



Standardized Data File - User Guide

Version 2018-2023

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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 standardized data file (SDF) is a subset of MPOG data that is pulled once per year covering a specific timeframe and containing patient demographic information, all active MPOG Quality measures, and over 100 phenotypes. The SDF can be requested via the usual PCRC process (proposal and presentation), and the data will be available almost immediately upon approval.

This user guide provides information on the included study population and data elements available, 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 *Last Known Alive* (which is derived from the latest date that the patient has an anesthesia or lab record in the MPOG database). 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. For a full description of the logic and definition for each phenotype, please refer to the [Phenotype Browser](#).

A video explaining the MPOG phenotypes can be found by accessing the MPOG research website → Tips & Tricks → [“Transforming Raw Data into Clinical Inferences: Phenotypes”](#)

3. Case Inclusion Criteria

The **2018-2023 Standardized Data File** includes MPOG cases meeting the following criteria:

- The case occurred between January 1, 2018 and December 31, 2023.
- The case occurred at an MPOG medical center located in the United States.
- The case occurred at an MPOG medical center that contributed data in 2023.
- The case occurred at a medical center that contributed more than 12 months of data in the time period covered by this standardized data file.
- The case met the data quality standards outline by the Intraoperative Research Standard detailed below.

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.
- If there is a patient in room time for a case, the case will be included if it is after, but not more than 30 minutes prior to the listed anesthesia start time. If a patient in room time is not present the case will still be included.
- For general anesthetic cases, the case duration must be greater than or equal to 10 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 an unused classification number that is present.
- There must be at least one blood pressure value recorded in the case data, which cannot be an artifact or other invalid metric.
- At least one intraoperative medication must be listed as administered between the start and end time for the case.

4. Table Descriptions

The **2018-2023 Standardized Data File** contains separate pediatric (patient age 0-17) and adult case info, CPT, ICD, and Quality Measures table. In addition, the adult tables are split by year to reduce file size related issues. The full list of individual data tables is:

Pediatric tables:

- SDF2023_Pediatric_CaseInfo
- SDF2023_Pediatric_CPTCodes
- SDF2023_Pediatric_ICDCodes
- SDF2023_Pediatric_QMeasures

Adult tables:

- SDF2023_Adult_CaseInfo_2018
- SDF2023_Adult_CaseInfo_2019
- SDF2023_Adult_CaseInfo_2020
- SDF2023_Adult_CaseInfo_2021
- SDF2023_Adult_CaseInfo_2022
- SDF2023_Adult_CaseInfo_2023
- SDF2023_Adult_CPTCodes_2018
- SDF2023_Adult_CPTCodes_2019
- SDF2023_Adult_CPTCodes_2020
- SDF2023_Adult_CPTCodes_2021
- SDF2023_Adult_CPTCodes_2022
- SDF2023_Adult_CPTCodes_2023
- SDF2023_Adult_ICDCodes_2018
- SDF2023_Adult_ICDCodes_2019
- SDF2023_Adult_ICDCodes_2020
- SDF2023_Adult_ICDCodes_2021
- SDF2023_Adult_ICDCodes_2022
- SDF2023_Adult_ICDCodes_2023
- SDF2023_Adult_QMeasures_2018
- SDF2023_Adult_QMeasures_2019
- SDF2023_Adult_QMeasures_2020
- SDF2023_Adult_QMeasures_2021
- SDF2023_Adult_QMeasures_2022
- SDF2023_Adult_QMeasures_2023

Tables can be merged by the unique MPOG Case ID available for each case. Please note:

- If your analyses require merging multiple tables, we recommend that you apply inclusion criteria to individual CaseInfo tables first and then merge in only the data for those cases from the other tables, which will help avoid potential computational and server bandwidth barriers related to file size.
- Individual patients may be represented more than once in any given table, if they had multiple procedures (and thus multiple cases). The MPOG Patient ID can help identify those patients who appear more than once in any given table.

5. Included Variables

Below is an overview of variables included in the **2018-2023 Standardized Data File**. For the complete list of variables, please see Appendix A.

Case Info – The Case Info tables contain the broadest amount of information including:

- **Basic patient information** including each patient's age, sex, height, weight, smoking status, and calculated BMI.
- **Institution** information including a de-identified institution ID, medical school affiliation status, and bed size.
- **Date/Time** related information including the date of service (and whether that was a weekend or holiday), last known alive date, date of death (where applicable), admission date, discharge date, and start/end times for anesthesia, induction, cardiopulmonary bypass, and surgery.
- **Patient comorbidity** information including a variety of Elixhauser comorbidities (obesity, hypertension, diabetes, renal failure, etc.) and comorbidity phenotypes created by MPOG including cerebrovascular disease and coronary artery disease.
- **Preop lab values** including common CMP/Chem-14 and CBC lab values.
- **Procedure type** information including body region, surgical service, and indicators of whether the procedure was one of several specific types of surgery or procedure (bronchoscopy, cardiac, liver transplant, MRI, etc.)
- **Patient status and vital signs** information including ASA class, airway upon arrival, blood pressure at specific time points (preop, first in room), urine output, PIP, PEEP, and Tidal Volume.
- **Anesthesia technique** information including general, neuraxial, nerve block, sedation, propofol use, nitrous oxide use, arterial line use, etc.
- **Limited medication and blood product** information related to antiemetics, oral morphine equivalents, non-opioid analgesics, and total blood products (cryoprecipitate, FFP, Platelets, PRBCs, etc.).

- **Provider information** limited to de-identified provider ID (for attending, resident, CRNA, fellow) and the minutes each attending, CRNA, or resident were on the case. (Please note that MPOG does not have demographic information about providers.)
- **Procedure text** provided for each case.

CPT Codes – 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.

ICD Codes - The ICD Codes (ICD 9/10 administrative data) table contains all ICD 9/10 codes from 365 days before to 365 days after the date of service, as well as the number of days between the ICD code and the procedure.

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>).

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. This process includes submitting a research cover sheet and consultation request, writing a full research proposal, submitting an IRB application at your home institution, and presenting your proposal for vote at a PCRC meeting.

The two main differences between requesting the SDF and a typical MPOG data request process are:

1. Instead of preparing a full query spec, you can just specify that you want the current adult and/or pediatric SDF.
2. If your IRB application (from your home institution) has been approved at the time your proposal is approved by PCRC, you will receive data almost immediately upon proposal approval, instead of waiting for several months for a custom data pull.

As is the case for other MPOG data pulls, the standardized data 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 (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.

Appendix A: Complete Variable List

The following table contains the complete list of variables in the 2018-2023 SDF (organized in dataset order by table), as well as a link to the documentation about each variable where available. Please note that phenotypes and quality measures are periodically revised, so if the documentation available online does not seem to align with the data in the SDF, please reach out to the MPOG coordinating center (mpog-research@med.umich.edu) to request the previous version of documentation for any specific phenotype if needed.

Table	Variable Name	Link to Documentation
CaseInfo	MPOGCaseID	MPOG_Case_ID (no link)
CaseInfo	MPOGPatientID	MPOG Patient ID
CaseInfo	DateOfService	Date of Service (no link)
CaseInfo	Holiday	Holiday
CaseInfo	Weekend	Weekend
CaseInfo	AdmitDate	Admit Date (no link)
CaseInfo	DischargeDate	Discharge Date (no link)
CaseInfo	AdmissionType	Admission Type
CaseInfo	SurgicalService	Surgical Service
CaseInfo	SurgicalServiceGroup	Surgical Service Group
CaseInfo	InstitutionNumber	Institution
CaseInfo	InstitutionRegion	Institution Region
CaseInfo	MedicalSchoolAffiliation	Medical School Affiliation
CaseInfo	HospitalBedSize	Hospital Bed Size (no link)
CaseInfo	Age_Years	Age (Years)
CaseInfo	Race	Race
CaseInfo	Sex	Sex
CaseInfo	Height	Height (cm)
CaseInfo	Weight	Weight (kg)
CaseInfo	ASAStatusClassification	ASA Class
CaseInfo	EmergStatusClass	Emergency Status (ASA Class) Yes/No
CaseInfo	ArrivedIntubated	Airway: Arrived Intubated
CaseInfo	ArterialLinePlaced	Arterial Line Used
CaseInfo	BodyMaxIndex	BMI
CaseInfo	WHOObesityClass	WHO BMI Classification
CaseInfo	BMIClassPediatric	BMI Classification (Pediatric)
CaseInfo	BMIPercentilePediatric	BMI Percentile (Pediatric)
CaseInfo	BodyRegion	Body Region
CaseInfo	IdealBodyWeight	Ideal Body Weight (kg)
CaseInfo	BloodPressureMean_Preop	Preop Blood Pressure - Mean
CaseInfo	BPMean_FirstInRoom	First In Room Blood Pressure - Mean
CaseInfo	AKIProgressionRisk	AKI - Risk of Progression to CKD
CaseInfo	SmokTobaccoClass	Smoking Tobacco Classification
CaseInfo	GestAgeAtBirth_Weeks	Gestational Age at Birth

CaseInfo	GestAgeAtBirth	Gestational Age at Birth
CaseInfo	HospitalMortality30Day	Mortality (In Hospital 30-day)
CaseInfo	DateOfDeath	Date of Death (no link)
CaseInfo	LastKnownAlive	Last Known Alive
CaseInfo	ProcedureText	Procedure Text
CaseInfo	PrimaryAnesCPT	Anesthesia CPT (Primary)
CaseInfo	PrimaryAnesCPTMPOGbaseUnits	Anesthesia CPT - Base Unit Value
CaseInfo	AnesTechniqueGeneral	Anesthesia Technique: General
CaseInfo	AnesTechniqueNeuraxial	Anesthesia Technique: Neuraxial
CaseInfo	AnesTechniqueBlock	Anesthesia Technique: Peripheral Nerve Block
CaseInfo	AnesTechniqueSedation	Anesthesia Technique: Sedation
CaseInfo	AnesTechniqueTIVA	Anesthesia Technique: TIVA (no link)
CaseInfo	ObstetricAnesType	Obstetric Anesthesia Type
CaseInfo	ProcTypeAdenotonsillectomy	Procedure Type: Adenotonsillectomy
CaseInfo	ProcTypeBlockOnly	Procedure Type: Block Only
CaseInfo	ProcTypeBronchoscopy	Procedure Type: Bronchoscopy
CaseInfo	ProcTypeCardiac	Procedure Type: Cardiac
CaseInfo	ProcTypeCystoscopy	Procedure Type: Cystoscopy
CaseInfo	ProcTypeDI	Procedure Type: Diagnostic Imaging
CaseInfo	ProcTypeECT	Procedure Type: ECT
CaseInfo	ProcTypeEndoscopy	Procedure Type: Endoscopy
CaseInfo	ProcTypeHipArthroplasty	Procedure Type: Hip Arthroplasty
CaseInfo	ProcTypeIntubation	Procedure Type: Intubation Only
CaseInfo	ProcTypeKneeArthroplasty	Procedure Type: Knee Arthroplasty
CaseInfo	ProcTypeTxpLiver	Procedure Type: Liver Transplant
CaseInfo	ProcTypeTxpLung	Procedure Type: Lung Transplant
CaseInfo	ProcTypeMRI	Procedure Type: MRI
CaseInfo	ProcTypeNonOpRoomAnesthesia	Procedure Type: Non-Operating Room Anesthesia
CaseInfo	ProcTypeOrganProcurement	Procedure Type: Organ Procurement
CaseInfo	ProcTypeTEEC cardioversion	Procedure Type: TEE/Cardioversion
CaseInfo	ProcTypeTympanoplasty	Procedure Type: Tympanoplasty
CaseInfo	AntiemeticsGiven	Antiemetics Given
CaseInfo	AntibioticsGiven	Antimicrobials Given
CaseInfo	OpioidsGiven	Opioids Given
CaseInfo	ParalyticsUsedAll	Paralytics Used (All)
CaseInfo	ParalyticsUsedNondepolariz	Paralytics Used (Non-depolarizing NMBs only)
CaseInfo	AnesGasUsedNitrous	Nitrous Oxide Used
CaseInfo	AnesGasUsedHalogenYN	Halogenated Anesthetic Gases (Yes/No)
CaseInfo	PropofolInfusionUsed	Propofol Infusion
CaseInfo	AntiHypertensiveInfusion	Anti-hypertensive Infusion
CaseInfo	InotropeInfusion	Inotrope Infusion
CaseInfo	VasopressorInfusion	Vasopressor Infusion
CaseInfo	VasopressorBolus	Vasopressor Bolus
CaseInfo	OME	Oral Morphine Equivalent

CaseInfo	OMENorm	Oral Morphine Equivalent (Normalized)
CaseInfo	NonOpioidAnalgesics	Non-Opioid Analgesics
CaseInfo	InductionTypeClassification	Induction Type
CaseInfo	MACHourAgeAdjustedCaseTotal	MAC Hour for Inhaled Anesthesia (no link)
CaseInfo	CryoVolume_MLs	Blood Product Total - Cryoprecipitate (mL)
CaseInfo	FFPvolume_MLs	Blood Product Total - FFP (ml)
CaseInfo	PlateletsVolume_MLs	Blood Product Total - Platelets (ml)
CaseInfo	PRBCvolumeTotal_MLs	Blood Product Total - PRBCs (ml)
CaseInfo	PRBCvolumeTotal_Units	Blood Product Total - PRBCs (ml)
CaseInfo	PRBCvolumeAutologous_MLs	Blood Product Total - PRBCs (ml)
CaseInfo	PRBCvolumeAutologous_Units	Blood Product Total - PRBCs (ml)
CaseInfo	PRBCvolumeHomologous_MLs	Blood Product Total - PRBCs (ml)
CaseInfo	PRBCvolumeHomologous_Units	Blood Product Total - PRBCs (ml)
CaseInfo	PRBCvolumeUnknown_MLs	Blood Product Total - PRBCs (ml)
CaseInfo	PRBCvolumeUnknown_Units	Blood Product Total - PRBCs (ml)
CaseInfo	Colloids	Total Colloid Administered
CaseInfo	CrystalloidsTotal	Total Crystalloid Administered
CaseInfo	CrystalloidsBalanced	Total Crystalloid Administered
CaseInfo	CrystalloidsNonQualifyHypertonic	Total Crystalloid Administered
CaseInfo	CrystalloidsNonQualifyHypotonic	Total Crystalloid Administered
CaseInfo	CrystalloidsNonQualifyOther	Total Crystalloid Administered
CaseInfo	CrystalloidsNormalSaline	Total Crystalloid Administered
CaseInfo	EstimatedBloodLoss	Total Estimated Blood Loss
CaseInfo	UrineOutput	Total Urine Output
CaseInfo	CompMPOGAKI	Complication - Acute Kidney Injury
CaseInfo	CompAHRQPulmAll	Complication - Pulmonary
CaseInfo	CompMPOGRenalRecovCreat	Complication - Renal Recovery
CaseInfo	DestinationClass_Postop	Postoperative Destination
CaseInfo	TroponinHighest_Postop	Highest Postop Troponin
CaseInfo	TroponinHighest_Postop_DaysAfter	Highest Postop Troponin Days After
CaseInfo	PreopStart	Preop Start
CaseInfo	AnesthesiaStart	Anesthesia Start
CaseInfo	AnesthesiaEnd	Anesthesia End
CaseInfo	AnesDuration	Anesthesia Duration
CaseInfo	AnesExposureDuration	Anesthesia Exposure Duration (no link)
CaseInfo	InductionStart	Induction Start
CaseInfo	InductionEnd	Induction End
CaseInfo	PatientInRoomStart	Patient In Room
CaseInfo	PatientInRoomEnd	Patient Out of Room
CaseInfo	PatientInRoomDuration	In Room Duration
CaseInfo	SurgeryStart	Surgery Start
CaseInfo	SurgeryEnd	Surgery End
CaseInfo	WaitingForTransportDuration	Waiting For Transport Duration
CaseInfo	CardioPulmBypassStart	Cardiopulmonary Bypass Start

CaseInfo	CardioPulmBypassEnd	Cardiopulmonary Bypass End
CaseInfo	CardioPulmBypassDuration	Cardiopulmonary Bypass Duration
CaseInfo	ObstetricNeuraxialStart	Obstetric Neuraxial Start
CaseInfo	PrimaryProviderAttending	Primary Provider - Attending
CaseInfo	PrimaryProviderResident	Primary Provider - Resident
CaseInfo	PrimaryProviderCRNA	Primary Provider - CRNA
CaseInfo	PrimaryProviderFellow	Primary Provider - Fellow
CaseInfo	ProviderDurationAttending	Anesthesia Attending Minutes
CaseInfo	ProviderDurationCRNA	CRNA Minutes
CaseInfo	ProviderDurationResident	Anesthesia Resident Minutes
CaseInfo	MinutesMAPBelow55	Minutes of MAP < 55 (no link)
CaseInfo	MinutesMAPBelow65	Minutes of MAP < 65
CaseInfo	PIPActualMedian	PIP Actual (median) (no link)
CaseInfo	PEEPActualMedian	PEEP Actual (median)
CaseInfo	PEEPSetMedian	PEEP Set (median)
CaseInfo	TidalVolumeActualMedian	Tidal Volume Actual (median)
CaseInfo	TidalVolumeSetMedian	Tidal Volume Set (median)
CaseInfo	VentRespiratoryRateActualMedian	Vent Respiratory Rate Actual (median) (no link)
CaseInfo	VentRespiratoryRateSetMedian	Vent Respiratory Rate Set (median) (no link)
CaseInfo	Albumin_Preop	Preop Albumin
CaseInfo	Albumin_Preop_DaysBefore	Preop Albumin Days Prior
CaseInfo	AlkPhosphatase_Preop	Preop Alk Phosphatase
CaseInfo	AlkPhosphatase_Preop_DaysBefore	Preop Alk Phosphatase Days Prior
CaseInfo	ALT_Preop	Preop ALT
CaseInfo	ALT_Preop_DaysBefore	Preop ALT Days Prior
CaseInfo	AST_Preop	Preop AST
CaseInfo	AST_Preop_DaysBefore	Preop AST Days Prior
CaseInfo	Bicarbonate_Preop	Preop Bicarbonate
CaseInfo	Bicarbonate_Preop_DaysBefore	Preop Bicarbonate Days Prior
CaseInfo	BicarbonateLabType_Preop	Preop Bicarbonate
CaseInfo	BUN_Preop	Preop BUN
CaseInfo	BUN_Preop_DaysBefore	Preop BUN Days Prior
CaseInfo	CalciumIonized_Preop	Preop Calcium Ionized
CaseInfo	CalciumIonized_Preop_DaysBefore	Preop Calcium Ionized Days Prior
CaseInfo	CalciumTotal_Preop	Preop Calcium Total
CaseInfo	CalciumTotal_Preop_DaysBefore	Preop Calcium Total Days Prior
CaseInfo	Chloride_Preop	Preop Chloride
CaseInfo	Chloride_Preop_DaysBefore	Preop Chloride Days Prior
CaseInfo	CO2Arterial_Preop	Preop CO2 Arterial
CaseInfo	CO2Arterial_Preop_DaysBefore	Preop CO2 Arterial Days Prior
CaseInfo	CO2MixedVenous_Preop	Preop CO2 Mixed Venous
CaseInfo	CO2MixedVenous_Preop_DaysBefore	Preop CO2 Mixed Venous Days Prior
CaseInfo	CO2Venous_Preop	Preop CO2 Venous
CaseInfo	CO2Venous_Preop_DaysBefore	Preop CO2 Venous Days Prior

CaseInfo	CreatHighest_Preop	Preop Creatinine Highest
CaseInfo	CreatHighest_Preop_DaysBefore	Preop Creatinine Highest Days Prior
CaseInfo	CreatMostRecent_Preop	Preop Creatinine Most Recent
CaseInfo	CreatMostRecent_Preop_DaysBefore	Preop Creatinine Most Recent Days Prior
CaseInfo	EGFR60DayLowest_Preop	Preop eGFR (Lowest Within 60 Days)
CaseInfo	Glucose_Preop	Preop Glucose
CaseInfo	Glucose_Preop_DaysBefore	Preop Glucose Days Prior
CaseInfo	HCG_Preop	Preop HCG
CaseInfo	HCG_Preop_DaysBefore	Preop HCG Days Prior
CaseInfo	Hematocrit_Preop	Preop Hematocrit
CaseInfo	Hematocrit_Preop_DaysBefore	Preop Hematocrit Days Prior
CaseInfo	Hemoglobin_Preop	Preop Hemoglobin
CaseInfo	Hemoglobin_Preop_DaysBefore	Preop Hemoglobin Days Prior
CaseInfo	HemoglobinLowest_Intraop	Lowest Intraop Hemoglobin
CaseInfo	HgbA1c_Preop	Preop HgbA1c
CaseInfo	HgbA1c_Preop_DaysBefore	Preop HgbA1c Days Prior
CaseInfo	INR_Preop	Preop INR
CaseInfo	INR_Preop_DaysBefore	Preop INR Days Prior
CaseInfo	Lactate_Preop	Preop Lactate
CaseInfo	Lactate_Preop_DaysBefore	Preop Lactate Days Prior
CaseInfo	Platelets_Preop	Preop Platelet Count
CaseInfo	Platelets_Preop_DaysBefore	Preop Platelet Count Days Prior
CaseInfo	Potassium_Preop	Preop Potassium
CaseInfo	Potassium_Preop_DaysBefore	Preop Potassium Days Prior
CaseInfo	Protein_Preop	Preop Protein
CaseInfo	Protein_Preop_DaysBefore	Preop Protein Days Prior
CaseInfo	PT_Preop	Preop PT
CaseInfo	PT_Preop_DaysBefore	Preop PT Days Prior
CaseInfo	PTT_Preop	Preop PTT
CaseInfo	PTT_Preop_DaysBefore	Preop PTT Days Prior
CaseInfo	Sodium_Preop	Preop Sodium
CaseInfo	Sodium_Preop_DaysBefore	Preop Sodium Days Prior
CaseInfo	TotalBilirubin_Preop	Preop Total Bilirubin
CaseInfo	TotalBilirubin_Preop_DaysBefore	Preop Total Bilirubin Days Prior
CaseInfo	TroponinDrawn_Preop	Preop Troponin Drawn
CaseInfo	TroponinHighest_Preop	Preop Troponin Highest
CaseInfo	TroponinHighest_Preop_DaysBefore	Preop Troponin Highest Days Prior
CaseInfo	TroponinMostRec_Preop	Preop Troponin Most Recent
CaseInfo	TroponinMostRec_Preop_DaysBefore	Preop Troponin Most Recent Days Prior
CaseInfo	WBC_Preop	Preop White Blood Cell Count
CaseInfo	WBC_Preop_DaysBefore	Preop White Blood Cell Count Days Prior
CaseInfo	ComorbElixAidsHIV	Elixhauser: AIDS/HIV
CaseInfo	ComorbElixAlcoholAbuse	Elixhauser: Alcohol Abuse
CaseInfo	ComorbElixBloodLossAnemia	Elixhauser: Blood Loss Anemia

CaseInfo	ComorbElixCardiacArrhythmias	Elixhauser: Cardiac Arrhythmia
CaseInfo	ComorbElixChronicPulmDisease	Elixhauser: Chronic Pulmonary Disease
CaseInfo	ComorbElixCoagulopathy	Elixhauser: Coagulopathy
CaseInfo	ComorbElixCongHeartFailure	Elixhauser: Congestive Heart Failure
CaseInfo	ComorbElixDeficiencyAnemia	Elixhauser: Deficiency Anemia
CaseInfo	ComorbElixDepression	Elixhauser: Depression
CaseInfo	ComorbElixDiabetesComp	Elixhauser: Diabetes (Complicated)
CaseInfo	ComorbElixDiabetesUncomp	Elixhauser: Diabetes (Uncomplicated)
CaseInfo	ComorbElixDrugAbuse	Elixhauser: Drug Abuse
CaseInfo	ComorbElixFluidElecDisorders	Elixhauser: Fluid and Electrolyte Disorders
CaseInfo	ComorbElixHypertensionComp	Elixhauser: Hypertension (Complicated)
CaseInfo	ComorbElixHypertensionUncomp	Elixhauser: Hypertension (Uncomplicated)
CaseInfo	ComorbElixHypothyroidism	Elixhauser: Hypothyroidism
CaseInfo	ComorbElixLiverDisease	Elixhauser: Liver Disease
CaseInfo	ComorbElixLymphoma	Elixhauser: Lymphoma
CaseInfo	ComorbElixMetastaticCancer	Elixhauser: Metastatic Cancer
CaseInfo	ComorbElixObesity	Elixhauser: Obesity
CaseInfo	ComorbElixOtherNeuroDisorders	Elixhauser: Other Neurological Disorders
CaseInfo	ComorbElixParalysis	Elixhauser: Paralysis
CaseInfo	ComorbElixPepUlcerExcludeBleed	Elixhauser: Peptic Ulcer Disease excluding Bleeding
CaseInfo	ComorbElixPeriphVascDisorders	Elixhauser: Peripheral Vascular Disorders
CaseInfo	ComorbElixPsychoses	Elixhauser: Psychoses
CaseInfo	ComorbElixPulmCircDisorders	Elixhauser: Pulmonary Circulation Disorders
CaseInfo	ComorbElixRenalFailure	Elixhauser: Renal Failure
CaseInfo	ComorbElixRheumArthColVascDis	Elixhauser: Rheumatoid Arthritis/Collagen
CaseInfo	ComorbElixSolidTumorWOMETAST	Elixhauser: Solid Tumor without Metastasis
CaseInfo	ComorbElixValvularDisease	Elixhauser: Valvular Disease
CaseInfo	ComorbElixWeightLoss	Elixhauser: Weight Loss
CaseInfo	ComorbMPOGCerebrovascDis	Comorbidity: Cerebrovascular Disease
CaseInfo	ComorbMPOGCoronaryArteryDis	Comorbidity: Coronary Artery Disease
CaseInfo	ComorbMPOGPreclampsia	Comorbidity: Pre-eclampsia
CPTCodes	MPOGCaseID	MPOG_Case_ID (no link)
CPTCodes	MPOGPatientID	MPOG Patient ID
CPTCodes	PrimaryAnesCPT	Primary Anes CPT Code
CPTCodes	PrimaryAnesCPTMPOGBaseUnits	Primary Anes CPT Code Base Unit Value
CPTCodes	AllAnesCPTCodes	All Anes CPT Codes (no link)
CPTCodes	PredictedAnesCPTCode1	Predicted Anes CPT Code 1 (no link)
CPTCodes	PredictedAnesCPTCode1Score	Predicted Anes CPT Code 1 Score (no link)
CPTCodes	PredictedAnesCPTCode2	Predicted Anes CPT Code 2 (no link)
CPTCodes	PredictedAnesCPTCode2Score	Predicted Anes CPT Code 2 Score (no link)
CPTCodes	PredictedAnesCPTCode3	Predicted Anes CPT Code 3 (no link)
CPTCodes	PredictedAnesCPTCode3Score	Predicted Anes CPT Code 3 Score (no link)
CPTCodes	SurgicalCPTCodes	Surgical CPT Codes

ICDCodes	MPOGCaseID	MPOG_Case_ID (no link)
ICDCodes	MPOGPatientID	MPOG Patient ID
ICDCodes	ICDCCode	ICD Code (no link)
ICDCodes	DaysFromCase	Days from Case (no link)
Qmeasures	MPOGCaseID	MPOG_Case_ID (no link)
Qmeasures	ABX01_MeasureResult	ABX-01-OB
Qmeasures	ABX02_MeasureResult	ABX-02-C
Qmeasures	ABX03_MeasureResult	ABX-03-C
Qmeasures	AKI01_MeasureResult	AKI-01
Qmeasures	BP01_MeasureResult	BP-01
Qmeasures	BP02_MeasureResult	BP-02
Qmeasures	BP03_MeasureResult	BP-03
Qmeasures	BP04_MeasureResult	BP-04-OB
Qmeasures	BP05_MeasureResult	BP-05
Qmeasures	BP06_MeasureResult	BP-06
Qmeasures	BRAIN01_MeasureResult	BRAIN-01
Qmeasures	CARD02_MeasureResult	CARD-02
Qmeasures	CARD03_MeasureResult	CARD-03
Qmeasures	FLUID01C_MeasureResult	FLUID-01-C
Qmeasures	FLUID01NC_MeasureResult	FLUID-01-NC
Qmeasures	FLUID02C_MeasureResult	FLUID-02-C-PEDS
Qmeasures	FLUID02NC_MeasureResult	FLUID-02-NC-PEDS
Qmeasures	GA01_MeasureResult	GA-01-OB
Qmeasures	GA02_MeasureResult	GA-02-OB
Qmeasures	GA03_MeasureResult	GA-03-OB
Qmeasures	GLU06_MeasureResult	GLU-06-CARD
Qmeasures	GLU07_MeasureResult	GLU-07-CARD
Qmeasures	GLU08_MeasureResult	GLU-08-CARD
Qmeasures	GLU09_MeasureResult	GLU-09
Qmeasures	GLU10_MeasureResult	GLU-10
Qmeasures	GLU11_MeasureResult	GLU-11
Qmeasures	GLU12_MeasureResult	GLU-12
Qmeasures	GLU13_MeasureResult	GLU-13
Qmeasures	MORT01_MeasureResult	MORT-01
Qmeasures	NMB01_MeasureResult	NMB-01
Qmeasures	NMB02_MeasureResult	NMB-02
Qmeasures	NMB03_MeasureResult	NMB-03-PEDS
Qmeasures	NMB04_MeasureResult	NMB-04
Qmeasures	NMB05_MeasureResult	NMB-05
Qmeasures	PAIN01_MeasureResult	PAIN-01-PEDS
Qmeasures	PAIN02_MeasureResult	PAIN-02
Qmeasures	PAIN03_MeasureResult	PAIN-03
Qmeasures	PONV03_MeasureResult	PONV-03

Qmeasures	PONV04_MeasureResult	PONV-04-PEDS
Qmeasures	PONV05_MeasureResult	PONV-05
Qmeasures	PUL01_MeasureResult	PUL-01
Qmeasures	PUL03_MeasureResult	PUL-03
Qmeasures	SMOK01_MeasureResult	SMOK-01
Qmeasures	SMOK02_MeasureResult	SMOK-02
Qmeasures	SUS01_MeasureResult	SUS-01
Qmeasures	SUS02_MeasureResult	SUS-02
Qmeasures	SUS03_MeasureResult	SUS-03
Qmeasures	SUS04_MeasureResult	SUS-04
Qmeasures	SUS05_MeasureResult	SUS-05-PEDS
Qmeasures	SUS06_MeasureResult	SUS-06-PEDS
Qmeasures	SUS07_MeasureResult	SUS-07
Qmeasures	TEMP01_MeasureResult	TEMP-01
Qmeasures	TEMP02_MeasureResult	TEMP-02
Qmeasures	TEMP03_MeasureResult	TEMP-03
Qmeasures	TEMP04_MeasureResult	TEMP-04-PEDS
Qmeasures	TEMP05_MeasureResult	TEMP-05-OB
Qmeasures	TEMP06_MeasureResult	TEMP-06-CARD
Qmeasures	TEMP07_MeasureResult	TEMP-07-CARD
Qmeasures	TOC01_MeasureResult	TOC-01
Qmeasures	TOC02_MeasureResult	TOC-02
Qmeasures	TOC03_MeasureResult	TOC-03
Qmeasures	TRAN01_MeasureResult	TRAN-01
Qmeasures	TRAN02_MeasureResult	TRAN-02
Qmeasures	TRAN03_MeasureResult	TRAN-03-PEDS
Qmeasures	TRAN04_MeasureResult	TRAN-04-PEDS

Appendix B. 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. 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 they may look for relevant codes 90 days prior to 7 days after the date of surgery. In contrast, if a researcher is attempting to define an outcome based on ICD 9/10 codes, then they 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. If the data you have does not seem to match with the phenotype spec available in the Phenotype Browser, please contact the MPOG research team (mpog-research@med.umich.edu) for clarification and previous versions of specs.

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.