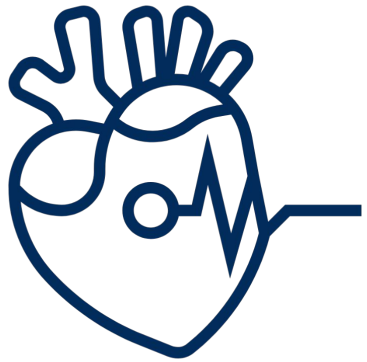
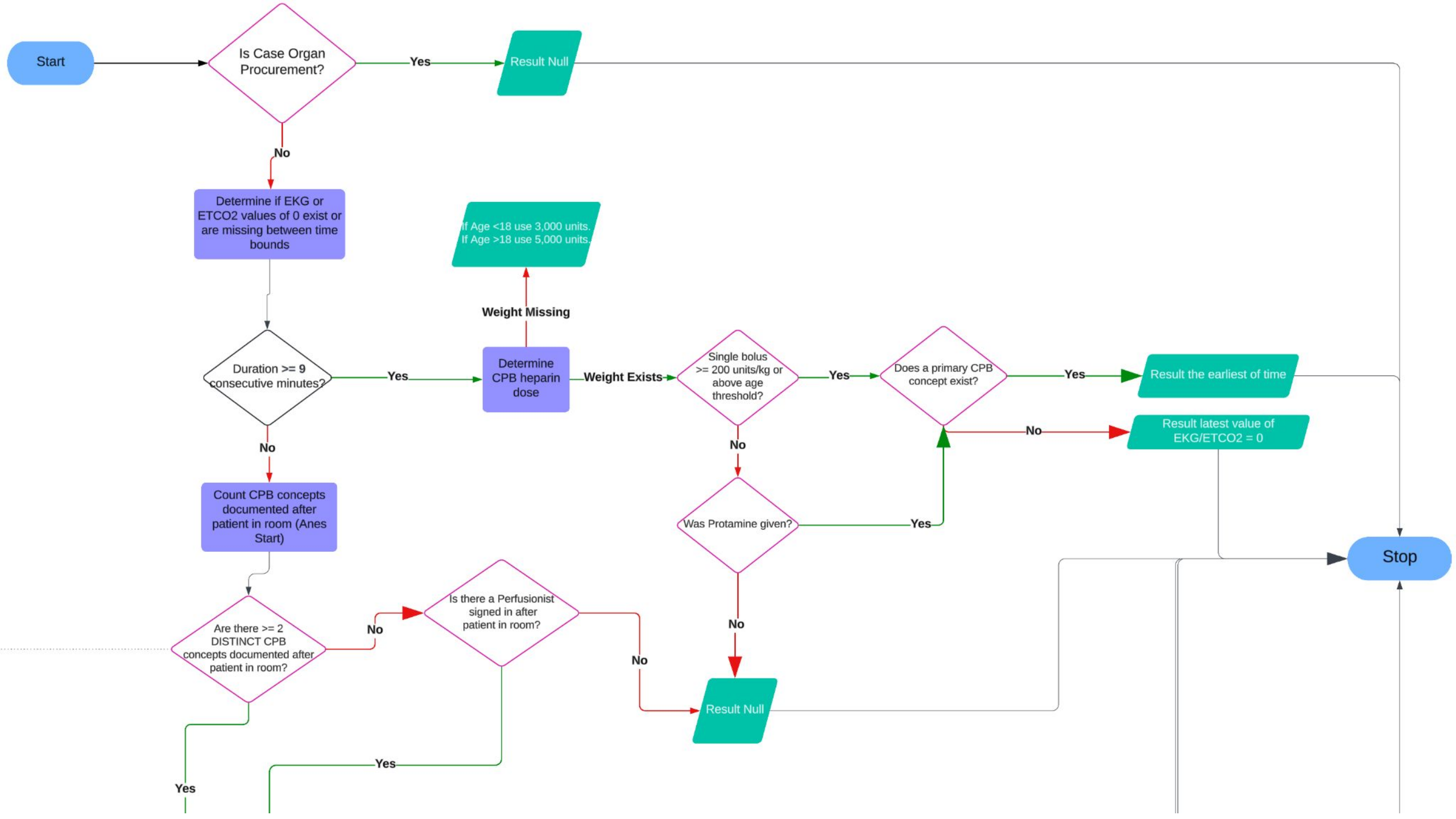
MPOG Peds Cardiac Anesthesia Workgroup Meeting
November 4, 2024

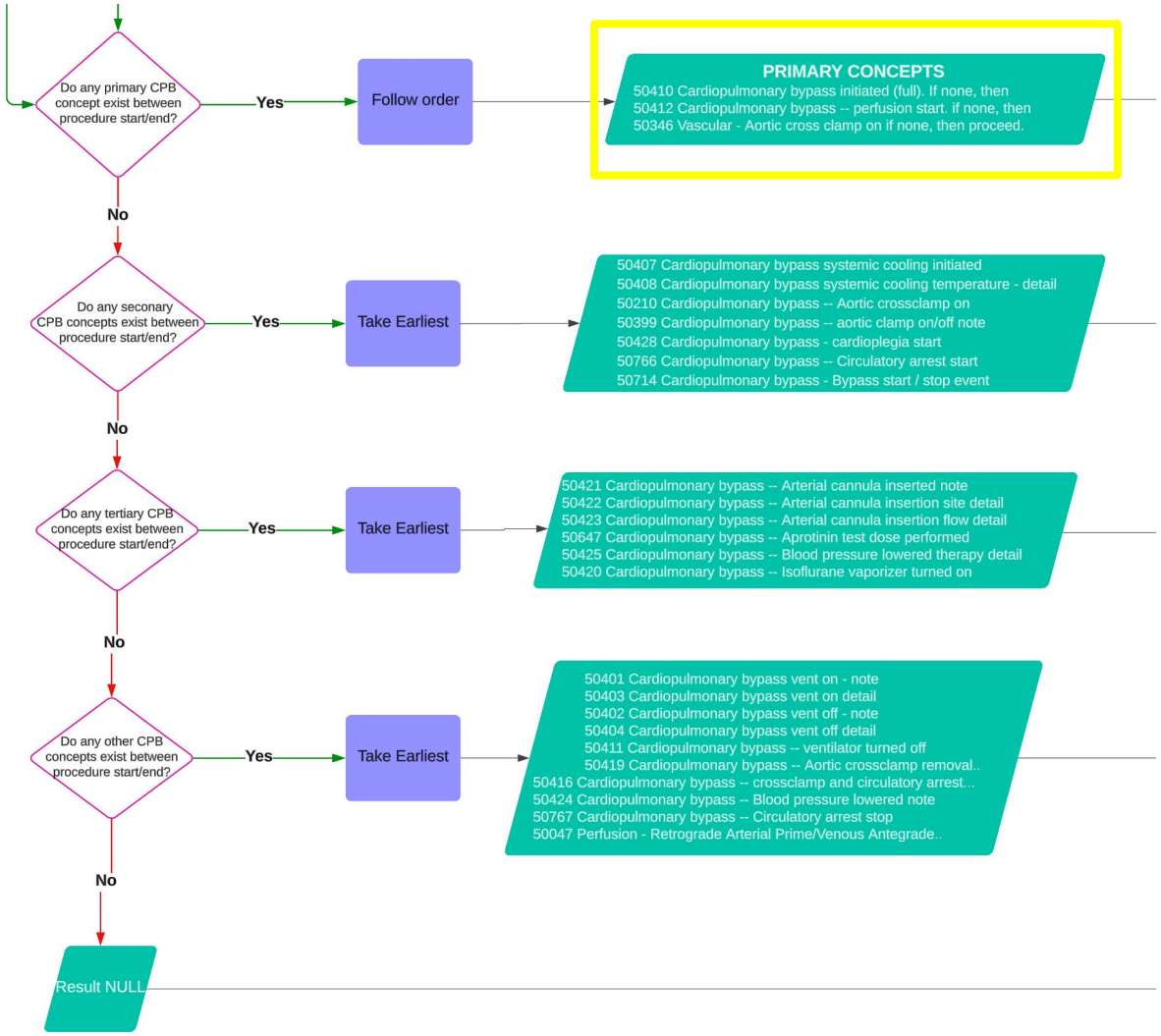
February Meeting Recap

Summary of Recommendations

- Formed workgroup - established short term goals
- Current adult cardiac phenotype does not accurately capture pediatric cases
- Build pediatric specific cardiac phenotype in 2024
  - Determined CPB Start algorithm needed deep cleaning first….




Start
Is Case Organ Procurement?
Yes
Result Null
No
Determine if EKG or ETCO2 values of 0 exist or are missing between time bounds
If Age <18 use 3,000 units.
If Age >18 use 5,000 units.
Weight Missing
Duration >= 9 consecutive minutes?
Yes
Determine CPB heparin dose
Weight Exists
Single bolus >= 200 units/kg or above age threshold?
Yes
Does a primary CPB concept exist?
Yes
Result the earliest of time
No
Result latest value of EKG/ETCO2 = 0
No
Was Protamine given?
Yes
No
Count CPB concepts documented after patient in room (Anes Start)
Are there >= 2 DISTINCT CPB concepts documented after patient in room?
No
Is there a Perfusionist signed in after patient in room?
No
Result Null
Yes
Yes
Stop



Check your sites variable mapping for primary CPB concepts:

- 50410 Cardiopulmonary bypass initiated (full).
- 50412 Cardiopulmonary bypass -- perfusion start.
- 50346 Vascular - Aortic cross clamp on

Peds Cardiac Phenotype Values

Value	Definition
No	Case was not a cardiac procedure nor included CPB
Cardiovascular, with CPB	If the procedure is cardiovascular (includes the heart, great vessels, or any branches of the great vessels), and cardiopulmonary bypass is used.
Cardiovascular, without CPB	If the procedure is cardiovascular, but cardiopulmonary bypass is not used. Examples include: coarctation of the aorta repair, creation of a systemic-to-pulmonary artery shunt, patent ductus arteriosus ligation. A delayed sternal closure is included in this category.
Non-Cardiovascular, with CPB	Procedures that are done with bypass support that do not involve a concomitant cardiovascular procedure.

2025 Goal: Build 1-2 peds cardiac-specific QI measures

Cardiovascular Anesthesiology

SYSTEMATIC REVIEW ARTICLE

Proposed Quality Metrics for Congenital Cardiac Anesthesia: A Scoping Review

Morgan L. Brown, MD, PhD,* Anna Dorste, MLIS,† Phillip S. Adams, DO,‡ Lisa A. Caplan, MD,§ Stephen J. Gleich, MD,‖ Jennifer L. Hernandez, MD,¶ and Lori Q. Riegger, MD# For the Quality and Safety Committee of the Congenital Cardiac Anesthesia Society

1. Use of a structured handover in the intensive care unit
2. Use of an infection prevention bundle
3. Use of Blood conservation strategies
4. Early extubation of cardiopulmonary bypass cases
5. Cardiac arrest under the care of a cardiac anesthesiologist

Candidate Quality Metrics

Structural

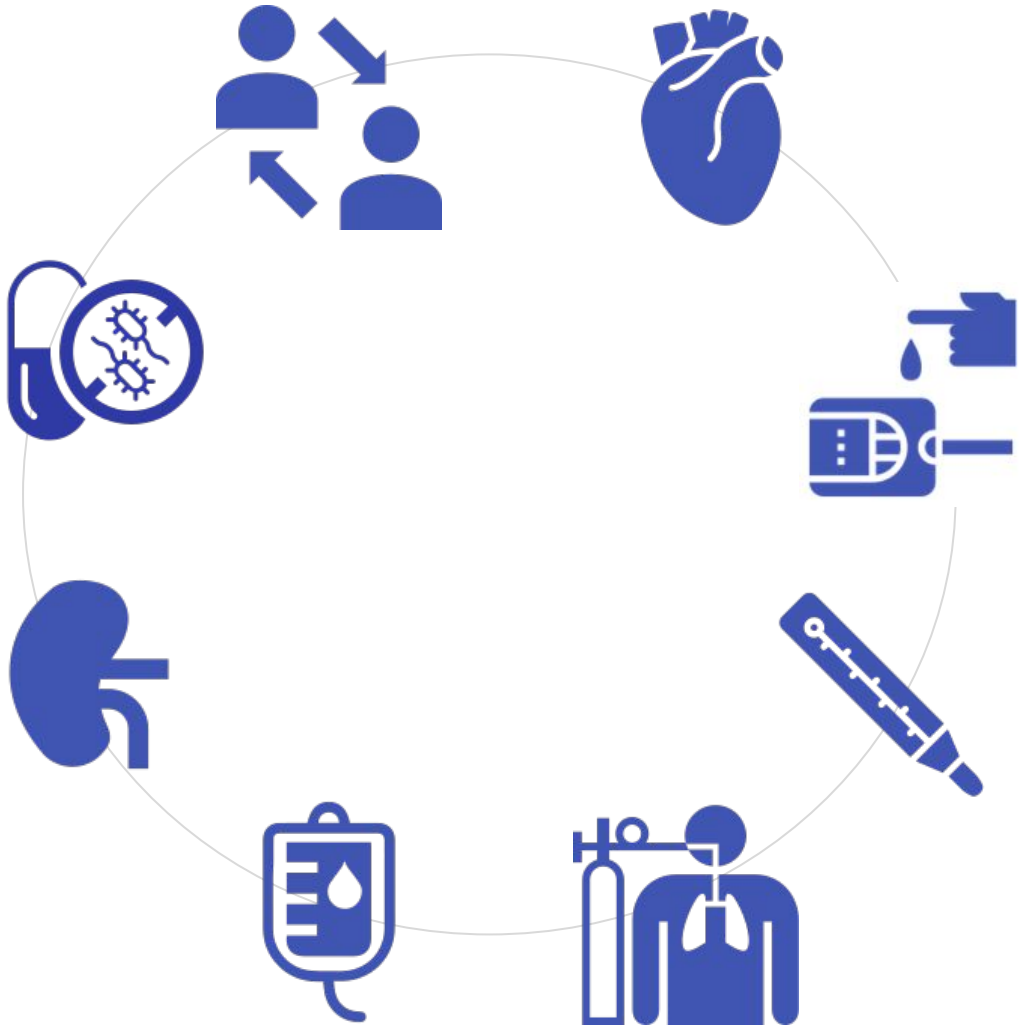
- Duration of anesthesia-ready time
- On time case starts

Process

- Antibiotic Choice and timing
- Use of ultrasound for line placement
- Glycemic Control
- Thermoregulation

Outcomes

- Intraop Cardiac Arrest
- Early extubation
- Reintubation
- Hospital Readmission



Current MPOG Adult Cardiac Measures

Cardiac

ABX-02-C: Antibiotic Timing, Open Cardiac

ABX-03-C: Antibiotic Re-dosing, Open Cardiac

ABX-04-C: Antibiotic Selection, Open Cardiac

ABX-05-C: Antibiotic Prophylaxis Compliance (Composite), Open Cardiac

AKI-02-C: Acute Kidney Injury, Cardiac

FLUID-01-C: Minimizing Colloid Use, Cardiac

GLU-06-C: Hyperglycemia Management, Open Cardiac (>180 mg/dL)

GLU-07-C: Hypoglycemia Management, Open Cardiac (<70mg/dL)

GLU-08-C: Hyperglycemia Treatment, Open Cardiac (>180mg/dL)

TEMP-06-C: Hypothermia Avoidance, Cardiac

TEMP-07-C: Hyperthermia Avoidance, Cardiac


High Reliability
Low Effort
Duration of Anesthesia Ready
Antibiotic Choice and Timing
High Reliability
High Effort
Low Reliability
Low Effort
Low Reliability
High Effort
Intraoperative Cardiac Arrest
DATA RELIABILITY
DEV EFFORT

Peds Cardiac Workgroup: Next Steps

- **Education** - Ideas on how to circulate MPOG information across CCAS membership?

- **Proposed 2025 Meeting Schedule**
  - February

THANK YOU!

Morgan Brown, MD, PhD

MPOG Pediatric Subcommittee Vice-Chair

Morgan.Brown@childrens.harvard.edu

Meridith Wade, MSN, RN

MPOG Pediatric Program Manager

Meridith@med.umich.edu

MPOG
MULTICENTER PERIOPERATIVE OUTCOMES GROUP

TEMP-06-C

Percentage of patients, who undergo an open cardiac surgical procedure **under general anesthesia of 120 minutes** duration or longer for whom the last *non-artifact* body temperature measure at the end of the case was greater than or equal to **35.5 degrees Celsius** (or 95.9 degrees Fahrenheit).

TEMP-07-C

Percentage of patients, who undergo an open cardiac surgical procedure using cardiopulmonary bypass under general anesthesia of **>120 minutes** for whom the **temperature was > 37.5 degrees Celsius while on bypass for over 5 consecutive minutes**

GLU-06

- **Success:**
  - 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.
    - Note: open cardiac cases without ANY glucose values documented are flagged

Pediatric/Cardiac Measures – Current State

- 4% of total cases in MPOG Registry
- 1 Cardiac-specific measure
  - FLUID-01-C: Minimizing Colloid Use (Cardiac)
- STS Integration
  - STS-Adult Cardiac Surgical Database (STS-ACSD, aka “STS Cardiac”) 3 sites
  - STS-General Thoracic Surgical Database (STS-GTSD, “STS Thoracic”) 8 sites
- More STS-MPOG integrated sites are in the pipeline!

Goals for Measure Development

- Discuss viable measure options with current state
  - Limitations exist within MPOG
- Build 1 cardiac-specific measure in 2020
- Build 2-3 cardiac-specific measures in 2021
- Table those topics requiring more discussion for later
- Future potential for STS/INTERMACS-MPOG merged outcome reports

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
- Considerations in new measure development:
  - Threshold?
  - Timing (post-CPB)?
  - Exclusions for specific cardiac cases (e.g. spinal protection w/ thoracic aortic)?

Glucose Management

- Current GLU-01 Measure:
  - % of cases with perioperative glucose > 200 mg/dL with administration of insulin or glucose recheck within 90 minutes of original glucose measurement
- Considerations:
  - Lower glucose threshold?
  - Set a shorter threshold for rechecks?
  - Initiation of an insulin infusion or treatment requirement?

Version 2: Add ECMO value

Value	Definition
ECMO	If ECMO cannulation or decannulation is the primary procedure performed, this category must be chosen.

Version 3?

Value	Definition
Thoracic	If a procedure is performed on a structure within the chest cavity but does not involve the cardiac chambers or vessels (for example, lobectomy, pectus excavatum/carinatum repair, anterior spine exposure).
Interventional Cardiology	If an interventional device (e.g., occluder, stent) is placed in the operating room as the primary procedure performed, this category must be chosen.
VAD Operation Done with CPB	Ventricular Assist Device procedure done with CPB. This includes operations to insert the VAD or to remove the VAD.
VAD Operation Done Without CPB	Ventricular Assist Device procedure done without CPB.This includes operations to insert the VAD, to remove the VAD, or any procedure performed while on the VAD.