
# Standardized Data File - User Guide

## Version 2020

Updated 11/2/2021

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# 1. Introduction

The Multicenter Perioperative Outcomes Group (MPOG) is a consortium of hospitals across the United States, which seeks to improve experiences of patients receiving care by anesthesia clinicians. Since its inception in 2008, MPOG has developed policies, procedures, and the technical infrastructure required to conduct large scale research, create quality improvement initiatives, educate caregivers, and guide healthcare administration.

The goal of MPOG research is to systematically transform real-world perioperative health data into actionable knowledge. The Perioperative Clinical Research Committee (PCRC) is made up of physicians and researchers at all participating MPOG institutions and governs the research efforts of MPOG, by reviewing all submitted proposals and tracking the progress of ongoing projects. The committee ensures the appropriateness of the clinical research conducted within MPOG and the use of MPOG resources. The PCRC, together with the MPOG coordinating center research team has developed the Standardized Data File to help MPOG researchers conduct studies as efficiently as possible.

The standardized data file is a once-per-year snapshot of a subset of the full MPOG Registry for cases within a pre-specified timeframe. The data file contains commonly requested, validated case-level phenotypes (i.e. summary variables computed or derived from raw data) for each included case, as well as raw administrative data associated with the patient. A new standardized data file will be released annually with additional data from new MPOG centers, more recent cases, and additional validated phenotypes.

This user guide provides information on the included study population and phenotypes, the structure of the data, and the process for accessing the data.

## 2. Phenotypes: Quality and Updates

Phenotypes help transform messy, real-world electronic health record data into structured, clinically useful inferences about the case and the course of clinical care. Each phenotype may be a computation, recode, or other combination of variables in the raw dataset that summarize information through one variable. Examples include the *BMI phenotype* (computed from weight and height) and the *Tobacco Smoking Classification phenotype* (which is derived from several different indicators in the raw data such as preoperative notes entered by the physician in the history and physical). At MPOG, these phenotypes are subjected to rigorous development and validation processes based on the logical application of multiple raw data elements associated with each case.

New phenotypes are created and validated on an ongoing basis. Before being released for use in research and quality improvement initiatives, each phenotype is validated. For a full description of the logic and definition for each phenotype in the standardized data file, please refer to **Appendix 1**. While the set of phenotypes included in the standardized data file remains fixed for each version release, if inconsistencies are found in the underlying logic for a phenotype or with an institution's mappings for that phenotype, MPOG will release update notes outlining the change(s) under the FAQ section of this document.

Additional information on MPOG phenotypes can be found by accessing the MPOG research website → Tips & Tricks → "Transforming Raw Data into Clinical Inferences: Phenotypes"

MPOG's full collection of phenotypes can be found by exploring the phenotype browser, available on the MPOG website → Tools → Phenotype Browser https://phenotypes.mpog.org/.

## 3. Case Inclusion Criteria

The **standardized data file version 2020** includes all MPOG cases occurring at participating MPOG medical centers throughout the **United States** which meet the intraoperative research standard definition from **January 1, 2015 through December 31, 2020**. Please note that participating sites must be contributing cases to MPOG at the time of the data pull in order for their data to be included in that year's standardized data file. Otherwise, cases from those sites will not be included until the subsequent standardized data file release. Version 2020 contains **four separate tables** that can be merged and analyzed together if desired as described in Section 4: Table Descriptions.

To be included in the standardized data file, each case must achieve certain data standards, defined as the intraoperative research standard, to ensure it is a case suitable for research. The intraoperative research standard was developed by members of the research and quality teams at the MPOG coordinating center and is continually re-evaluated to ensure reliability.

To meet the **intraoperative research standard**, a case must satisfy all of the following criteria:

- There must be a date and time noted for the beginning and end of the anesthetic procedure. If multiple start times exist, the earliest is used, and the start time must be before the end time. There is only one start and end time for each case.
- For general anesthetic cases, the case duration must be greater than or equal to 15 minutes.
- For anesthetic cases when general anesthetic was not used, the case duration must be greater than or equal to 5 minutes.
- There must be an age listed for the patient in the data.
- There must be data regarding the patient's sex (either male or female). This phenotype does not reflect the patient's gender identity.
- The data must include an American Society of Anesthesiology Physical Status classification score (ASA), between 1 and 6, which gives information on the patient's overall health and potential risks in anesthetic management. A case is excluded if there are multiple ASA statuses, the ASA status is missing, or is a classification number that is not used.
- There must be at least one blood pressure value recorded in the case data, which cannot be an artifact or other invalid metric.
- There must be at least one intraoperative medication listed as administered between the start and end times for the case.

## 4. Table Descriptions

The **standardized data file version 2020** contains the following component tables that are linkable across one another.

| Table Name | Description | Linking Phenotypes |
|---|---|---|
| Case Level | Main case table includes phenotypes related to patient and case characteristics, administrative data, anesthesia technique, comorbidities, fluid administration, intraoperative medications, outcomes, physiologic data, laboratory phenotypes (dates/times) and staffing information. This table also includes institution-level data such as whether the medical center is affiliated with a medical school and bed size where the medical center is located. | Patient ID; Case ID |
| CPT - Administrative Data | The current procedural terminology (CPT) code administrative data table contains all *case-linked* anesthesia and surgical CPT codes.This table also includes the primary anesthesia CPT code along with the base unit value associated with that primary code. In addition, this table includes results from the CPT prediction tool, along with the associated ranking for each of those predicted codes. More information regarding the CPT prediction tool can be found in the FAQ section of this document. | Patient ID; Case ID |
| ICD 9/10 - Administrative Data | The ICD 9/10 administrative data table contains all *patient-linked* ICD 9/10 codes from 365 days before to 365 days after the date of service along with case date and the admit and discharge dates associated with those codes. For more information on how to merge this table with the main case level table, please refer to the FAQ section in this document. | Patient ID; Case ID |
| ASPIRE Quality Measures | The quality measures table includes information about *case-linked* quality measures. Please note that not all cases meet the inclusion criteria for a given measure. Details regarding how each quality measure is defined can be found at the following link on the MPOG website (https://spec.mpog.org/Measures/Public) or in Appendix 2 of this document. | Case ID |

Please refer to **Appendix 1** and **Appendix 2** for the full list of available phenotypes and measures.

## 5. Included Variables

Below is the list of variables included in the **standardized data file version 2020.** Full definitions and specifications for phenotypes and measures are available in **Appendix 1** and **Appendix 2**.

| Data Table | Sub-category | Phenotype or Variable Name/Description |
|---|---|---|
| Administrative Data Table | CASE ID | MPOG case ID |
| Administrative Data Table | PATIENT ID | MPOG patient ID |
| Administrative Data Table | CPT Code | Primary anes CPT code |
| Administrative Data Table | CPT Code | Primary anes CPT code base unit value |
| Administrative Data Table | CPT Code | All actual anes CPT codes |
| Administrative Data Table | CPT Code | Predicted anes CPT code 1 |
| Administrative Data Table | CPT Code | Predicted anes CPT code 1 score |
| Administrative Data Table | CPT Code | Predicted anes CPT code 2 |
| Administrative Data Table | CPT Code | Predicted anes CPT code 2 score |
| Administrative Data Table | CPT Code | Predicted anes CPT code 3 |
| Administrative Data Table | CPT Code | Predicted anes CPT code 3 score |
| Administrative Data Table | CPT Code | Surgical CPT codes |
| Administrative Data Table | CASE ID | MPOG case ID |
| Administrative Data Table | PATIENT ID | MPOG patient ID |
| Administrative Data Table | ICD Code | ICD 9/10 code associated with the case from -365 to +365 days from case date |
| Administrative Data Table | Timestamp | Case date |
| Administrative Data Table | Timestamp - duration | Days from case |
| Administrative Data Table | Timestamp | Admit date associated with ICD 9/10 discharge diagnosis code |

| Administrative Data Table | Timestamp | Discharge date associated with ICD 9/10 discharge diagnosis code |
|---|---|---|
| Case Level Table | CASE ID | MPOG case ID |
| Case Level Table | PATIENT ID | MPOG patient ID |
| Case Level Table | Timestamp | Date of service |
| Case Level Table | INSTITUTION ID | Deidentified Institution ID |
| Case Level Table | Institution Characteristic | Medical school affiliation |
| Case Level Table | Institution Characteristic | Bed size |
| Case Level Table | Patient Characteristic | Age (Years) |
| Case Level Table | Patient Characteristic | Race |
| Case Level Table | Patient Characteristic | Sex |
| Case Level Table | Patient Characteristic | Height (cm) |
| Case Level Table | Patient Characteristic | Weight (kg) |
| Case Level Table | Patient Characteristic | BMI |
| Case Level Table | Patient Characteristic | World Health Organization BMI Classification |
| Case Level Table | Patient Characteristic | Ideal Body Weight |
| Case Level Table | Patient Characteristic | Tobacco Smoking Classification |
| Case Level Table | Administrative Data | Primary Anesthesia CPT |
| Case Level Table | Administrative Data | Primary Anesthesia CPT - Base Unit Value |
| Case Level Table | Administrative Data | Body Region |
| Case Level Table | Anesthesia Technique | Anesthesia Technique: General |
| Case Level Table | Anesthesia Technique | Anesthesia Technique: Neuraxial |
| Case Level Table | Anesthesia Technique | Anesthesia Technique: Peripheral Nerve Block |
| Case Level Table | Anesthesia Technique | Anesthesia Technique: Sedation |
| Case Level Table | Anesthesia Technique | Nitrous Oxide Used |

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|---|---|---|
| Case Level Table | Anesthesia Technique | Halogenated Anesthetic Gases |
| Case Level Table | Anesthesia Technique | Propofol infusion used |
| Case Level Table | Case Characteristic | Admission Type |
| Case Level Table | Case Characteristic | Holiday |
| Case Level Table | Case Characteristic | Weekend |
| Case Level Table | Case Characteristic | Emergency Status (ASA Class) Yes/No |
| Case Level Table | Case Characteristic | Arterial Line Used |
| Case Level Table | Case Characteristic | ASA Class |
| Case Level Table | Case Characteristic | Oral Morphine Equivalent |
| Case Level Table | Case Characteristic | Oral Morphine Equivalent (Normalized) |
| Case Level Table | Case Characteristic | Non-Opioid Analgesics |
| Case Level Table | Case Characteristic | Procedure Text |
| Case Level Table | Case Characteristic | Obstetric Anesthesia Type |
| Case Level Table | Case Characteristic | Procedure Type Cardiac |
| Case Level Table | Case Characteristic | Procedure Type Transplant Liver |
| Case Level Table | Case Characteristic | Procedure Type Transplant Lung |
| Case Level Table | Case Characteristic | Procedure Type MRI |
| Case Level Table | Staff Information | Attending Minutes |
| Case Level Table | Staff Information | CRNA Minutes |
| Case Level Table | Staff Information | Resident Minutes |
| Case Level Table | Fluid Administration | Total blood administered as PRBC |
| Case Level Table | Fluid Administration | Total Cryoprecipitate Administered |
| Case Level Table | Fluid Administration | Total FFP Administered |
| Case Level Table | Fluid Administration | Total Platelets Administered |

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|---|---|---|
| Case Level Table | Fluid Administration | Total Estimated Blood Loss (EBL) |
| Case Level Table | Fluid Administration | Total Urine Output |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Aids/HIV |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Alcohol Abuse |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Blood Loss Anemia |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Cardiac Arrhythmias |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Chronic Pulmonary Disease |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Coagulopathy |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Congestive Heart Failure |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Deficiency Anemia |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Depression |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Diabetes Complicated |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Diabetes Uncomplicated |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Drug Abuse |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Fluid Electrolyte Disorders |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Hypertension Complicated |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Hypertension Uncomplicated |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Hypothyroidism |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Liver Disease |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Lymphoma |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Metastatic Cancer |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Obesity |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Other Neurological Disorders |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Paralysis |

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|---|---|---|
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Peptic Ulcer Disease Excluding Bleeding |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Peripheral Vascular Disorders |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Psychoses |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Pulmonary Circulation Disorders |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Renal Failure |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Rheumatoid Arthritis Collagen Vascular Diseases |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Solid Tumor Without Metastasis |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Valvular Disease |
| Case Level Table | Comorbidity (Elixhauser) | Comorbidity Elixhauser Weight Loss |
| Case Level Table | Comorbidity (non-Elixhauser) | Cerebrovascular Disease |
| Case Level Table | Comorbidity (non-Elixhauser) | Coronary Artery Disease |
| Case Level Table | Preop Lab - value | Preop Albumin Value |
| Case Level Table | Preop Lab - days before | Preop Albumin days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop Alk Phos Value |
| Case Level Table | Preop Lab - days before | Preop Alk Phos days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop ALT Value |
| Case Level Table | Preop Lab - days before | Preop ALT days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop Arterial Lactate |
| Case Level Table | Preop Lab - days before | Preop Arterial Lactate days prior to anesthesia start (most recent within 365 days preop) |

| | | |
|---|---|---|
| Case Level Table | Preop Lab - value | Preop AST Value |
| Case Level Table | Preop Lab - days before | Preop AST days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop BUN |
| Case Level Table | Preop Lab - days before | Preop BUN  days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop Calcium Ionized |
| Case Level Table | Preop Lab - days before | Preop Calcium Ionized, days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop Calcium Total |
| Case Level Table | Preop Lab - days before | Preop Calcium Total, days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop Chloride |
| Case Level Table | Preop Lab - days before | Preop Chloride  days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop CO2 arterial |
| Case Level Table | Preop Lab - days before | Preop CO2 arterial  days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop CO2 mixed venous |
| Case Level Table | Preop Lab - days before | Preop CO2 mixed venous days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop CO2 serum |
| Case Level Table | Preop Lab - days before | Preop CO2 serum days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop CO2 venous |
| Case Level Table | Preop Lab - days before | Preop CO2 venous days prior to anesthesia start (most recent |

| | | |
|---|---|---|
| | | within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop Creatinine |
| Case Level Table | Preop Lab - days before | Preop Creatinine days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop Formal lab - eGFR prior to anesthesia start (most recent within 60 days preop) |
| Case Level Table | Preop Lab - value | Preop Glucose |
| Case Level Table | Preop Lab - days before | Preop Glucose days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop HCG |
| Case Level Table | Preop Lab - days before | Preop HCG days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop Hematocrit |
| Case Level Table | Preop Lab - days before | Preop Hematocrit days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop Hemoglobin (most recent within 365 days preop) |
| Case Level Table | Preop Lab - days before | Preop Hemoglobin  days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop HgbA1c |
| Case Level Table | Preop Lab - days before | Preop HgbA1c days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop INR, Total Value |
| Case Level Table | Preop Lab - days before | Preop INR, Total days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop Platelet Count |
| Case Level Table | Preop Lab - days before | Preop Platelet Count days prior to anesthesia start (most recent |

| | | |
|---|---|---|
| | | within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop Potassium |
| Case Level Table | Preop Lab - days before | Preop Potassium days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop Protein |
| Case Level Table | Preop Lab - days before | Preop Protein days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop PT, Total Value |
| Case Level Table | Preop Lab - days before | Preop PT, Total days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop PTT, Total Value |
| Case Level Table | Preop Lab - days before | Preop PTT, Total days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop Sodium |
| Case Level Table | Preop Lab - days before | Preop Sodium  days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - value | Preop Billirubin, Total Value |
| Case Level Table | Preop Lab - days before | Preop Billirubin, Total days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Preop Lab - days before | Highest Preoperative Troponin days before within 42 days prior to anesthesia start |
| Case Level Table | Preop Lab - value | Highest Preoperative Troponin Value |
| Case Level Table | Preop Lab - days before | Most Recent Preop Troponin within 42 days prior to anesthesia start |
| Case Level Table | Preop Lab - value | Most Recent Preop Troponin Value |
| Case Level Table | Preop Lab - value | Pre-op White Blood Count |

| | | |
|---|---|---|
| Case Level Table | Preop Lab - days before | Pre-op WBC days prior to anesthesia start (most recent within 365 days preop) |
| Case Level Table | Outcome | Complication - Acute Kidney Injury (AKI) |
| Case Level Table | Outcome | Complication - Pulmonary |
| Case Level Table | Outcome | Date of death |
| Case Level Table | Outcome | Last Known Alive Date |
| Case Level Table | Outcome | Mortality (In Hospital 30-day) |
| Case Level Table | Postop Lab - days after | Highest Postoperative Troponin within 72 hours of anesthesia end |
| Case Level Table | Postop Lab - value | Highest Postoperative Troponin within 72 hours of anesthesia end |
| Case Level Table | Timestamp | Anesthesia Start |
| Case Level Table | Timestamp | Anesthesia End |
| Case Level Table | Timestamp - Duration | Anesthesia Duration |
| Case Level Table | Timestamp | Case Start |
| Case Level Table | Timestamp | Case End |
| Case Level Table | Timestamp - Duration | Case Duration |
| Case Level Table | Timestamp | Induction Start |
| Case Level Table | Timestamp | Induction End |
| Case Level Table | Timestamp | Patient In Room Date/Time |
| Case Level Table | Timestamp | Patient Out Of Room Date/Time |
| Case Level Table | Timestamp - Duration | Procedure Room Duration |
| Case Level Table | Timestamp | Surgery Start Date/Time |
| Case Level Table | Timestamp | Surgery End Date/Time |
| Case Level Table | Timestamp - Duration | Waiting For Transport Duration |
| Case Level Table | Timestamp | Cardiopulmonary Bypass Start |

| | | |
|---|---|---|
| Case Level Table | Timestamp | Cardiopulmonary Bypass End |
| Case Level Table | Timestamp - Duration | Cardiopulmonary Bypass Duration |
| Case Level Table | Physiologic Data | Minutes of MAP< 55 |
| Case Level Table | Physiologic Data | Minutes of MAP< 65 |
| Case Level Table | Physiologic Data | Median peak inspiratory pressure (PIP) |
| Case Level Table | Physiologic Data | Median positive end-expiratory pressure Actual (PEEP) |
| Case Level Table | Physiologic Data | Median positive end-expiratory pressure Set (PEEP) |
| Case Level Table | Physiologic Data | Median Tidal Volume Actual |
| Case Level Table | Physiologic Data | Median Tidal Volume Set |
| Quality Measures Table | CASE ID | MPOG case ID |
| Quality Measures Table | ASPIRE measures | ABX-01-OB |
| Quality Measures Table | ASPIRE measures | AKI-01 |
| Quality Measures Table | ASPIRE measures | BP-01 |
| Quality Measures Table | ASPIRE measures | BP-02 |
| Quality Measures Table | ASPIRE measures | BP-03 |
| Quality Measures Table | ASPIRE measures | BP-04-OB |
| Quality Measures Table | ASPIRE measures | CARD-02 |
| Quality Measures Table | ASPIRE measures | CARD-03 |
| Quality Measures Table | ASPIRE measures | FLUID-01-C |
| Quality Measures Table | ASPIRE measures | FLUID-01-NC |
| Quality Measures Table | ASPIRE measures | GA-01-OB |
| Quality Measures Table | ASPIRE measures | GLU-01 |
| Quality Measures Table | ASPIRE measures | GLU-02 |
| Quality Measures Table | ASPIRE measures | GLU-03 |

| | | |
|---|---|---|
| Quality Measures Table | ASPIRE measures | GLU-04 |
| Quality Measures Table | ASPIRE measures | GLU-05 |
| Quality Measures Table | ASPIRE measures | MED-01 |
| Quality Measures Table | ASPIRE measures | NMB-01 |
| Quality Measures Table | ASPIRE measures | NMB-02 |
| Quality Measures Table | ASPIRE measures | PAIN-01-PEDS |
| Quality Measures Table | ASPIRE measures | PAIN-02 |
| Quality Measures Table | ASPIRE measures | PONV-01 |
| Quality Measures Table | ASPIRE measures | PONV-02 |
| Quality Measures Table | ASPIRE measures | PONV-03 |
| Quality Measures Table | ASPIRE measures | PUL-01 |
| Quality Measures Table | ASPIRE measures | PUL-02 |
| Quality Measures Table | ASPIRE measures | PUL-03 |
| Quality Measures Table | ASPIRE measures | SUS-01 |
| Quality Measures Table | ASPIRE measures | TEMP-01 |
| Quality Measures Table | ASPIRE measures | TEMP-02 |
| Quality Measures Table | ASPIRE measures | TEMP-03 |
| Quality Measures Table | ASPIRE measures | TRAN-01 |
| Quality Measures Table | ASPIRE measures | TRAN-02 |

## 6. Request Process

To obtain access to the standardized data file, researchers should follow the steps to "Write a Research Proposal" as outlined on the MPOG website. To summarize, interested researchers should submit and present their proposal to the PCRC for approval. Each research project requires separate IRB approval for a limited dataset at the institution responsible for conducting the analysis. Once PCRC and IRB approval are obtained, study team members will be granted access to the standardized data file. This file will reside on the MPOG, HIPAA-compliant virtual server, along with statistical and analytic software. As a reminder, case-level data can **never** be removed from the protected virtual server, however, summary outputs, such as tables, figures, etc., can be moved off the server.

## 7. Limitations

Although great care is taken at every stage of data collection/extraction and several validation steps are used before the data becomes part of the MPOG database, errors in the MPOG datasets may arise. These can come from issues with the source data, problems with merging multiple sources of data, and difficulties with concept mapping. Additional limitations stem from variations in the level of detail reported by each MPOG center, factors related to site selection and inclusion, types of procedures performed at each site, and so on. Any errors that exist in the larger MPOG dataset and other limitations of the full dataset are also limitations of the standardized data file. For a full description of all the steps the data go through to become part of the MPOG dataset and additional limitations, please see the manuscript Considerations for Integration of Perioperative Electronic Health Records Across Institutions for Research and Quality Improvement: The Approach Taken by the Multicenter Perioperative Outcomes Group (2020).

## 8. Contact Information

Please direct any questions or concerns regarding the MPOG standardized data to mpog-research@med.umich.edu.

## 9. Frequently Asked Questions

***Q: How does the CPT prediction tool work?***

**A:** The CPT prediction tool predicts the likely CPT codes for a case by using procedure text and a weighted scoring method. The top three CPTs predicted by the model are returned with the following exceptions:

- If the top CPTs include both codes for C-Section and labor epidural, return only those for c-section.
- If the top scoring code is weighted 1.6 times the next highest scoring code, return only the first code.
- If the top scoring code is weighted 1.6 times the third highest scoring code, return only the first two codes.
- If the predicted codes are for OB cases and the patient's age makes that prediction unlikely (age less than 10 or greater than 55), those codes are not returned.

**Q:** ***How should a researcher merge the case-level table with the ICD 9/10 administrative data table?***

**A:** The ICD 9/10 administrative data table contains all patient-linked ICD 9/10 codes from 365 days before to 365 days after the date of service along with case date and the admit and discharge dates associated with those codes. Therefore, each researcher will need to decide per project, what relevant timeframe to look for associated ICD 9/10 codes. For example, if a researcher is trying to define a comorbidity using ICD 9/10 codes, then he/she may look for relevant codes 90 days prior to 7 days after the date of surgery (similar to how the Elixhauser comorbidity phenotypes are defined). In contrast, if a researcher is attempting to define an outcome based on ICD 9/10 codes, then he/she may only look for relevant codes occurring on or after the date of surgery.

***Q: Can phenotype definitions change over time?***

**A:** Yes, phenotypes are continuously refined and adapted as new institutions join MPOG with unique electronic health record systems. For this version of the standardized data file, we have taken a "snapshot" of the data and included the specification for how each phenotype was defined at the time that the data was queried in Appendix 1. Therefore, we do not recommend comparing data from multiple standardized data files, as the underlying definitions/logic may have changed. While the set of phenotypes included in the standardized data file remains fixed for each version release, if inconsistencies are found in the underlying logic for a phenotype or with an institution's mappings for that phenotype, MPOG will release update notes outlining the change(s) under the FAQ section of this document.

**Q: How should a researcher utilize the physiologic parameters that have both a set and actual value (for example: median positive end-expiratory pressure (PEEP) set and actual, and median tidal volume set and actual)?**

**A:** Each research team will need to determine the most appropriate way to utilize these covariates in their analysis. In some instances, at the discretion of the research team, it may be useful to combine the actual and set parameters to have more complete data.