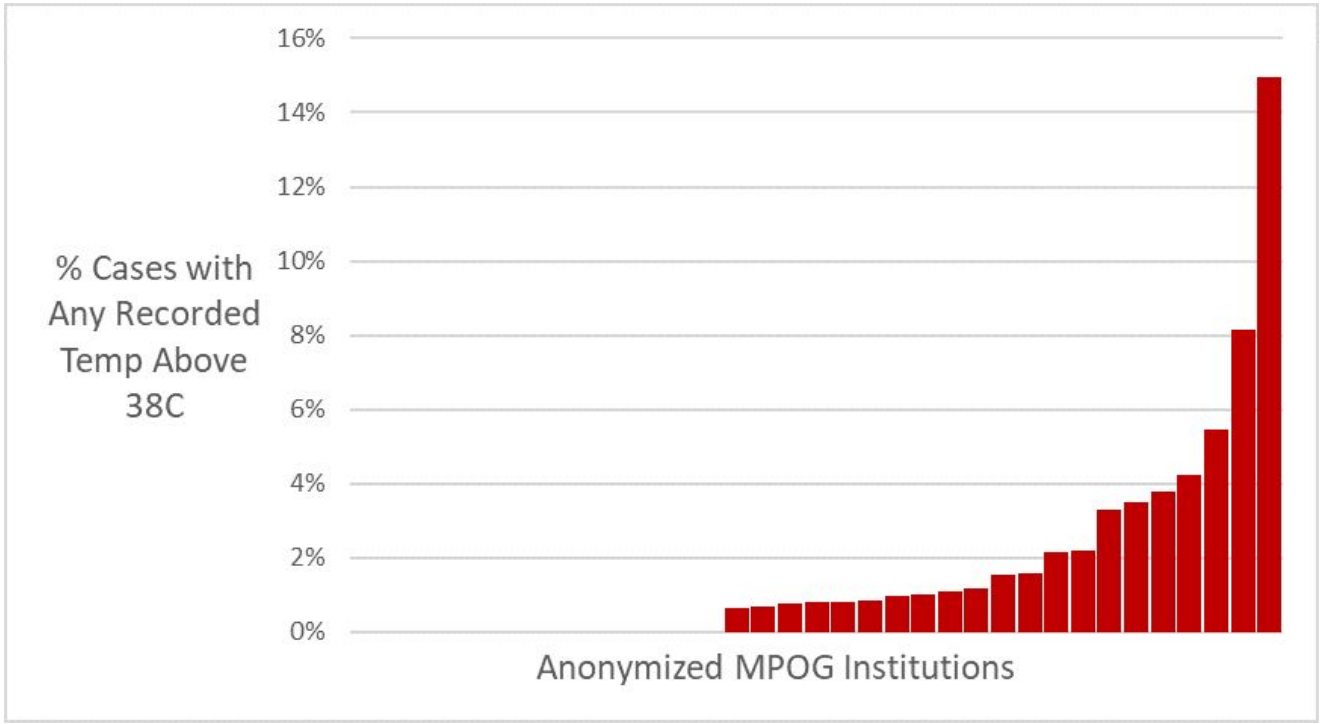
Hyperthermia Avoidance – Literature Review

- ERAS cardiac recommendations [4]
  - Avoid >37.9C while on bypass
- Current cardiac **hyper**thermia avoidance Anesthesia Quality Institute measure [5]
  - AQI65, for cerebral hyperthermia avoidance defines hyperthermia as ≥37C while on bypass

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

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

Prelim MPOG data: Hyperthermia avoidance >38°C



Hyperthermia Avoidance Measure Details

- **TEMP-07:**
  - % of patients, ≥ 18 years age, who undergo open cardiac surgical procedures using cardiopulmonary bypass under general anesthesia of >120 minutes for whom the temperature did not rise above 37 degrees Celsius while on bypass for over 10 consecutive minutes

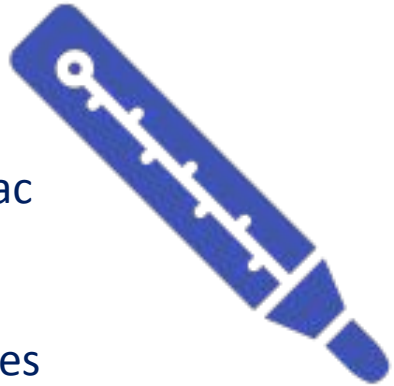
- **Timing:**
  - Cardiopulmonary Bypass Start until Cardiopulmonary Bypass End (phenotypes exist but need improvement)

Hyperthermia Avoidance Measure Details

- **Artifact algorithm:**
  - Less than 32.0°C (89.6F)
  - Greater than 40.0°C (104.0F)
  - Any minute-to-minute jumps >0.5°C equivalent
  - Example: 0.125°C /15s, 0.25°C / 30s, 1°C / 2mins

- **Attribution:**
  - Any provider signed in for ≥40 minutes from bypass start until bypass end (or the provider signed in for the greatest number of minutes during this period, if this period is <40 minutes) per staff role

Hyperthermia Avoidance Measure Details



- **Inclusions:**
  - All patients, 18 years of age or older, who undergo open cardiac surgical procedures using cardiopulmonary bypass (as determined by Procedure Type: Cardiac Open phenotype and Cardiopulmonary Bypass phenotype) under GA of ≥120 minutes

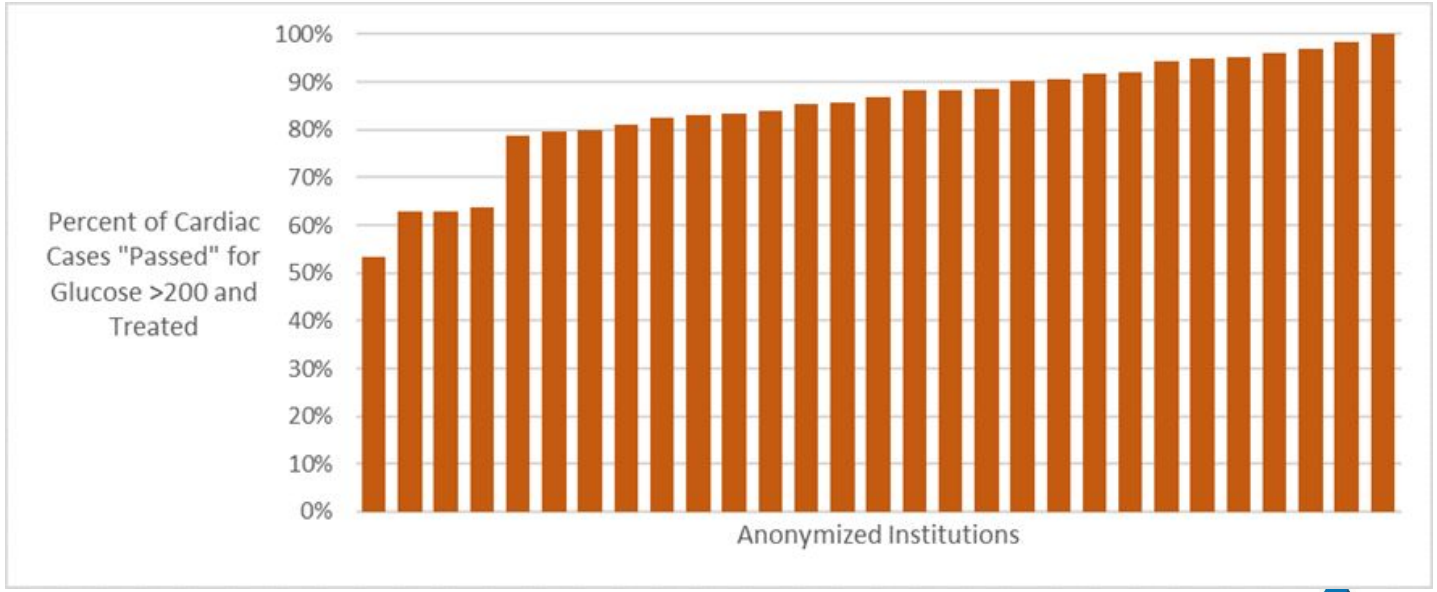
- **Exclusions:**
  - ASA 6
  - Organ harvest (CPT: 01990)
  - Non-cardiac cases as defined as those cases not meeting criteria for the cardiac case type phenotype
  - Within the general cardiac case type phenotype, exclude: Transcatheter/Endovascular, EP/Cath groups and Other Cardiac
  - Non-CPB cases
  - Cases with age <18

Future Measure Planning

- **Top ranked topics:**
  - **AKI avoidance**
    - 75% ranked in top 3
    - AKI-01 version with just cardiac open cases?
  - **Postop. pulmonary complication avoidance**
    - 67% ranked in top 3
    - PUL-02 version with just open cardiac cases?
    - Extubation data in import manager would require a deep dig
  - **Glucose management** and **hypotension avoidance**
    - Both with 42% ranked in top 3
    - High variation with glucose performance
    - May be challenging to establish thresholds and exclusion periods for hypotension measures

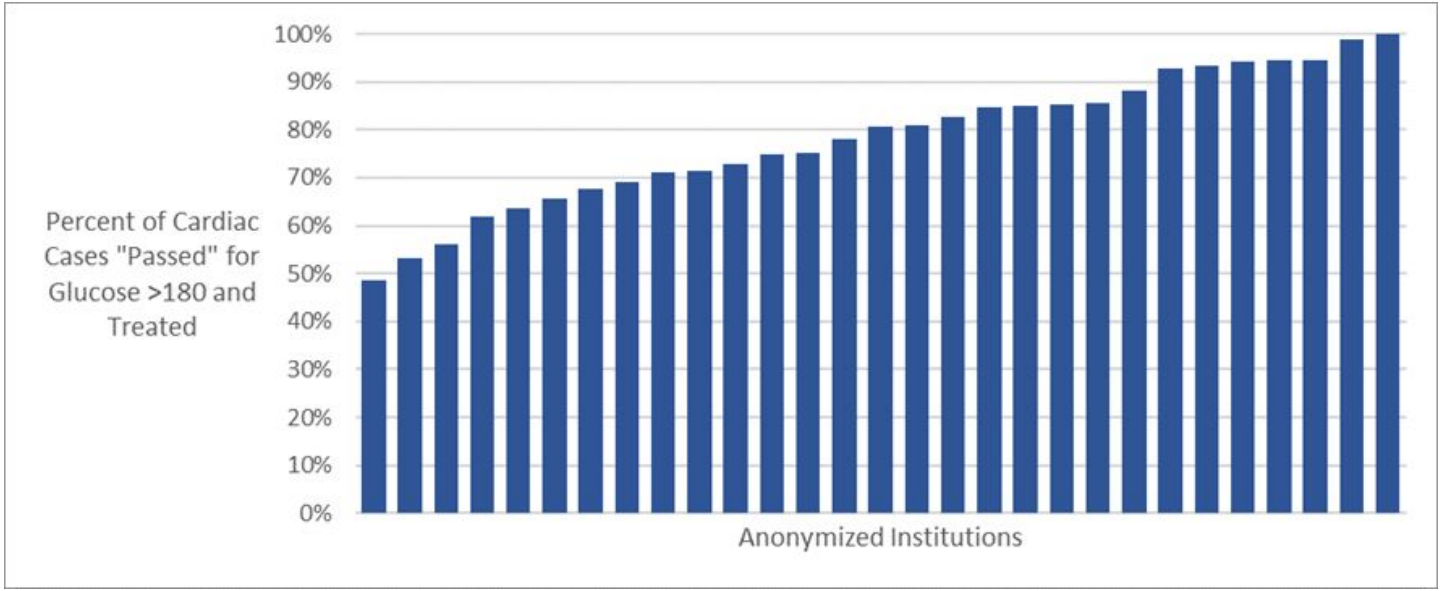
Example of Glucose Variation Data

- Adapted GLU-01 Measure:
  - % of cases with perioperative glucose > 200 mg/dL with administration of insulin or glucose recheck within 60 minutes of original glucose measurement
  - Mean: 85% SD: 11%



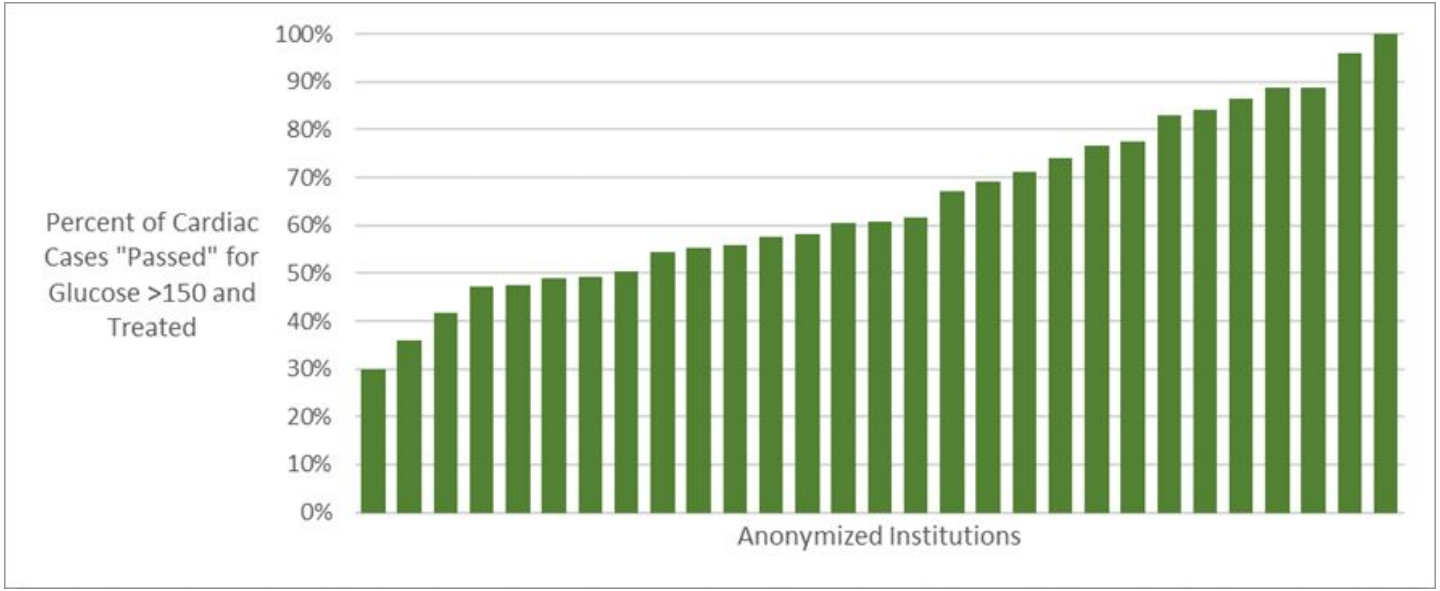
Example of Glucose Variation Data

- Adapted GLU-01 Measure:
  - % of cases with perioperative glucose > 180 mg/dL with administration of insulin or glucose recheck within 60 minutes of original glucose measurement
  - Mean: 79% SD: 14%



Example of Glucose Variation Data

- Adapted GLU-01 Measure:
  - % of cases with perioperative glucose > 150 mg/dL with administration of insulin or glucose recheck within 60 minutes of original glucose measurement
  - Mean: 64% SD: 18%



Goals

- Build 1 cardiac-specific measure in 2021
  - Post-bypass **hypo**thermia avoidance
- Build 1 additional cardiac-specific measures in late 2021
  - On-bypass **hyper**thermia avoidance
- Plan next measure in late 2021
  - AKI avoidance
  - PPC avoidance
  - Glucose management?
  - Hypotension avoidance?

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 2021 – 2022 Meeting Schedule
  - Late 2021 Meeting: December 2021
  - Winter 2022 Meeting: February 2022

- Thank you for using the forum for discussion between meetings!

Please Join Us!

- MPOG Annual Retreat will be held in San Diego on October 8, 2021
- Registration is now available
- Virtual and In-person options
- Contact Tory Lacca (lacca@med.umich.edu) if you have questions about registration

REGISTER NOW

MPOG
MULTICENTER PERIOPERATIVE OUTCOMES GROUP

Annual Retreat - San Diego, California
Friday, October 8, 2021

07:00 – 08:00	**Breakfast and Check-in**
08:00 – 08:15	**Welcome and State of MPOG** Sachin Kheterpal, MD, MBA – MPOG
08:15 – 09:00	**Opportunities and Challenges with Data Sharing** Michelle Mello, JD, PhD - Stanford University
09:00 – 09:30	**THRIVE: Trajectories of Recovery after Intravenous Propofol vs inhaled Volatile Anesthesia** Sachin Kheterpal, MD, MBA - MPOG
09:30 - 10:00	**Best of MPOG Research and QI: Part 1** **Perioperative Outcomes Among Surgeons Who Operated the Night Prior** Eric Sun, MD, PhD - Stanford University **Adherence to Guidelines for the Administration of Intraoperative Antibiotics** Amit Bardia, MD - Yale University
10:00 – 10:15	**Break and questions**
10:15 - 11:15	**Artificial Intelligence in Medicine** Eric Topol, MD - Scripps Research
11:15 – 12:00	**Best of MPOG Research and QI: Part 2** **Multicenter Review of Practice Patterns Regarding Benzodiazepine Use in Cardiac Surgery** Allison Janda, MD - University of Michigan **An Assessment of Procedural and Patient Risk Factors for Hypoxemia in Pediatric Patients Less than 3 years of age Undergoing One-Lung Ventilation and Thoracic Surgery** Wes Templeton, MD - Wake Forest University
12:00 – 1:15	**Networking Lunch**
1:15 – 1:45	**Development / QI Update** Nirav Shah, MD - MPOG Kate Buehler, MS, RN - MPOG
1:45 – 2:50	**Small Group Sessions: Simultaneous moderated sessions on attendee proposed topics. Final topics to be determined on the day of Retreat, and could include:** 1. How to improve QI measure visualizations 2. How to improve self serve data queries 3. Updates to PCRC/QC format or agenda 4. How to structure an MPOG Fellowship
2:50 – 3:00	**Wrap up** Nirav Shah, MD - MPOG
3:00 – 4:00	**Round Table Discussions** (In-person only) 1. Subcommittee Meetings (Cardiac, Obstetrics, and Pediatrics) 2. THRIVE discussion section 3. Onboarding Site