**Sample Query Specification PCRC 0096 – Inclusion Criteria**

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| **Variable Name** | **Definition** | **Data Format** | **Data Source / ID** | **Notes** |
| DOS | Date of Surgery/Procedure/Service | Mo/Day/Year | Phenotype: Surgery Start Date/Time | Include: Surgery performed between January 1, 2014 and August 1, 2019 |
| Age | Age in years | Num | Phenotype: Age (Years) | Include: >/=18 |
| Cardiac\_cases | Cardiac cases | Num | Phenotype: Cardiac | Include: o Cardiac – Anesthesia CPT Codes 00550, 00560, 00561, 00562, 00563, 00567, 00580 |

**Sample Query Specification PCRC 0096 – Exposure Variables, Covariates, Exclusion Criteria, and Outcomes**

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| **Variable Name** | **Definition** | **Data Format** | **Data Source / ID** | **Notes** |
| DOS | Date of Surgery/Procedure/Service | Mo/Day/Year | Phenotype: Surgery Start Date/Time | Include: Surgery performed between January 1, 2014 and August 1, 2019 |
| Age | Age in years | Num | Phenotype: Age (Years) | Valid range: 18-120 |
| Sex | Sex | Num | Phenotype: Sex | Sex |
| Race | Patient Race | Num | Phenotype: Race | Race |
| Actual\_Procedure\_Text | Procedure name (performed, not scheduled) | Character | Phenotype: Procedure Text | Actual\_Procedure\_Text |
| Charge\_Capture\_Primary\_ Diagnosis\_Code | ICD-9/ICD-10 Code | Num | All ICD diagnosis codes | Charge\_Capture\_Primary\_ Diagnosis\_Code |
| MPOG\_Patient\_ID | MPOG Patient ID Number | Char |  | MPOG\_Patient\_ID |
| MPOG\_Case\_ID | MPOG Case ID Number | Char |  | MPOG\_Case\_ID |
| MPOG\_Institution\_ID | MPOG Institution ID | Num | Phenotype: Institution | MPOG\_Institution\_ID |
| Cardiac\_cases\_per\_year | Number of cardiac cases per year | Num | Number of Phenotype: Cardiac =1 per year | Cardiac\_cases\_per\_year\_2014  Cardiac\_cases\_per\_year\_2015 Cardiac\_cases\_per\_year\_2016 Cardiac\_cases\_per\_year\_2017 Cardiac\_cases\_per\_year\_2018  Cardiac\_cases\_per\_year\_2019 |
| MPOG\_Primary\_Provider\_ID | MPOG Primary Provider, attending only | Num | Phenotype: PrimaryProvider | MPOG\_Primary\_Provider\_ID |
| MPOG\_Starting\_Provider\_ID | MPOG Starting Provider, attending only | Num | Phenotype: StartingProvider | MPOG\_Starting\_Provider\_ID |
| Primary\_Anesthesia\_CPT | Primary anesthesia base CPT | Character | Phenotype: Primary Anesthesia CPT | Primary\_Anesthesia\_CPT |
| Predicted\_Anesthesia\_CPT | Predicted anesthesia CPT | Number | Anesthesia CPT prediction tool | Predicted\_Anesthesia\_CPT |
| MPOG\_Admission\_Type | Integer representing patient admission type | Num | Phenotype: Admission Type | MPOG\_Admission\_Type |
| MPOG\_Primary\_Procedural\_ Service\_Concept\_ID | Integer representing primary procedural service | Num | MPOG Surgical Services by code | MPOG\_Primary\_Procedural\_ Service\_Concept\_ID |
| MPOG\_Primary\_Procedural\_ Service\_Concept\_Desc | Description associated with concept identifier above | Char | MPOG Surgical Service by name | MPOG\_Primary\_Procedural\_ Service\_Concept\_Desc |
| ASA\_Class\_Number | ASA classification | Num | Phenotype: ASA Class (cleaned) | ASA\_Class\_Number |
| Emergent | Processed emergent status | Yes / No | Phenotype: Emergency Status (ASA Class) Yes/No | Emergent |
| General\_yn | General anesthetic technique used | Yes / No | Phenotype: Anesthesia Technique: General | General\_yn |
| Anesthesia\_Start\_DT | First date/time when anesthesia start documented | Mo/Day/Year HH:MM | Phenotype: Anesthesia Start | Anesthesia\_Start\_DT |
| Anesthesia\_End\_DT | Last date and time when anesthesia end documented for case | Mo/Day/Year HH:MM | Phenotype: Anesthesia End | Anesthesia\_End\_DT |
| Patient\_In\_Room\_DT | First date/time when patient in room documented | Mo/Day/Year HH:MM | Phenotype: Patient In Room Date/Time | Patient\_In\_Room\_DT |
| Patient\_Out\_Of\_Room\_DT | Last date/time when patient transport from room documented for case | Mo/Day/Year HH:MM | Phenotype: Patient Out Of Room Date/Time | Patient\_Out\_Of\_Room\_DT |
| Ventilator\_Start\_DT | Date and time of ventilator start time | Mo/Day/Year HH:MM | Phenotype: Ventilator Start Time | Ventilator\_Start\_DT |
| Bypass\_Start\_DT | First date/time when cardiopulmonary bypass start documented for case | Mo/Day/Year HH:MM | Phenotype: Cardiopulmonary Bypass Start | Bypass\_Start\_DT |
| Bypass\_End\_DT | Last date/time when cardiopulmonary bypass end documented for case | Mo/Day/Year HH:MM | Phenotype: Cardiopulmonary Bypass End | Bypass\_End\_DT |
| Bypass\_Duration | Duration of bypass in minutes from start to end | Num | Phenotype: Cardiopulmonary Bypass Duration | Bypass\_Duration |
| Case\_Duration\_In\_Room\_min | Minutes from patient in room to patient out of room | Num | Phenotype: Patient In Room Duration | Case\_Duration\_In\_Room\_min |
| Case\_Duration\_Anesthesia\_min | Minutes from anesthesia start to end | Num | Phenotype: Anesthesia Duration | Case\_Duration\_Anesthesia\_min |
| Case\_Duration\_Surgery\_min | Minutes from procedure start to procedure end | Num | Phenotype: Surgery Duration | Case\_Duration\_Surgery\_min |
| Meds\_Preop | List of preop medications – used to generate Home\_Benzo\_YN and Home\_Opioid\_YN | List of Char | Phenotype: PreopMedications | Meds\_Preop; used to generate Home\_Benzo\_YN and Home\_Opioid\_YN |
| PMH\_Elix\_CHF | History of Congestive Heart Failure, using Elixhauser Comorbidity Enhanced ICD-9-CM and ICD-10 Algorithms | Yes/No | Phenotype: Comorbidity - Congestive Heart Failure | PMH\_Elix\_CHF |
| PMH\_Elix\_Arrhythmia | History of Cardiac Arrhythmia, using Elixhauser Comorbidity Enhanced ICD-9-CM and ICD-10 Algorithms | Yes/No | Phenotype: Comorbidity - Cardiac Arrhythmia | PMH\_Elix\_Arrhythmia |
| PMH\_Elix\_Valvular | History of Valvular Disease, using Elixhauser Comorbidity Enhanced ICD-9-CM and ICD-10 Algorithms | Yes/No | Phenotype: Comorbidity - Valvular Disease | PMH\_Elix\_Valvular |
| PMH\_Elix\_Pulm\_Circ | History of Pulmonary Circulation Disorder, using Elixhauser Comorbidity Enhanced ICD-9-CM and ICD-10 Algorithms | Yes/No | Phenotype: Comorbidity - Pulmonary Circulation Disorders | PMH\_Elix\_Pulm\_Circ |
| PMH\_Elix\_HTN\_Uncomp | History of Uncomplicated Hypertension, using Elixhauser Comorbidity Enhanced ICD-9-CM and ICD-10 Algorithms | Yes/No | Phenotype: Comorbidity - Hypertension (uncomplicated) | PMH\_Elix\_HTN\_Uncomp |
| PMH\_Elix\_HTN\_Comp | History of Complicate, using Elixhauser Comorbidity Enhanced ICD-9-CM and ICD-10 Algorithms | Yes/No | Phenotype: Comorbidity - Hypertension (complicated) | PMH\_Elix\_HTN\_Comp |
| PMH\_Elix\_Neuro | History of Other Neurological Disorders, using Elixhauser Comorbidity Enhanced ICD-9-CM and ICD-10 Algorithms | Yes/No | Phenotype: Comorbidity - Other Neurological Disorders | PMH\_Elix\_Neuro |
| PMH\_Elix\_CPD | History of Chronic Pulmonary Disease, using Elixhauser Comorbidity Enhanced ICD-9-CM and ICD-10 Algorithms | Yes/No | Phenotype: Comorbidity - Chronic Pulmonary Disease | PMH\_Elix\_CPD |
| PMH\_Elix\_Diabetes\_Uncomp | History of Uncomplicated Diabetes, using Elixhauser Comorbidity Enhanced ICD-9-CM Algorithm | Yes/No | Phenotype: Comorbidity - Diabetes (uncomplicated) | PMH\_Elix\_Diabetes\_Uncomp |
| PMH\_Elix\_Diabetes\_Comp | History of Complicated Diabetes, using Elixhauser Comorbidity Enhanced ICD-9-CM and ICD-10 Algorithms | Yes/No | Phenotype: Comorbidity - Diabetes (complicated) | PMH\_Elix\_Diabetes\_Comp |
| PMH\_Elix\_Renal\_Failure | History of Renal Failure, using Elixhauser Comorbidity Enhanced ICD-9-CM and ICD-10 Algorithms | Yes/No | Phenotype: Comorbidity - Renal Failure | PMH\_Elix\_Renal\_Failure |
| PMH\_Elix\_Liver\_Disease | History of Liver Disease, using Elixhauser Comorbidity Enhanced ICD-9-CM and ICD-10 Algorithms | Yes/No | Phenotype: Comorbidity - Liver Disease | PMH\_Elix\_Liver\_Disease |
| PMH\_Elix\_Obesity | History of Obesity (part of Elixhauser Comorbidity Enhanced ICD-9-CM), however will use MPOG to detect | Yes/No | Phenotype: Comorbidity - Obesity | PMH\_Elix\_Obesity |
| PMH\_Elix\_EtOH | History of Alcohol Abuse, using Elixhauser Comorbidity Enhanced ICD-9-CM and ICD-10 Algorithms | Yes/No | Phenotype: Comorbidity - Alcohol Abuse | PMH\_Elix\_EtOH |
| PMH\_Elix\_Drug\_Abuse | History of Drug Abuse, using Elixhauser Comorbidity Enhanced ICD-9-CM and ICD-10 Algorithms | Yes/No | Phenotype: Comorbidity - Drug Abuse | PMH\_Elix\_Drug\_Abuse |
| PMH\_Elix\_Psychoses | History of Psychoses, using Elixhauser Comorbidity Enhanced ICD-9-CM and ICD-10 Algorithms | Yes/No | Phenotype: Comorbidity- Psychoses | PMH\_Elix\_Psychoses |
| PMH\_Elix\_Depression | History of Depression, using Elixhauser Comorbidity Enhanced ICD-9-CM and ICD-10 Algorithms | Yes/No | Phenotype: Comorbidity- Depression | PMH\_Elix\_Depression |
| MPOG\_Height\_cm | MPOG processed height in cm via most recent height in cm, or converted from inches if not available | Num | Phenotype: Height (cm) | MPOG\_Height\_cm |
| MPOG\_Weight\_kg | MPOG processed weight in kg via most recent weight in kg, or converted from pounds if not available | Num | Phenotype: Weight (kg) | MPOG\_Weight\_kg |
| MPOG\_Body\_Mass\_Index | MPOG BMI calculated from MPOG height and weight | Num | Phenotype: BMI | MPOG\_Body\_Mass\_Index |
| MPOG\_WHO\_BMI\_ Classification\_CD | WHO BMI Classification code from MPOG BMI | Num | Phenotype: WHO BMI Classification | MPOG\_WHO\_BMI\_ Classification\_CD |
| Baseline\_MAP | Baseline Mean Arterial Pressure | Num | Phenotype: Baseline Blood Pressure - Mean | Baseline\_MAP |
| Midazolam | Midazolam given as infusion and bolus; date, time, and dose for each administration in a separate table; total dose for the preop period, total dose for intraop period | Num, Mo/Day/Year HH:MM | MPOG Concept: 10301 | Midazolam |
| Lorazepam | Lorazepam given as infusion and bolus; date, time, and dose for each administration in a separate table; total dose for the preop period, total dose for intraop period | Num, Mo/Day/Year HH:MM | MPOG Concept: 10272 | Lorazepam |
| Diazepam | Diazepam given as infusion and bolus; date, time, and dose for each administration in a separate table; total dose for the preop period, total dose for intraop period | Num, Mo/Day/Year HH:MM | MPOG Concept: 10154 | Diazepam |
| Clonazepam | Clonazepam given as infusion and bolus; date, time, and dose for each administration in a separate table; total dose for the preop period, total dose for intraop period | Num, Mo/Day/Year HH:MM | MPOG Concept: 10700 | Clonazepam |
| Alprazolam | Alprazolam given as infusion and bolus; date, time, and dose for each administration in a separate table; total dose for the preop period, total dose for intraop period | Num, Mo/Day/Year HH:MM | MPOG Concept: 10721 | Alprazolam |
| Fentanyl | Fentanyl as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10186 | Fentanyl\_YN  Fentanyl\_inf\_max  Fentanyl\_bolus\_total |
| Remifentanil | Remifentanil as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10390 | Remifentanil\_YN  Remifentanil\_inf\_max  Remifentanil\_bolus\_total |
| Sufentanil | Sufentanil as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10414 | Sufentanil\_YN  Sufentanil\_inf\_max  Sufentanil\_bolus\_total |
| Alfentanil | Alfentanil as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10020 | Alfentanil\_YN  Alfentanil\_inf\_max  Alfentanil\_bolus\_total |
| Methadone | Methadone as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10290 | Methadone\_YN  Methadone\_inf\_max  Methadone\_bolus\_total |
| Hydromorphone | Hydromorphone as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10219 | Hydromorphone\_YN  Hydromorphone\_inf\_max  Hydromorphone\_bolus\_total |
| Morphine | Morphine as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10306 | Morphine\_YN  Morphine\_inf\_max  Morphine\_bolus\_total |
| Propofol | Propofol as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10377 | Propofol\_YN  Propofol\_inf\_max  Propofol\_bolus\_total |
| Etomidate | Etomidate as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10183 | Etomidate\_YN  Etomidate\_inf\_max  Etomidate\_bolus\_total |
| Ketamine | Ketamine as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10238 | Ketamine\_YN  Ketamine\_inf\_max  Ketamine\_bolus\_total |
| Phenylephrine | Phenylephrine as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10354 | Phenylephrine\_YN  Phenylephrine\_inf\_max  Phenylephrine\_bolus\_total |
| Norepinephrine | Norepinephrine as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10326 | Norepinephrine\_YN  Norepinephrine\_inf\_max  Norepinephrine\_bolus\_total |
| Vasopressin | Vasopressin as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10445 | Vasopressin\_YN  Vasopressin\_inf\_max  Vasopressin\_bolus\_total |
| Dopamine | Dopamine as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10165 | Dopamine\_YN  Dopamine\_inf\_max  Dopamine\_bolus\_total |
| Dobutamine | Dobutamine as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10162 | Dobutamine\_YN  Dobutamine\_inf\_max  Dobutamine\_bolus\_total |
| Epinephrine | Epinephrine as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10176 | Epinephrine\_YN  Epinephrine\_inf\_max  Epinephrine\_bolus\_total |
| Isoproterenol | Isoprotere as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10235 | Isoproterenol\_YN  Isoproterenol\_inf\_max  Isoproternol\_bolus\_total |
| Milrinone | Milrinone as a Y/N variable; if given as an infusion, max infusion rate for the case; if given as bolus, sum of total bolus doses | Y/N, num for infusion, Num for bolus | MPOG Concept: 10302 | Milrinone\_YN  Milrinone\_inf\_max  Milrinone\_bolus\_total |