MPOG DataDirect: User Access & Demonstration

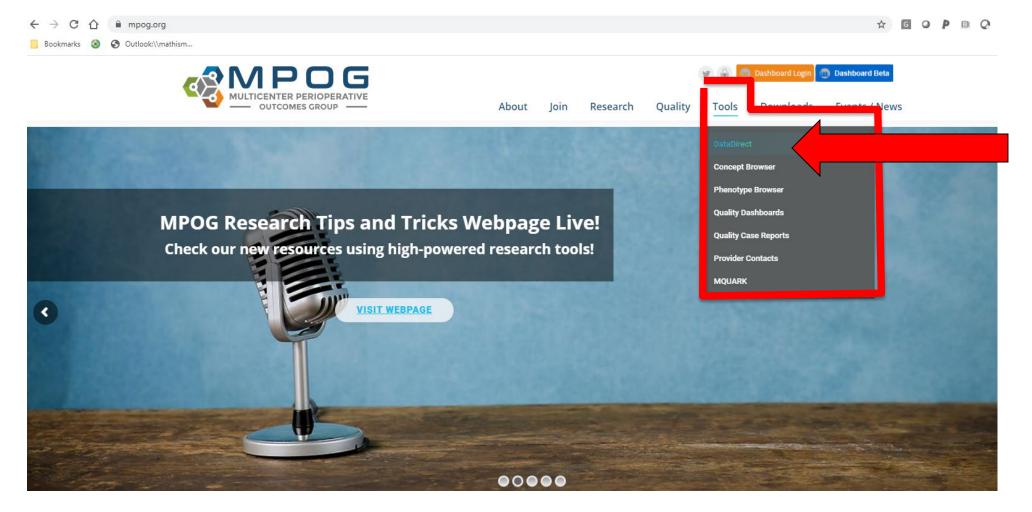
Michael Mathis, MD

Associate Research Director, MPOG

Assistant Professor, Michigan Medicine



DataDirect Access





DataDirect Access

- Pre-requisites:
 - -Security Checklist & Authorization Form
 - –Obtain Login



DataDirect Access



Research
MPOG DataDirect Security Checklist and Authorization Form
DataDirect User Guide
PCRC Proposal Template
PCRC Proposal Checklist
Regulatory and Legal
BAA Template for University of Michigan
IRB Approval Letter Coordinating Site (Expires 01-21-2020)
IRB Approval Letter Participating Site (Expires 12-16-2019)
IRB University of Michigan Performance Site Application Example
MPOG Bylaws
MPOG Master DUA Agreement (Europe Only)
MPOG Master DUA Agreement (United States Only)
IT Job



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MPOG DataDirect Security Checklist and Authorization Form

Thank you for your interest in using MPOGs DataDirect application for Quality Improvement and/or Research Projects at your institution. DataDirect contains limited dataset (protected health information is excluded except for date of service). However, because DataDirect may contain information regarding hospital level quality indicators (i.e. hospital mortality), we ask that approval from the appropriate hospital department (i.e. Quality or Health Information Management) is obtained.

Standard data security processes must be followed when using the application. These are detailed below.

The site's Anesthesiology Quality Champion and/or Practice Leader is responsible for all of the data that is downloaded for their institution from DataDirect. All individuals gaining access to MPOG DataDirect will need to complete and sign the affidavit below. This affidavit affirms that he/she understands the necessary processes and policies to ensure data security. Detailed descriptions of all items on the checklist can be found on the MPOG Security

Use of this data for Research

Anyone downloading data using Data Direct for the purpose of research should follow their institution review board policies.

Please do not hesitate to contact the MPOG with any questions/concerns.

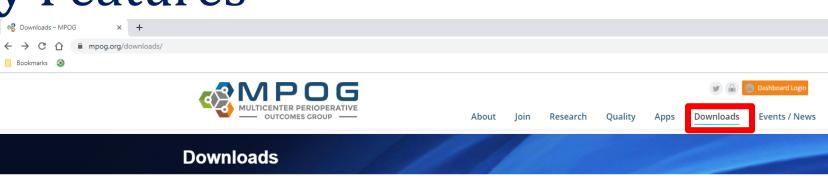
Secure Computer

- Encrypt all mobile workstations (laptops): encrypt computer hard drive using approved tools (described on MPOG website)
- Ensure physical security or encryption of any desktop workstations
- Ensure physical security of servers: Institutional server room with near zero risk of physical theft





• User Guide



MPOG Suite

DataDirect User Guide

DataDirect User Guide PCRC Proposal Template PCRC Proposal Checklist

Regulatory and Legal

BAA Template for University of Michigan

IRB Approval Letter Coordinating Site (Expires 01-21-2020)

IRB Approval Letter Participating Site (Expires 12-16-2019)

IRB University of Michigan Performance Site Application Example

MPOG Bylaws

MPOG Master DUA Agreement (Europe Only)

MPOG Master DUA Agreement (United States Only)



DataDirect

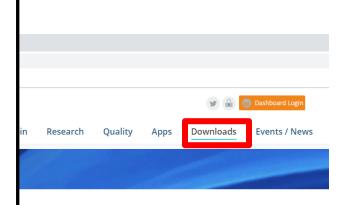
• User Guide



DataDirect User Guide

For questions or comments, please contact:

Multicenter Perioperative Outcomes Group support@mpog.zendesk.com





• Query Modes

- Cohort Only

- Goals:
 - Determine if a research/QI question is **answerable**
 - Sample size \rightarrow roughly estimate <u>statistical power</u>
 - Ensure a satisfying experience doing MPOG research or QI
- No prior approval
 - (except login)
- Multicenter data (counts only)



• Query Modes

-Quality Report

- Goal:
 - Review cases, processes of care, and outcomes for local research and QI
- Approval from your site leadership
 - -Implied with DataDirect login, but user re-attests at time of access
- Single center data



• Query Modes

- Research

- Goal:
 - Execute high-impact multicenter research for manuscripts / grants
- Approval from PCRC Committee
 - Formal submission/review process
- Single-center data before PCRC review/approval
- Multi-center data after PCRC review/approval



• Query Modes

	Access Requirements	Scope	Goal
Cohort Only	Login	Multicenter (counts)	Determine if question is answerable
Quality Report			





• Query Modes

	Access Requirements	mentsinMulticenter(counts)n +Single CenterSt with	Goal
RequireCohort OnlyLogQuality ReportLoginRe-attest	Login		Determine if question is answerable
Quality Report	Requirements Only Login Multicenter (counts) Determine if questi answerable Report Login + Re-attest with download Single Center Local QI	Local QI	
Research		Its Multicenter Determine if question is answerable Single Center Local QI	

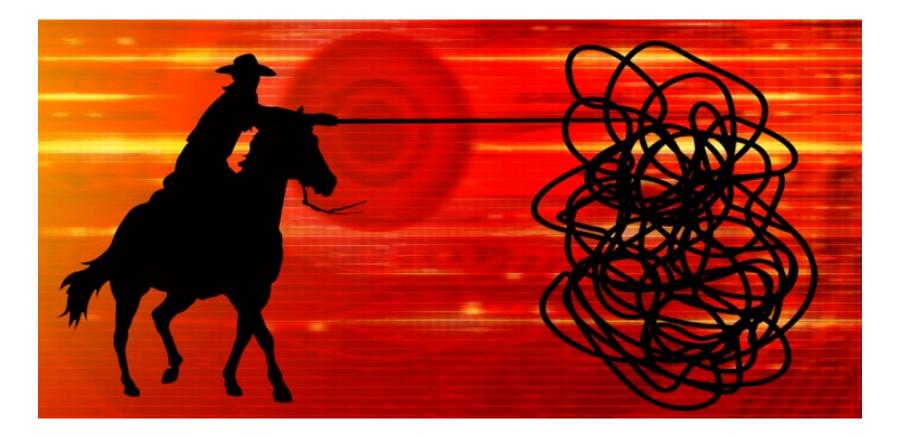


• Query Modes

	Access Requirements	Scope	Goal
Cohort Only	Login	Multicenter (counts)	Determine if question is answerable
Quality Report	Requirementshort OnlyLoginMulticenter (counts)Deter (counts)ity ReportLogin + Re-attest with downloadSingle CenteresearchPCRC ApprovalSingle Center	Local QI	
Research	PCRC Approval		High-impact publications / grants



... some thoughts on data wrangling in MPOG





- Commonly <u>structured</u>, or with <u>cleanable artifact</u>:
 - Demographics height, weight, gender, age, etc.
 - Simple case details ASA class, Anesthesia CPT, duration
 - Simple anesthetic details GA, ETT/LMA attempted
 - Elixhauser comorbidities, ICD-9/10 diagnosis codes
 - Intraoperative medications
 - Standard physiologic monitors
 - Laboratory values



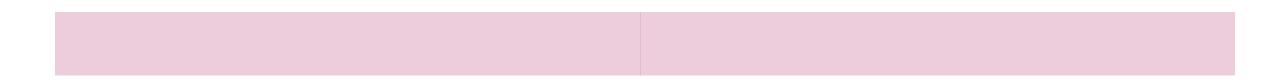
- Sometimes **unstructured**, or with **complex artifact**:
 - Surgical diagnosis and/or procedure text
 - Nuanced intraoperative interventions
 - e.g. positioning, awake/deep extubation, jet ventilation, partial CPB
 - Anesthesia H&P comorbidities
 - Non-intraoperative medications (e.g. home, preop, postop)
 - Advanced physiologic monitors (e.g. CVP, cerebral oximetry)



Usually Structured, Cleanable

Sometimes Unstructured, Cleaning is Challenging or Intractable

Demographics, Labs







Usually Structured, Cleanable	Sometimes Unstructured, Cleaning is Challenging or Intractable
Demographics, Labs	
Simple Case Details (e.g. Anes CPT)	Diagnosis/Procedure Text



Usually Structured, Cleanable	Sometimes Unstructured, Cleaning is Challenging or Intractable
Demographics, Labs	
Simple Case Details (e.g. Anes CPT)	Diagnosis/Procedure Text
Simple Anesthetic Details (e.g. ETT)	Nuanced Interventions (e.g. jet vent)



Usually Structured, Cleanable	Sometimes Unstructured, Cleaning is Challenging or Intractable
Demographics, Labs	
Simple Case Details (e.g. Anes CPT)	Diagnosis/Procedure Text
Simple Anesthetic Details (e.g. ETT)	Nuanced Interventions (e.g. jet vent)
Comorbidities – Elixhauser	Comorbidities – Anesthesia H&P



Usually Structured, Cleanable	Sometimes Unstructured, Cleaning is Challenging or Intractable
Demographics, Labs	
Simple Case Details (e.g. Anes CPT)	Diagnosis/Procedure Text
Simple Anesthetic Details (e.g. ETT)	Nuanced Interventions (e.g. jet vent)
Comorbidities – Elixhauser	Comorbidities – Anesthesia H&P
Medications – Intraoperative	Medications – Home, Preop, Postop



Usually Structured, Cleanable	Sometimes Unstructured, Cleaning is Challenging or Intractable
Demographics, Labs	
Simple Case Details (e.g. Anes CPT)	Diagnosis/Procedure Text
Simple Anesthetic Details (e.g. ETT)	Nuanced Interventions (e.g. jet vent)
Comorbidities – Elixhauser	Comorbidities – Anesthesia H&P
Medications – Intraoperative	Medications – Home, Preop, Postop
Standard Monitors (e.g. BP)	Advanced Monitors (e.g. CVP)



DataDirect v2.0 Updates



DataDirect v2.0

- Major updates
 - Intuitive workflow
 - Step-wise process
 - Differentiation between inclusion criteria vs. covariates/outcomes
 - Broader range of data types
 - MPOG concepts, phenotypes, QI measures all accessible
 - (Coming soon): Automated, downloadable data summaries
 - QI: Quality Report
 - Research: Data Query Spec



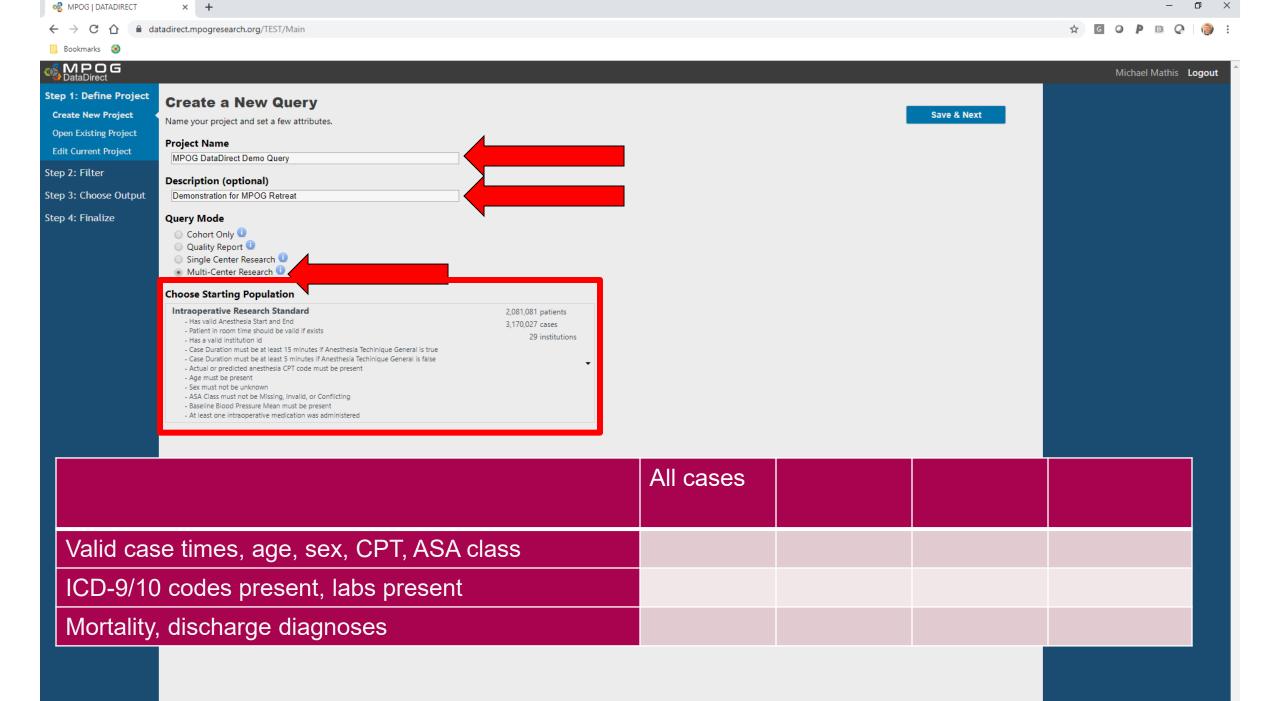
DataDirect v2.0 Demo

(note: DataDirect continues to be updated...current version not identical to this presentation)



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Open Existing Project	Open Existing			
Edit Current Project	Edit Current			
Step 2: Filter	t.mpogresearch.org/TEST/Main			
Step 3: Choose Output				
Step 4: Finalize				

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Step 1: Define Project	Create a New Query		
Create New Project	Name your project and set a few attributes.		Save & Next
Open Existing Project			
Edit Current Project	Project Name		
Step 2: Filter	MPOG DataDirect Demo Query		
	Description (optional)		
Step 3: Choose Output	Demonstration for MPOG Retreat		
Step 4: Finalize	Query Mode		
	O Cohort Only 1		
	 Quality Report ① Single Center Research ① 		
	Multi-Center Research		
	Choose Starting Population		
	Intraoperative Research Standard	2,081,081 patients	
	- Has valid Anesthesia Start and End - Patient in room time should be valid if exists	3,170,027 cases	
	- Has a valid institution id - Case Duration must be at least 15 minutes if Anesthesia Techinique General is true	29 institutions	
	- Case Duration must be at least 5 minutes if Anesthesia Techinique General is false		
	 Actual or predicted anesthesia CPT code must be present Age must be present 		
	- Sex must not be unknown		
	 ASA Class must not be Missing, Invalid, or Conflicting Baseline Blood Pressure Mean must be present 		
	- At least one intraoperative medication was administered		



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MPOG DataDirect						Mic	ael Mathi	s Lo
p 1: Define Project reate New Project ben Existing Project lit Current Project p 2: Filter p 3: Choose Output p 4: Finalize	Create a New Query Ame your project and set a few attributes. Project Name MPOG DataDirect Demo Query Demonstration for MPOG Retreat Oury Mode Ochort Only Quality Report Quality Report Multi-Center Research Multi -Center Research Multi-Cente	2,081,081 patients 3,170,027 cases 29 institutions			Save & Next			
			All cases	Intraop Standard				
Valid cas	Define Project New Project Xisting Project Wrent Project Filter Choose Output Finalize Output Define Project Finalize Output Description (optional) Demonstration for MPOG Retreat Query Mode © Cohort Only ① Quality Report ② Single Center Research ③ Multi-Center Research ④ Patient in room time should be valid if exists Has valid Anesthesia Start and End Single Center Research ④ Atual or predicted anesthesia CPT code must be present Age must be present Sex must not be unknown As Class must not be Missing, Invalid, or Conflicting Baseline Blood Pressure Mean must be present	class		Х				
ICD-9/10) codes present, labs present							
Mortality	discharge diagnoses							

				Standard	Standard	
			All cases	Intraop	Periop	
	Intraoperative Research Standard - Has valid Anesthesia Start and End - Patient in room time should be valid if exists - Has a valid institution id - Case Duration must be at least 15 minutes if Anesthesia Techinique General is true - Case Duration must be at least 5 minutes if Anesthesia Techinique General is false - Actual or predicted anesthesia CPT code must be present - Age must be present - Sex must not be unknown - ASA Class must not be Missing, Invalid, or Conflicting - Baseline Blood Pressure Mean must be present - At least one intraoperative medication was administered	2,081,081 patients 3,170,027 cases 29 institutions				
	Quality Report Single Center Research Multi-Center Research Choose Starting Population					
p 4: Finalize	Query Mode		-			
p 3: Choose Output	Description (optional) Demonstration for MPOG Retreat					
fit Current Project p 2: Filter	MPOG DataDirect Demo Query					
reate New Project	Name your project and set a few attributes. Project Name				Save & Next	
p 1: Define Project	Create a New Query					

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MPOG DataDirect						Michael Mathis
p 1: Define Project eate New Project it Current Project o 2: Filter o 3: Choose Output o 4: Finalize	<section-header><section-header><text><section-header><section-header></section-header></section-header></text></section-header></section-header>	2,081,081 patients 3,170,027 cases 29 institutions			Save & Next	
			All cases	Intraop Standard	Periop Standard	Outcome Standard
Valid ca	se times, age, sex, CPT, ASA	class		Х	Х	Х
					Х	Х
ICD-9/1	0 codes present, labs present				Λ	~

Email Support/Feedback

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Step 1: Define Project Step 2: Filter Demographics Cases Comorbidities Diamones	SMPOG DataDirect		Mich	nael Mathis Logou t
tep 2: Filter pensorgaphics Here you will apply filters to define your cohort and return only cases that you're interested in. The available filters are listed on the left sidebar while the size of your cohort will be dynamically updated on the right. Next Wey Coldability project 12:109 Cuery Mode: Cohort Laturd dated on 10/14/2019 Comorbidities Diagnoses Forestrict Start 3,170,01 Procedures Forestrict Start 3,170,01 Notes Forestrict Start 3,170,01 Notes Forestrict Forestrict Forestrict Notes Forestrict Forestrict Forestrict Labs Forestrict Forestrict Forestrict Forestrict Cotones Forestrict Forestrict Forestrict Forestrict Barbon College Forestrict Forestrict Forestrict Forestrict Rotications Forestrict Forestrict Forestrict Forestrict Barbon College Forestrict Forestrict Forestrict Forestrict Rotications Forestrict Forestrict Forestrict Forestrict Barbon College Forestrict Forestrict Forestrict		Filtering Cases		
openographics query Mode: Cohort Lat updated on 10/14/2019 Cases Cohort Size Cohort Size Diagnoses Start 3,170,0 Procedures Start 3,170,0 Madications Start 3,170,0 Intraoperative 291 Addications Start 3,170,0 Physiologica Start 3,170,0 Intraoperative 291 3,170,0 Intraoperative 3,170,0 3,170,0 Intr	tep 2: Filter	Here you will apply filters to define your cohort and return only cases that you're interested in. The available filters are listed on the left sidebar while the size of your cohort will be	MPOG DataDirect De Project ID: 2169	emo Query
Cases Comorbidites Diagnoses Procedures Notes Medications Labs Dutcomes ep 3: Choose Output	Demographics	dynamically updated on the right.	Query Mode: Cohort Last updated on 10/14/	2019
Start 3,70,0,1 Intraoperative 291 Addications 9	Cases			
rocedures otes edications hysiologic abs utcomes ep 3: Choose Output				
bes			Start Intraoperative	3,170,027 cas 29 institutio
tications sologic so comes 3: Choose Output				
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3: Choose Output				
	4. Fillalize			

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Cases

Procedure Date 📀

CPT Base Units 😨

Weekend Case 😨

Holiday Case 🕝

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Step 1: Define Project

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Comorbidities

Diagnoses Procedures

Medications

Physiologic Labs Outcomes

Step 3: Choose Output

Step 4: Finalize

Cases

Perioperative case characteristics from the clinical documentation and professional fee billing systems. Some patient characteristics (ASA status) may change from one case to another and reflect the information known at the time of that case.

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to 10/14/2019

Add	
Next	

MPOG DataDirect Demo Query Project ID: 2169 Query Mode: Cohort

Cohort Size

Start Intraoperative 3,170,027 cases 29 institutions

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Demographics

Age: 18 years - 150 years BMI: 0.0 - 100.0

e: American Indian or Alaska Native or Asia ific Islander or Black, not of Hispanic Origin panic, Black or Hispanic, Color Unknown or

spanic, Black or Hispanic, Color Unknown or spanic, White or Middle Eastern or White, not of spanic Origin or Bi or Multi Racial or Other Race ot Listed

2,465,118 cases 28 institutions

	ASA Status 🔞	ASA 1 ASA 2 ASA 3 ASA 4 ASA 5 ASA 6
	Emergency Status 🕢	
t	Admission Type 🞯	 ✓ Inpatient ✓ Outpatient ✓ Other ✓ Unknown
	Case Duration 🔍	Anesthesia time 1 minute(s) to 1440 minute(s)
	Cardiac Case 🕢	🗹 Yes 🗹 No
	Anesthesia Technique General 🙆	🗹 Yes 🗹 No
	Anesthesia Technique LMA	🗹 Yes 🗹 No
	Endotracheal Tube Used	🗹 Yes 🖉 No
	Anesthesia Technique Neuraxial 💿	🖉 Yes 🖉 No
	Anesthesia Technique Block 🕑	🗹 Yes 🖉 No

01/01/2000

🗹 Yes 🛛 🗹 No

🗹 Yes 🗹 No

to 30

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DataDirect				Michael Ma	athis Logout
tep 1: Define Project	Comorbidities			Project	
tep 2: Filter		are pre-defined collections of ICD-9 and ICD-10 codes which assess for 31 patient comorbidities, commonly used for correlation to a higher risk of in-	Add	MPOG DataDirect Demo Qu Project ID: 2169	iery
Demographics		ties are only available for centers contributing Problem Summary List ICD9/10 or Discharge ICD9/10 data. ICD-10 coding was initially developed by the World the United States began requiring the use of ICD-10 coding October 1, 2015.		Query Mode: Cohort Last updated on 10/14/2019	
Cases	-				
Comorbidities	Elixhauser comorbidities 📀	1 comorbidity selected +		Cohort Size	
Diagnoses				Start : Intraoperative	3,170,027 cases 29 institutions
Procedures	Mode	Keep only cases with these comorbidites			
Notes		Remove cases with these comorbidites		Demographics Age: 18 years - 150 years	
Medications	Selection			BMI: 0.0 - 100.0 Race: American Indian or Alaska	Nativo or Asian o
Physiologic		Valvular Disease 🗙		Pacific Islander or Black, not of I	Hispanic Origin or
Labs				Hispanic, Black or Hispanic, Colo Hispanic, White or Middle Easter	
Outcomes				Hispanic Origin or Bi or Multi Ra	

Step 3: Choose Output

Step 4: Finalize

Cases

ASA 5

AnesTech General: Yes Endotracheal Tube: Yes – 0 ×

2,465,118 cases

28,367 cases

ASA Status: ASA 1 or ASA 2 or ASA 3 or ASA 4 or

Anesthesia time: 60 minutes - 1440 minutes

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Step 1: Define Project	Diagnoses			Project	
Step 2: Filter	-		Clinicity and analytical lists and Add	MPOG DataDirect Demo	Query
		uses are derived from billing sources (administrative or professional billing) or the clinician-entered problem summary list. Id ICD-10 codes. ICD-10 coding was initially developed by the World Health Organization in 1992, and the United States b	eren requiring the use of ICD 10 reding	Project ID: 2169 Query Mode: Cohort	
Demographics	October 1, 2015.		egan requiring the use of ICD-10 coding Next	Last updated on 10/14/2019	
Cases					
Comorbidities	Diagnosis Source	[Search all sources] +		Cohort Size	
Diagnoses				Start	3,170,027 cases
Procedures		✓ ICD-9 ✓ ICD-10 ✓ Include related ICD-9/ICD10		Intraoperative	29 institutions
Notes	Diagnosis code	6		Demographics	
	or description			Age: 18 years - 150 years	
Medications				BMI: 0.0 - 100.0 Race: American Indian or Alas	ska Native or Asian or
Physiologic	Present on admission	any 🔻 🔘		Pacific Islander or Black, not o	of Hispanic Origin or
Labs	Mode	Keep only cases with these diagnoses		Hispanic, Black or Hispanic, C Hispanic, White or Middle Ea	
Outcomes		Remove cases with these diagnoses		Hispanic Origin or Bi or Multi	
				Not Listed	0.465.440
Step 3: Choose Output	Selection	Atherosclerotic heart disease of native coronary artery with unspecified angina pectoris	8		2,465,118 cases 28 institutions
Step 4: Finalize		ICD-10	8	Cases	
		<i25.119> Atherosclerotic heart disease of native coronary artery with unspecified angina pectoris</i25.119>	8	Procedure Date: 01/01/2014	- 10/14/2019
		<i25.110> Atherosclerotic heart disease of native coronary artery with unstable angina pectoris</i25.110>	8	ASA Status: ASA 1 or ASA 2 or	ASA 3 or ASA 4 or
		<i25.111> Atherosclerotic heart disease of native coronary artery with angina pectoris with documented spase</i25.111>		ASA 5 Emergency Status: Yes or No	
		<i25.118> Atherosclerotic heart disease of native coronary artery with other forms of angina pectoris</i25.118>		Anesthesia time: 60 minutes	
		Atherosclerotic heart disease of native coronary artery with unstable angina pectoris Coronary atherosclerosis of native coronary artery	ă l	Cardiac Case: Yes	
		ICD-9	8	AnesTech General: Yes Endotracheal Tube: Yes	
		[414.01] Coronary atherosclerosis of native coronary artery	8		28,367 cases
		[414.00] Coronary atherosclerosis of unspecified type of vessel, native or graft			25 institutions
		[414.02] Coronary atherosclerosis of autologous vein bypass graft	8	Comorbidities	13,737 cases
		[414.03] Coronary atherosclerosis of nonautologous biological bypass graft	8	keep: Valvular Disease	22 institutions
		[414.04] Coronary atherosclerosis of artery bypass graft			
		[414.05] Coronary atherosclerosis of unspecified bypass graft			
		[414.06] Coronary atherosclerosis of native coronary artery of transplanted heart [414.07] Coronary atherosclerosis of bypass graft (artery) (vein) of transplanted heart	ă l		
		ICD-10	^o		
		<125.10> Atherosclerotic heart disease of native coronary artery without angina pectoris	8		
		<125.89> Other forms of chronic ischemic heart disease	8		
		<i25.810> Atherosclerosis of coronary artery bypass graft(s) without angina pectoris</i25.810>	0		
		<125.799> Atherosclerosis of other coronary artery bypass graft(s) with unspecified angina pectoris	8		
		<i25.811> Atherosclerosis of native coronary artery of transplanted heart without angina pectoris</i25.811>	0		
		<125.812> Atherosclerosis of bypass graft of coronary artery of transplanted heart without angina pectoris			
		Atherosclerotic heart disease of native coronary artery without angina pectoris ICD-9			
		[429.2] Cardiovascular disease, unspecified	ŏ		

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📙 Bookmarks 🛛 🛞 DataDirect Michael Mathis Logout Project Step 1: Define Project **Procedures** MPOG DataDirect Demo Query Add Step 2: Filter Perioperative procedures activity identified using Current Procedure Terminology (CPT) codes, professional fee charges, or using free text procedure descriptions. Next Demographics CPT search 😨 0 Type a CPT code or a procedure name Cases Cohort Size Comorbidities Actual or Scheduled Add 🚺 Type a procedure name to search, and hit 'Enter' or click 'Add' button to add 3,170,027 cases Start Diagnoses Procedure Text Procedures Mode Keep only cases with these procedures Demographics Notes Remove cases with these procedures Medications Selection 8 [Actual or Scheduled Procedure] mitral Physiologic Labs Outcomes 2,465,118 cases Step 3: Choose Output Step 4: Finalize Cases AnesTech General: Yes Endotracheal Tube: Yes 28,367 cases Comorbidities 13.737 cases Diagnoses or 414.03 or 414.04 or 414.05 or 414.06 or 414.07 4,988 cases 18 institutions Email Support/Feedback

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o G DataDirect					Michael Mathis Logout
Step 1: Define Project	Intraoperative N	lotes			Project
Step 2: Filter	-		tive notes, such as cardiopulmonary bypass, thoracic surgery, specific blocks, etc.	Add	MPOG DataDirect Demo Query Project ID: 2169
Demographics				Next	Query Mode: Cohort
Cases	Search Note Concept	MPOG Intraoperative Note Concept Name, ID, or Group Name	0		Last updated on 10/14/2019
Comorbidities	Mode	· Kana anka ana with the saint and a saint and a			Cohort Size
Diagnoses	Mode	 Keep only cases with these intraoperative notes Remove cases with these intraoperative notes 			Start 3,170,027 cases Intraoperative 29 institutions
Procedures	Selection				
Notes		[50122] Intubation Endotracheal Tube Size	0		Demographics Age: 18 years - 150 years
Medications		[50115] Intubation Laryngoscopy Blade Type and Size [50118] Intubation Number of Attempts			BMI: 0.0 - 100.0
Physiologic		[50119] Intubation Direct Laryngoscopy View	Ø		Race: American Indian or Alaska Native or Asian or Pacific Islander or Black, not of Hispanic
Labs		[50123] Intubation Endotracheal Tube Type [50334] Intubation - cricoid pressure applied			Origin or Hispanic, Black or Hispanic, Color Unknown or Hispanic, White or Middle Eastern
Outcomes		[50120] Intubation Bougie Introducer Used	0		or White, not of Hispanic Origin or Bi or Multi
Step 3: Choose Output		[50117] Intubation - ETT Placed [50197] Intubation - atraumatic			Racial or Other Race Not Listed 2,465,118 cases 28 institutions
Step 4: Finalize		[50695] Categorized note - Intubation [50205] Intubation Tube Note [50207] Intubation device and adjunct note [50688] Intubation - comment [50101] Intubation - Observed to be difficult			Cases Procedure Date: 01/01/2014 - 10/14/2019 ASA Status: ASA 1 or ASA 2 or ASA 3 or ASA 4 or ASA 5
					Emorgonou Status Vos or No

Anesiech General: Yes

28,367 cases 25 institutions

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13,737 cases

Comorbidities 13,

Diagnoses

diagnosis category: Clinical Problem Summary List, Professional Billing, Administrative Discharge Billing present on admission: any diagnosis type: none specified psl status: none specified keep codes: 125.110 or 125.110 or 125.111 or 125.118 or 125.10 or 125.80 or 125.810 or 125.791 or 125.811 or 125.812 or 414.01 or 414.00 or 414.02 or 414.03 or 414.00 or 414.05 or 414.07 or 429.2

> 4,988 cases 18 institutions

Procedures keep: mitral or m 1,035 cases 14 institutions

Email Support/Feedback

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MPOG DataDirect		Michael Mathis Logout
Step 2: Filter	Medication Administration	Project MPOG DataDirect Demo Query
Demographics	Perioperative medications that were administered. Medication data is at the case-level. Medications are searchable by drug name (generic only, MPOG concept name) or drug ID (MPOG concept ID). Bolus or infusion administrations can be identified distinctly.	Project ID: 2169 Query Mode: Cohort Last updated on 10/14/2019
Cases Comorbidities	Name of Medication	Cohort Size
Diagnoses Procedures Notes Medications Physiologic Labs Outcomes Step 3: Choose Output	Mode Keep only cases with these medications that were administered Remove cases with these medications that were administered Selection [10301] MIDAZOLAM (Bolus or Infusion)	Demographics Age: 18 years - 150 years BMI: 0.0 - 100.0 Race: American Indian or Alaska Native or Asian or Pacific Islander or Black, not of Hispanic Origin or Hispanic, Black or Hispanic, Color Unknown or Hispanic, White or Middle Eastern or White, not of Hispanic Origin or Bi or Multi Racial or Other Race Not Listed 2,465,118 cases 28 institutions Cases Procedure Date: 01/01/2014 - 10/14/2019 ASA Status: ASA 1 or ASA 2 or ASA 3 or ASA 4 or
Step 4: Finalize		ASA 5 Emergency Status: Yes or No Anesthesia time: 60 minutes - 1440 minutes Cardiac Case: Yes AnesTech General: Yes Endotracheal Tube: Yes 28,367 cases 25 institutions Comorbidities keep: Valvular Disease 22 institutions
		Diagnoses diagnosis category: Clinical Problem Summary List, Professional Billing, Administrative Discharge Billing present on admission: any diagnosis type: none specified psl status: none specified keep codes: I25.119 or I25.110 or I25.111 or I25.118 or I25.10 or I25.89 or I25.810 or I25.799 or I25.811 or I25.812 or 414.01 or 414.00 or 414.02 or 414.03 or 414.04 or 414.05 or 414.06 or 414.07 or 429.2 4,988 cases 18 institutions
		Procedures 1,035 cases keep: mitral or mv 14 institutions Intraoperative Notes Keep: 50122 or 50115 or 50118 or 50119 or 50123 or 50123 or 50120 or 50117 or 50197 or 50197 or 50695 or 50205 or 50207 or 50688 or 50101 50695 or 50205 or 50207 or 50688 or 50101 1,035 cases

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Step 1: Define Project Step 2: Filter Demographics	Physiologic Intraoperative physiologic data acquired from automated device interfaces (blood pressure, SpO2) or manually entered (Train-of-four ratio, EKG rhythm). Search by MPOG concept ID or concept name. Next	Project MPOG DataDirect Demo Query Project ID: 2169 Query Mode: Cohort Last updated on 10/14/2019
Cases Comorbidities Diagnoses	Name of Physiologic Data i Mode Keep only cases with these physiologic data i	Cohort Size BMII: 0.0 - 100.0 Race: American Indian or Alaska Native or Asian
Procedures Notes Medications	Selection [3080] Central Venous Pressure 3	or Pacific Islander or Black, not of Hispanic Origin or Hispanic, Black or Hispanic, Color Unknown or Hispanic, White or Middle Eastern or White, not of Hispanic Origin or Bi or Multi Racial or Other Race Not Listed
Physiologic Labs Outcomes	Minimum number of values 1	2,465,118 cases 28 institutions Cases Procedure Date: 01/01/2014 - 10/14/2019
Step 3: Choose Output Step 4: Finalize		ASA Status: ASA 1 or ASA 2 or ASA 3 or ASA 4 or ASA 5 Emergency Status: Yes or No Anesthesia time: 60 minutes - 1440 minutes Cardiac Case: Yes
		AnesTech General: Yes Endotracheal Tube: Yes 28,367 cases 25 institutions Comorbidities heep: Valvular Disease 22 institutions Diagnoses diagnosis category: Clinical Problem Summary List, Professional Billing, Administrative
		Discharge Billing present on admission: any diagnosis type: none specified psl status: none specified keep codes: I25.119 or I25.110 or I25.111 or I25.118 or I25.10 or I25.89 or I25.810 or I25.799 or I25.811 or I25.812 or 414.01 or 414.00 or 414.02 or 414.03 or 414.04 or 414.05 or 414.06 or 414.07 or 429.2 4,988 cases 18 institutions
		Procedures 1,035 cases keep: mitral or mv 14 institutions
		Intraoperative Notes keep: 50122 or 50115 or 50118 or 50119 or 50123 or 50334 or 50120 or 50117 or 50197 or 50695 or 50205 or 50207 or 50688 or 50101 1,035 cases 14 institutions
Email Support/Feedback		Medication Administration940 caseskeep: 1030114 institutions

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BataDirect						Michael	Mathis Logout
Step 1: Define Project	Laboratory					Project	
Step 2: Filter		dentification criteria which includes lab results. This is patient-level data	a, but can be connec	ted to specific cases using result dates and case time linkage	s. Add	MPOG DataDirect Demo Project ID: 2169	Query
Demographics					Next	Query Mode: Cohort Last updated on 10/14/2019	
Cases	Name of Laboratory Value			0			
Comorbidities	Mode	• Keep only cases with these laboratory values				Cohort Size	an Middle Fraters
Diagnoses		 Remove cases with these laboratory values 				Unknown or Hispanic, White or White, not of Hispanic Ori	igin or Bi or Multi
Procedures	Selection					Racial or Other Race Not List	ted 2,465,118 cases
Notes		[5002] Formal lab - Creatinine, Serum/Plasma		8			28 institutions
Medications	Date of Lab Test	Any time Any time				Cases Procedure Date: 01/01/2014	4 - 10/14/2019
Physiologic	Date of Lab Test	O days before Anesthesia Start ▼				ASA Status: ASA 1 or ASA 2 o ASA 5	
Labs (Ouring Intraoperative Period (Anesthesia Start to End)				Emergency Status: Yes or No	
Outcomes						Anesthesia time: 60 minutes Cardiac Case: Yes	- 1440 minutes
Step 3: Choose Output						AnesTech General: Yes Endotracheal Tube: Yes	
Step 4: Finalize							28,367 cases 25 institutions
						Comorbidities keep: Valvular Disease	13,737 cases 22 institutions
						Diagnoses diagnosis category: Clinical P List, Professional Billing, Adm Discharge Billing present on admission: any diagnosis type: none specified keep codes: 125.119 or 125.11 125.118 or 125.10 or 125.89 or or 125.811 or 125.812 or 414. 414.02 or 414.03 or 414.04 or or 414.07 or 429.2	ninistrative ed 10 or 125.111 or rr 125.810 or 125.799 of 1414.00 or or 414.05 or 414.06 4,988 cases 18 institutions
						Procedures keep: mitral or mv	1,035 cases 14 institutions
						Intraoperative Notes keep: 50122 or 50115 or 501 50123 or 50334 or 50120 or 50695 or 50205 or 50207 or	50117 or 50197 or

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Medication Administration940 caseskeep: 1030114 institutions

Physiologic keep: 3080

885 cases 13 institutions Min.# of values per case: 1

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BataDirect		Michael Mathis Logout
Step 1: Define Project	Outcomes	Project
Step 2: Filter	Clinical outcomes derived from Electronic Health Record and Administrative Data.	MPOG DataDirect Demo Query Project ID: 2169
Demographics	Next	Query Mode: Cohort
Cases	Acute Kidney Injury 🗌 No AKI	Last updated on 10/14/2019
Comorbidities	Stage 1 AKI	Cohort Size
Diagnoses	Stage 2 AKI Stage 3 AKI	_, ,
	No preoperative creatinine	Cases
Procedures	Preoperative renal failure	Procedure Date: 01/01/2014 - 10/14/2019
Notes	 No postoperative creatinine Missing or invalid 	ASA Status: ASA 1 or ASA 2 or ASA 3 or ASA 4 or ASA 5
Medications		Emergency Status: Yes or No
Physiologic		Anesthesia time: 60 minutes - 1440 minutes Cardiac Case: Yes
Labs	30-day Hospital Mortality 🖉 Yes 🖉 No 🔲 ASA6 💭 Missing 💭 Conflicting	AnesTech General: Yes
Outcomes		Endotracheal Tube: Yes 28,367 cases
Step 3: Choose Output		25 institutions
Step 4: Finalize		Comorbidities13,737 caseskeep: Valvular Disease22 institutions
		Diagnoses diagnosis category: Clinical Problem Summary List, Professional Billing, Administrative Discharge Billing present on admission: any diagnosis type: none specified psl status: none specified keep codes: 125.119 or 125.110 or 125.111 or 125.118 or 125.812 or 125.89 or 125.810 or 125.799 or 125.811 or 125.812 or 414.01 or 414.00 or 414.02 or 414.03 or 414.04 or 414.05 or 414.06 or 414.07 or 429.2 4,988 cases 18 institutions
		Procedures1,035 caseskeep: mitral or mv14 institutions
		Intraoperative Notes keep: 50122 or 50115 or 50118 or 50119 or 50123 or 50334 or 50120 or 50117 or 50197 or 50695 or 50205 or 50207 or 50688 or 50101 1,035 cases 14 institutions
		Medication Administration 940 cases keep: 10301 14 institutions
		Physiologic 885 cases keep: 3080 13 institutions Min.# of values per case: 1 14
Email Support/Feedback		Laboratory 882 cases keep: 5002 12 institutions Range: any time

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tep 1: Define Project	Outcomes		Pr	oject	
tep 2: Filter		om Electronic Health Record and Administrative Data.		POG DataDirect Demo C	Query
Demographics	clinical outcomes derived in	In Lieutonic Health Record and Administrative Data.	Qui	ject ID: 2169 ery Mode: Cohort	
Cases	Acute Kidney Injury	🗆 No AKI	Las Disable this filter	t updated on 10/14/2019	
Comorbidities		Stage 1 AKI Stage 2 AKI	Co	hort Size	
liagnoses		Stage 2 AN	Delete this filter		ASA 3 or ASA
rocedures		No preoperative creatinine	ASA Em	4 5 ergency Status: Yes or No	
lotes		Preoperative renal failure No postoperative creatinine	And	esthesia time: 60 minutes -	
ledications		Missing or invalid	Ane	diac Case: Yes esTech General: Yes	
hysiologic			End	lotracheal Tube: Yes	28,367 cas
abs	30-day Hospital Mortality	🗹 Yes 🖉 No 📄 ASA6 📄 Missing 📄 Conflicting			25 institutio
outcomes				morbidities	13,737 ca
p 3: Choose Output				p: Valvular Disease Ignoses	22 instituti
			dia List Dis pre dia psl kee 125 or 414 414 or 4 0 r 4 14 14 V r c kee	prosis category: Clinical Pr , Professional Billing, Admi charge Billing sent on admission: any gnosis type: none specified p codes: 125.119 or 125.11 .118 or 125.812 or 125.81 .02 or 414.03 or 414.04 or 14.07 or 429.2 cecdures p: mitral or mv raoperative Notes p: 50122 or 50115 or 5011 .23 or 50334 or 50120 or 5	nistrative 0 or 125.111 125.810 or 1 1 or 414.00 414.05 or 4 4,988 c 18 institu 1,035 c 14 institu 8 or 50119
			500 Me kee Mir Lat	edication Administration p: 10301 p: 3080 h.# of values per case: 1 p: 5002	0688 or 501 1,035 c 14 institu

Email Support/Feedback

- 0 ×

879 cases

Outcomes

Acute Kidney Injury: any 12 institutions 30-day Mortality: Yes or No

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🗞 MPOG DataDirect			Michael Mathis Logout
Step 1: Define Project	Choose Output Items		Project
Step 2: Filter	Now that you've chosen which cases will be included, you will need to define which data elements will be re-	sturned in the result set	MPOG DataDirect Demo Query Project ID: 2169
Step 3: Choose Output			Query Mode: Cohort
	Search Output Items		Last updated on 10/14/2019
Step 4: Finalize			Cohort Size
			ASA Status: ASA 1 or ASA 2 or ASA 3 or ASA 4 or ASA 5
	Available Output Items	Selected Output Items	Emergency Status: Yes or No Anesthesia time: 60 minutes - 1440 minutes
	Anesthesia Technique Used: Neuraxial Neuraxial block attempted perioperatively		Cardiac Case: Yes
	Arrived Intubated		AnesTech General: Yes Endotracheal Tube: Yes
	Patient already intubated prior to entering the OR		28,367 cases 25 institutions
	Arterial Line Placed Arterial line placed or recorded perioperatively		Comorbidities 13,737 cases keep: Valvular Disease 22 institutions
	ASA Status ASA Physical Status Classification System Status		Diagnoses diagnosis category: Clinical Problem Summary
	Body Region of Primary Procedure + Classification of body region for the procedure		List, Professional Billing, Administrative Discharge Billing present on admission: any
	Days Since Last Case + Duration in days since the patient's last case		diagnosis type: none specified psl status: none specified keep codes: I25.119 or I25.110 or I25.111 or
	Emergency Status ASA "E" physical status classification		125.118 or 125.10 or 125.89 or 125.810 or 125.799 or 125.811 or 125.812 or 414.01 or 414.00 or 414.02 or 414.03 or 414.04 or 414.05 or 414.06
	Endotracheal Tube Used + Endotracheal tube attempted during the case		or <u>414.07</u> or <u>429.2</u> 4,988 cases 18 institutions
	Hospital Length of Stay + Patient hospital length of stay in days		Procedures 1,035 cases keep: mitral or mv 14 institutions
	Institution +		Intraoperative Notes keep: 50122 or 50115 or 50118 or 50119 or
	Intentional Hypothermia +		50123 or 50334 or 50120 or 50117 or 50197 or 50695 or 50205 or 50207 or 50688 or 50101 1,035 cases
	Intubated Awake Documented intubation (awake, asleep, unknown)		14 institutions Medication Administration 940 cases
	Intubated Fiberoptic + Attempted fiberoptic intubation (not glidescope)		keep: 10301 14 institutions Physiologic 885 cases
	Patient Last Known Alive Date + Time/date of last documented clinical observation		keep: 3080 13 institutions Min.# of values per case: 1
	Postop Destination + Destination for the patient following the case		Laboratory 882 cases keep: 5002 12 institutions Range: any time 12 institutions

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Email Support/Feedback

Procedure Location Classifications

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879 cases

Outcomes

Acute Kidney Injury: any 30-day Mortality: Yes or No – 0 ×

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DataDirect				Michael Mathis	is Logo
ep 1: Define Project	Choose Output Items			Project	
ep 2: Filter	Now that you've chosen which cases will be included, you will need to define which data elem-	ents will be returned in the result set.	Save	MPOG DataDirect Demo Query Project ID: 2169	1
ep 3: Choose Output	Search Output Items		Next	Query Mode: Cohort Last updated on 10/14/2019	
ep 4: Finalize	All	•		Cohort Size	
				ASA Status: ASA 1 or ASA 2 or ASA 3	, 3 or ASA
	Available Output Items	Selected Output Items		ASA 5 Emergency Status: Yes or No	
	Anesthesia Technique Used: Block Peripheral block attempted perioperatively	+ ASA Status ASA Physical Status Classification System Status	Options X	Anesthesia time: 60 minutes - 1440 Cardiac Case: Yes AnesTech General: Yes) minute
	Anesthesia Technique Used: General General anesthetic attempted operatively	Age Patient age in years	×		,367 ca instituti
	Anesthesia Technique Used: Neuraxial Neuraxial block attempted perioperatively	Height Patient height in centimeters	×		,737 ca instituti
	Arrived Intubated Patient already intubated prior to entering the OR	+ Sex Categorical patient sex	×	Diagnoses diagnosis category: Clinical Problem	
	Arterial Line Placed Arterial line placed or recorded perioperatively	+ Weight Patient weight in kilograms	×	List, Professional Billing, Administrative Discharge Billing present on admission: any	
	Body Region of Primary Procedure Classification of body region for the procedure	+ Estimated Blood Loss Estimated blood loss recorded for the case	×	diagnosis type: none specified psl status: none specified keep codes: 125.119 or 125.110 or 125.11	25.111
	Days Since Last Case Duration in days since the patient's last case	+ Fresh Frozen Plasma Total intraop fresh frozen plasma administered	Options X	125.118 or 125.10 or 125.89 or 125.81 or 125.811 or 125.812 or 414.01 or 4 414.02 or 414.03 or 414.04 or 414.0	310 or 12 414.00
	Emergency Status ASA "E" physical status classification	+ Packed Red Blood Cells Total intraoperative PRBCs adminstered	Options X		,988 ca
	Endotracheal Tube Used Endotracheal tube attempted during the case	+ Platelets Total intraoperative platelets administered	Options X	Procedures 1,0	,035 ca institut
	Hospital Length of Stay Patient hospital length of stay in days	+ MIDAZOLAM Unprocessed raw data for medication midazolam	×	Intraoperative Notes keep: 50122 or 50115 or 50118 or 5	
	Institution Institution where the case was documented	+ Postop Creatinine First lab value documented after Case End	×	50123 or 50334 or 50120 or 50117 of 50695 or 50205 or 50207 or 50688 of 1,0	
	Intentional Hypothermia Intentional hypothermia documented in the case	+ Cardiopulmonary Bypass Duration Difference of (Bypass End - Bypass Start)	×	Medication Administration	institut 940 c
	Intubated Awake Documented intubation (awake, asleep, unknown)	Baseline Blood Pressure First recorded non-artifact mean blood pressure	×	Physiologic 8	institut 885 c
	Intubated Fiberoptic Attempted fiberoptic intubation (not glidescope)	Train of Four Measurements Perioperative train of four readings	×	Min.# of values per case: 1	institut
	Patient Last Known Alive Date Time/date of last documented clinical observation	+			institut
nail Support/Feedback	Postop Destination Destination for the patient following the case	•			879 ca instituti

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BataDirect

Step 4: Finalize

Review and Finalize Step 2: Filter Here you can review your choices in detail and save documents relevant to your proposal.

Step 3: Choose Output **Cohort Details**

Project ID: 2169 Query Mode: multiCenterResearch Last updated on 10/14/2019

Filter	Cases	Patients	Institutions
Start	3,170,027	2,081,081	29
Demographics	2,465,118	1,589,653	28
Cases	28,367	26,888	25
Comorbidities	13,737	13,174	22
Diagnoses	4,988	4,768	18
Procedures	1,035	1,021	14
Intraoperative Notes	1,035	1,021	14
Medication Administration	940	929	14
Physiologic	885	874	13
Laboratory	882	871	12
Outcomes	879	868	12

Query Output Specification

Table 1 - Main Case List
This table contains a single row for each case in the research cohort.

Display Name	Source	Data Direct Category	Ī
MPOG_Case_ID	Collation Group: MPOG Case ID	Basic Elements	
Institution	Institution Randomizer	Basic Elements	
ASA Status	Collation Group: ASA Status Classification	Case Characteristics	
Age	Collation Group: Age in Years	Demographics	
Height	Collation Group: Height	Demographics	
Sex	Collation Group: Sex	Demographics	
Weight	Collation Group: Weight	Demographics	

Michael Mathis Logout Project MPOG DataDirect Demo Query Download Docs Download Data (Unavailable in Cohort Mode) Cohort Size

Endotracheal Tube: Yes 28,367 cases

Comorbidities

Diagnoses

414.02 or 414.03 or 414.04 or 414.05 or 414.06 or 414.07 or 429.2 4,988 cases

18 institutions

1,035 cases 14 institution

13,737 cases

(2)

Procedures

Intraoperative Notes

1,035 cases

Medication Administration 940 cases

Physiologic

885 cases

882 cases

Laboratory

Outcomes

879 cases 12 institution

Email Support/Feedback

DataDirect v2.0

Outputs

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- Single vs. Repeated Measures

	Example	Values Returned
Single Measures (One value per case)		
Repeated Measures (Many values per case)		

MULTICENTER PERIOPERATIVI OUTCOMES GROUP

DataDirect v2.0

• Outputs

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- Single vs. Repeated Measures

	Example	Values Returned
Single Measures (One value per case)	Age	MPOG Case ID, MPOG Patient ID, Date of Procedure, Value
Repeated Measures (Many values per case)		



DataDirect v2.0

Outputs

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- Single vs. Repeated Measures

	Example	Values Returned
Single Measures (One value per case)	Age	MPOG Case ID, MPOG Patient ID, Date of Procedure, Value
Repeated Measures (Many values per case)	Blood pressure	MPOG Case ID, MPOG Patient ID, BP Source, Dates/Times of Measurements, Values



Take-Home Points

- DataDirect can catalyze research/QI, without needing:
 - ... to be a computer programmer
 - ... to be a 1st-degree relative of your hospital's CMIO
- DataDirect **<u>query modes</u>** can be tailored to use-case:
 - Cohort ID mode → Research/QI "speed dating"
 - Quality Report \rightarrow Improve care at your hospital
 - − Research → High-impact science



Thank You

