MPOG Research Process Overview

From Real-World Data to Actionable Knowledge

Michael Mathis, MD
Assistant Professor of Anesthesiology
Associate Research Director, MPOG

Shelley Vaughn, MPH
Department of Anesthesiology
Lead Research Facilitator, MPOG
Outline

• MPOG Data Pipeline
• Types of MPOG Research
• Querying MPOG Data
• Writing a Research Proposal
• Inspecting/Curating MPOG Data
• Submitting a Manuscript
Types of Research Studies Leveraging MPOG

– Descriptive Studies
– Operational Analyses
– Outcomes Studies
  – MPOG Data
  – MPOG + Surgical Registry

– Enhanced Observational Studies (EOS)
– Clinical Trials Network
How many adults undergoing general anesthesia with an endotracheal tube with heart failure, diabetes, or hypertension received propofol during the surgery?
Phenotypes: **Structured Inferences** from messy data

**Standard MPOG Concepts**

<table>
<thead>
<tr>
<th>Fluids</th>
<th>Labs</th>
<th>Vitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meds</td>
<td>Times</td>
<td>Diagnoses</td>
</tr>
<tr>
<td>Outputs</td>
<td>Events</td>
<td>Outcomes</td>
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**MPOG Phenotypes**

- Cardiopulmonary Bypass Used
- Anesthesia Technique: General
- Oral Morphine Equivalents
- Baseline Blood Pressure
  
  ...
Developing a Research Study

The research committee coordinates the clinical research efforts of MPOG, by reviewing all submitted research proposals and tracking the progress of ongoing research projects. The committee ensures the appropriateness of the clinical research conducted within MPOG and the use of MPOG resources. Only colleagues from active MPOG sites can submit a research proposal to the PCRC for review and it is the responsibility of the MPOG site’s Principal Investigator (PI) to review all proposals before submission to the PCRC.

The following steps outline the process for submitting a research proposal:

**STEP 1: BEFORE YOU BEGIN**

**STEP 2: DETERMINE FEASIBILITY**

**STEP 3: WRITE RESEARCH PROJECT SPECIFIC IRB AND DRAFT PCRC PROPOSAL**

**STEP 4: DATA QUERY SPECIFICATION**

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**Title of Study or Project:** Multicenter Review of Practice Patterns Regarding Benzodiazepine Use in Cardiac Surgery

**Primary Institution:** University of Michigan

**Principal Investigator:** Allison Janda, MD

**Co-Investigators:** Allison Janda, MD; Jessica Spence, MD; Timur Dubovenko, MD; Emilie Dolery-Clifel, MD, PhD; Gracela Mentz, PhD; Sachin Khierpal, MD, MBA; Michael Mathis, MD

**Statisticians:** Gracela Mentz, PhD

**Type of Study:** IR Retrospective Observational

**HIM Number and Status:** HUM01167369 / approved

**Hypotheses/aims:** We propose to explore data from cardiac surgical patients meeting inclusion criteria, to describe benzodiazepine use during cardiac surgery across MPOG centers. We aim to identify patient factors associated with benzodiazepine use and further describe the timing of administration. We hypothesize that patient, provider, and institutional factors are independently associated with benzodiazepine use during cardiac surgery.

**Number of Patients/Participants:** Based on the availability of pertinent perioperative data, we expect approximately 5,000 patients to be included at the University of Michigan, and 50,000 in MPOG.

**Power Analysis:** Sample size for this descriptive study are based on the accuracy of the overall estimates of benzodiazepine administration. It was determined that if the true population level use of benzodiazepines ranges between 70% and 90%, we will need a sample between 3,556 to 3,985 patients to estimate descriptive statistics with a precision of 5%.

**Proposed statistical test/analysis:** We will produce descriptive statistics including: histograms, mean/median, standard deviation/interquartile ranges, percentiles and 95% confidence intervals.

**Resources (Brief summary of resources for data collection, personnel, financial):** Data collection will include MPOG database queries performed via IT support. Statistical analysis will be conducted by Anesthesiology Department staff in consultation with Gracela Mentz; and in discussion with all co-investigators. Financial support as per the University of Michigan Department of Anesthesiology, NIH-NIGMS, Grant T32GM103730-06; NIH-NHLBI, Grant 1K01HL141702-02; Bethesda, MD.
PCRC Community of Peers
Data Visualization and Curation
Writing the Manuscript
Writing the Manuscript

• Authorship protocol
  – Byline authors – as per ICMJE guidelines
  – Acknowledged collaborators – MPOG assists with tracking

• Registration of research protocol
  – Protected version on MPOG website → always
  – Public access version on Open Science Framework → discretion of PI

• iThenticate plagiarism checker
Thank You