Data Direct 2.0 User Guide

Data Direct Overview

- Data Direct is an application that allows users to create queries using data submitted to MPOG for quality improvement (QI) and research purposes.
- It contains multiple filters that can help easily identify a cohort of patients and access data following appropriate approvals

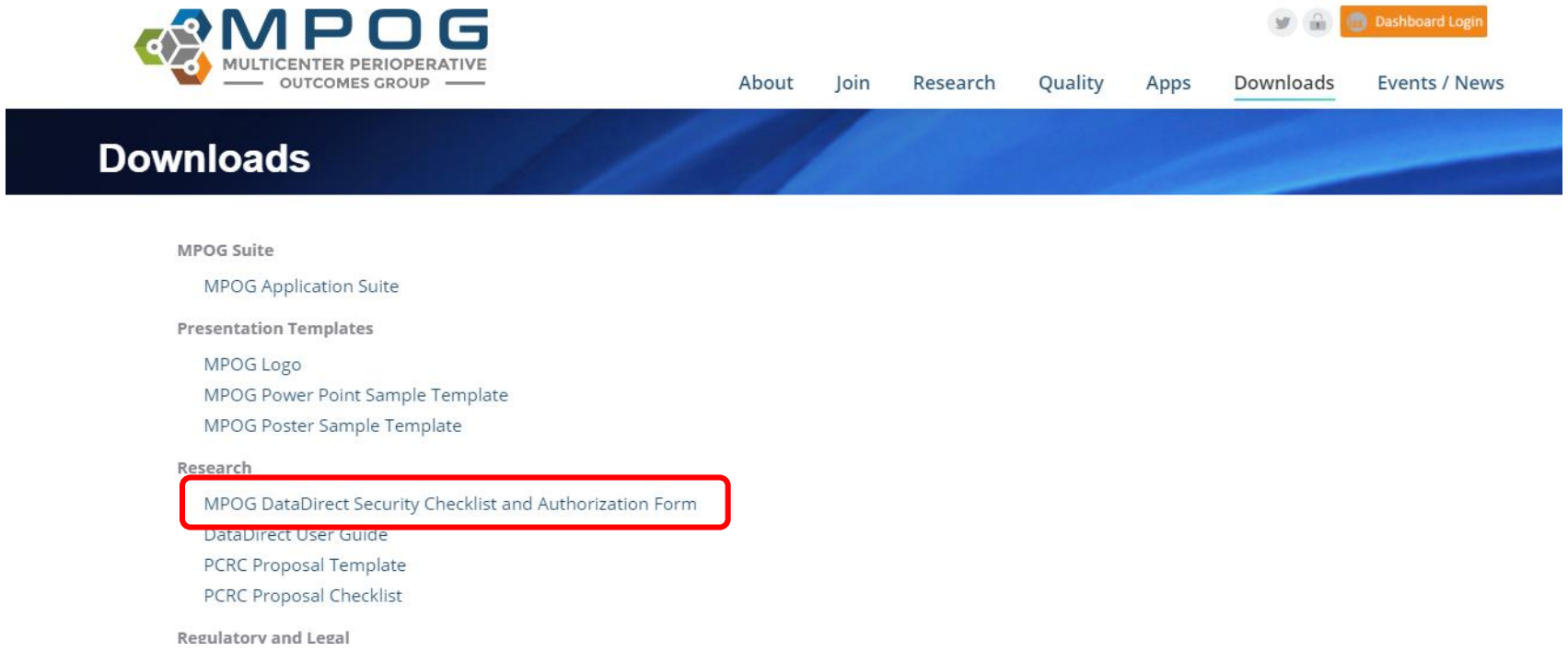
Data Direct Overview

- Researchers can use Data Direct to identify patient, case, and institution counts for the cohort they are interested in studying.
- Quality Champions can generate a list of patients to audit outcomes or processes of case. As an example, the Quality Champion for the site may be interested in identifying patients who received reversal for neuromuscular blockade and compare that to institution reintubation rates to identify if any correlation exists.

Gaining Data Direct Access

- Data Direct contains a limited dataset. Protected Health Information is excluded except for dates of service.
- However, because Data Direct may contain information regarding hospital level quality indicators (i.e. hospital mortality), approval from the appropriate hospital department (i.e. Quality or Health Information Management) is required.

Gaining DataDirect Access



- To gain access to DataDirect, an authorization form must be completed and sent to the MPOG coordinating center. This form can be found on our website https://mpog.org/downloads

Gaining Data Direct Access

- Please scan and email the completed form to mpog-admin@med.umich.edu. You will be contacted once login permissions have been updated. Access expires every six months. Users must renew to maintain access.

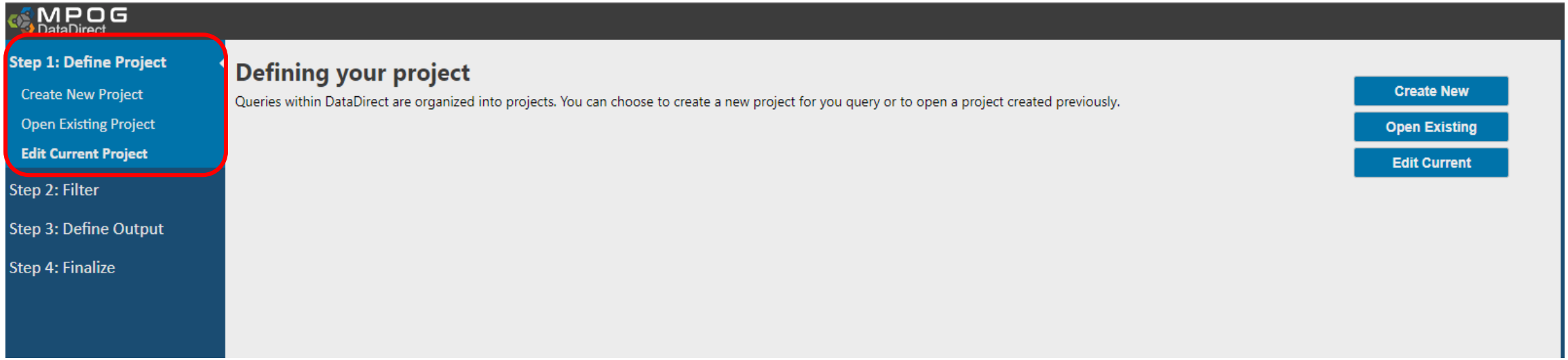
Generating a Query

When creating a query, there are three modes you can choose from.

- **Cohort Only** generates a *count* to rapidly determine feasibility of a research or QI project. There is no ability to download data, and no additional approval (e.g. Institutional Review Board) is required for access.
- **Quality Report** generates a cohort count, data query, and case list for a specific site. Although Data Direct will display final case counts, institutions will remain anonymized.
- **Single Center Research** allows for cohort identification and data access from your site only.
- **Multi-Center Research** allows for cohort identification and data access from multiple sites and requires approval from the Perioperative Clinical Research Committee (PCRC). Steps for PCRC review are found here: https://mpog.org/pcrc/

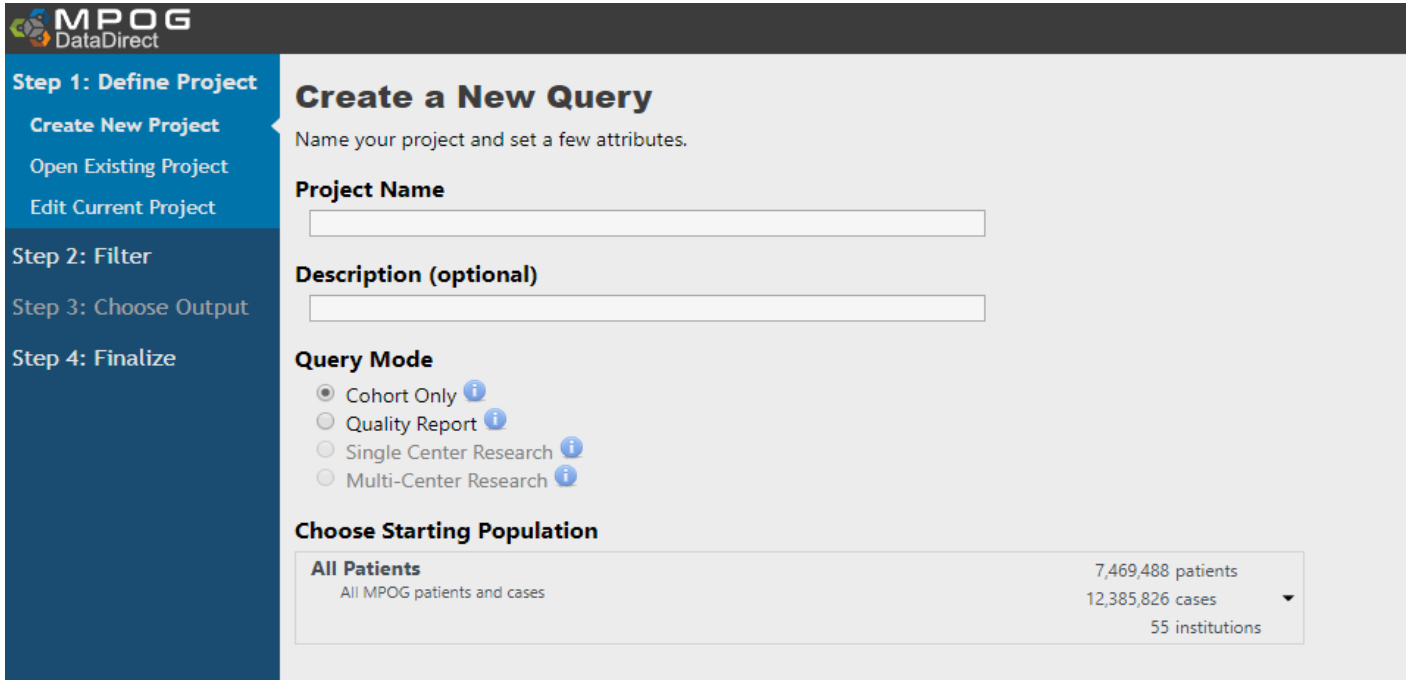
Step 1: Define your Project

- Choose from **New, Existing,** or **Edit Current**



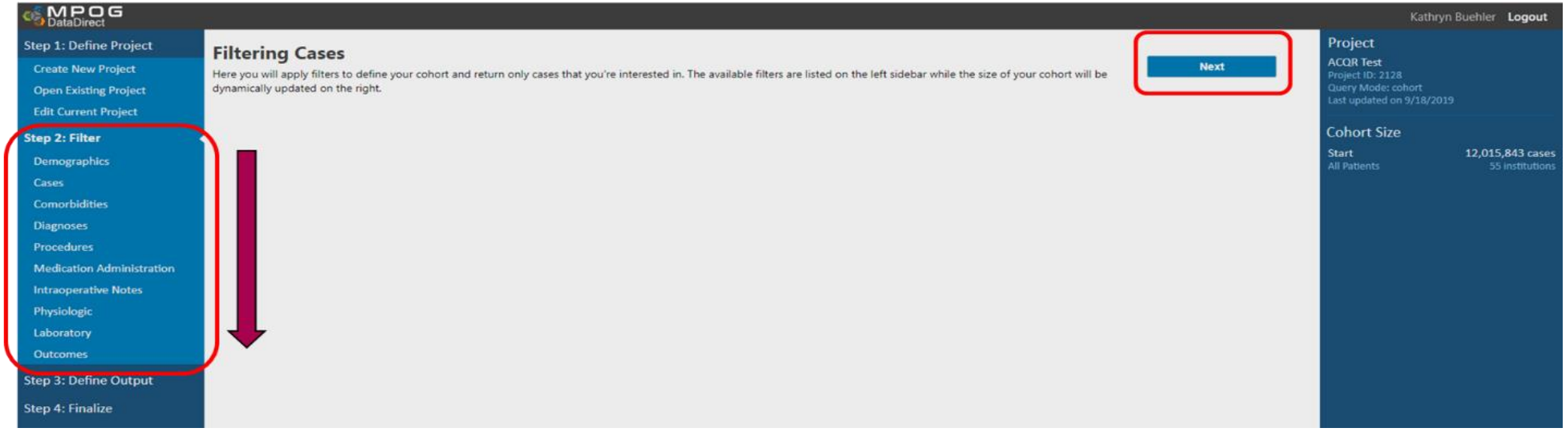
Creating a New Query

- Enter a name, description (optional), and reason for your query



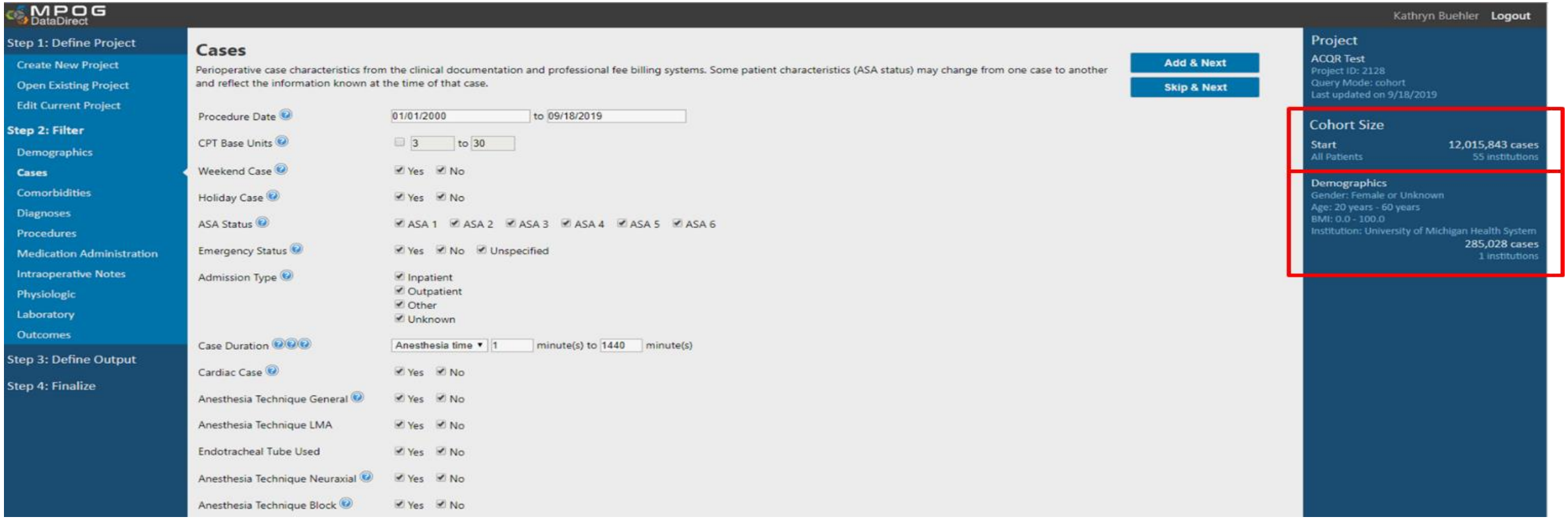
Step 2: Filtering Cases

- Next, begin defining criteria for your query. Choose from the filters listed in the left panel. The **Next** button advances users through the list of filters as they are added.



Cohort Results

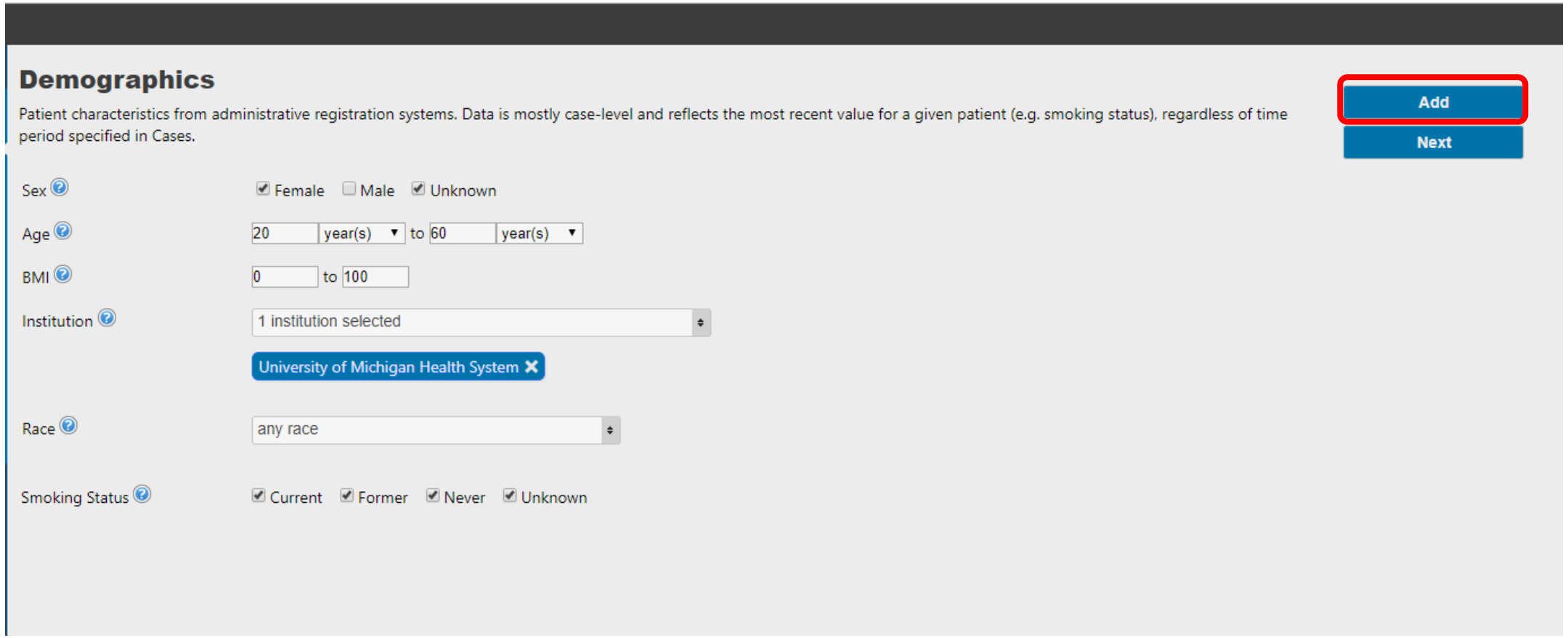
- As Data Direct retrieves data to match the selected criteria, the right panel of the screen will display final counts. This will refresh as filters are added (see next slide). *Note: your query is also saved to your individual profile in Data Direct.*
- Results include:
  - Initial patient, case, and institution counts
  - Saved query criteria
  - Sequential counts of patient data matching each successive query criteria.


MPOG DataDirect
Kathryn Buehler Logout
Step 1: Define Project
Create New Project
Open Existing Project
Edit Current Project
Step 2: Filter
Demographics
Cases
Comorbidities
Diagnoses
Procedures
Medication Administration
Intraoperative Notes
Physiologic
Laboratory
Outcomes
Step 3: Define 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.
Add & Next
Skip & Next
Procedure Date 01/01/2000 to 09/18/2019
CPT Base Units 3 to 30
Weekend Case Yes No
Holiday Case Yes No
ASA Status ASA 1 ASA 2 ASA 3 ASA 4 ASA 5 ASA 6
Emergency Status Yes No Unspecified
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
Project
ACQR Test
Project ID: 2128
Query Mode: cohort
Last updated on 9/18/2019
Cohort Size
Start 12,015,843 cases
All Patients 55 institutions
Demographics
Gender: Female or Unknown
Age: 20 years - 60 years
BMI: 0.0 - 100.0
Institution: University of Michigan Health System
285,028 cases
1 institutions

Adding Filters

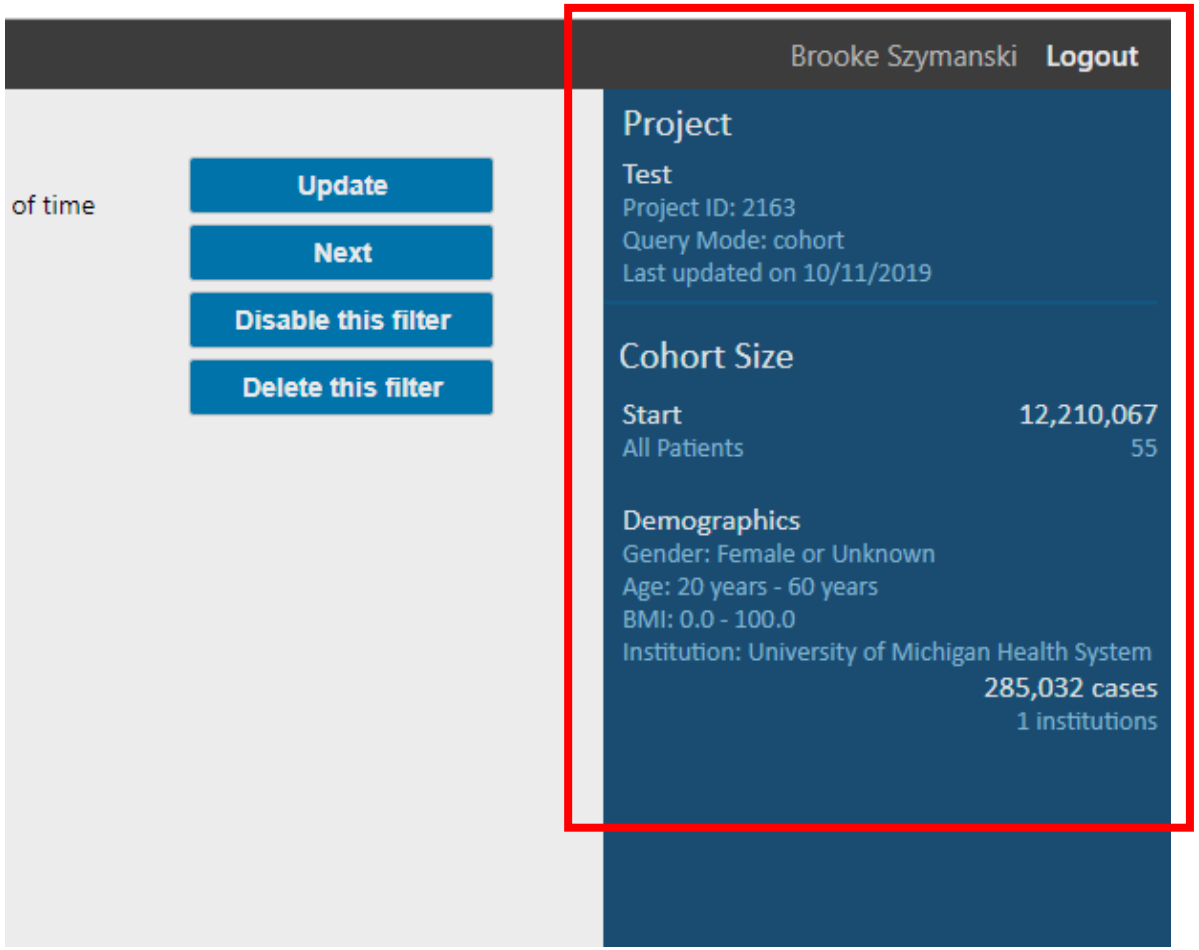
Demographics

- Demographics are *patient-level* characteristics available from the administrative registry systems, *not* case-level information.



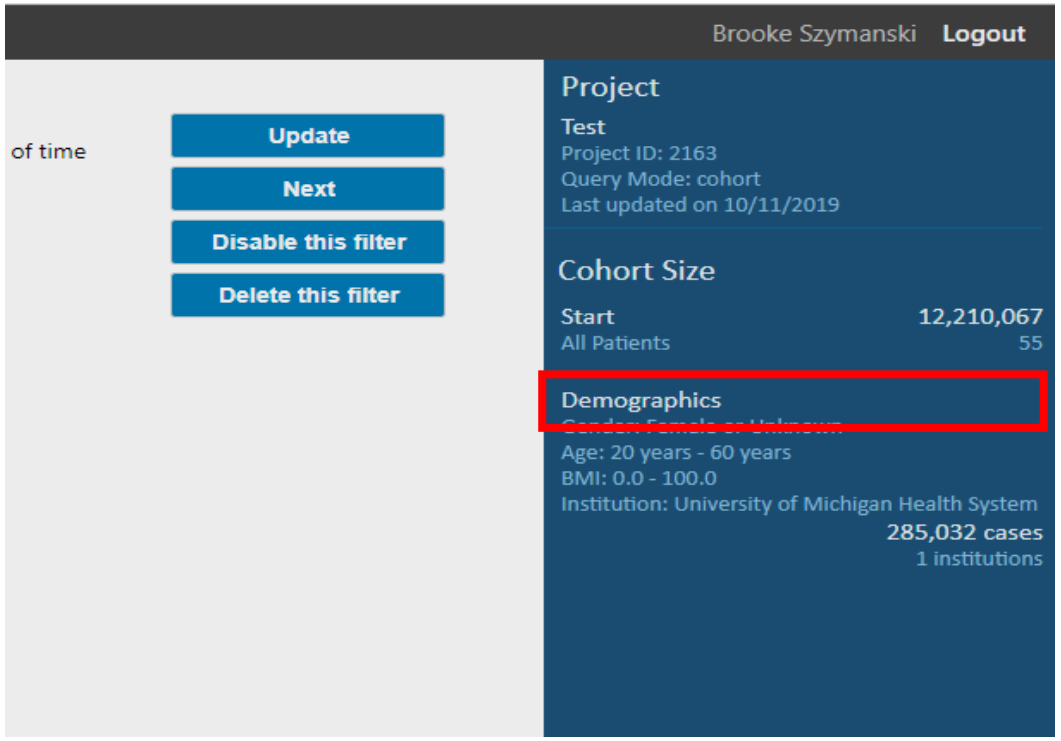
- **Select** the checkboxes beside the characteristics to *include* them in your query. De-select items you do not wish to include. For example, to find only Female patients, de-select Male and Unknown under Gender. You can select all institutions or only your own institution in cohort mode.
- Click **Add** to add these criteria to your query:

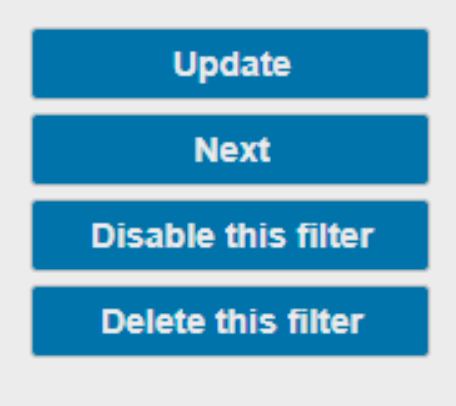
- The selected criteria will now appear in the box to the right



Filter Navigation

- As filters are created and updated, *Filter Navigation* buttons can be used in the top right corner of Data Direct. As you build your query, check the right panel to verify that your criteria have been added. At any time, you may enable/disable, edit or remove an individual filter from your query.
- First, click the header of the filter you would like to change





- Then, use the Filter Navigation buttons in the upper right-hand corner to make modifications.
- **Update**: When making changes to an existing filter, use **Update** to update filters on the right
- **Next**: Will move the user to the next step (i.e. the next filter down the list on the right).
- **Disable this filter**: Will disable the filter from the query. It will not be deleted but allows the user to view the difference in results when applying the filter vs. disabling the filter.
- **Delete this filter**: Will delete the filter entirely.

Cases

To continue building your query, select an additional filter category, for example, **Cases**.

- Choosing **Next** on the above screen will advance the user to the Cases filter.
- Check boxes you wish to select within each field.
- Click **Add** to apply the filter and **Next** to advance to the next filter (e.g. Comorbidities).

Review the updated result panel on the right side of the screen each time you click **Add** to note the additional criteria have been *saved* to your query.

(see next slide)

Step 1: Define Project
Step 2: Filter
- Demographics
- **Cases**
- Comorbidities
- Diagnoses
- Procedures
- Notes
- 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.

Update **Next** **Disable this filter** **Delete this filter**

Procedure Date	01/01/2000 to 10/11/2019
CPT Base Units	☐ 3 to 30
Weekend Case	☑ Yes ☑ No
Holiday Case	☑ Yes ☑ No
ASA Status	☑ ASA 1 ☑ ASA 2 ☑ ASA 3 ☑ ASA 4 ☑ ASA 5 ☑ ASA 6
Emergency Status	☑ Yes ☑ No ☑ Unspecified
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

Project

Test
Project ID: 2163
Query Mode: cohort
Last updated on 10/11/2019

Cohort Size

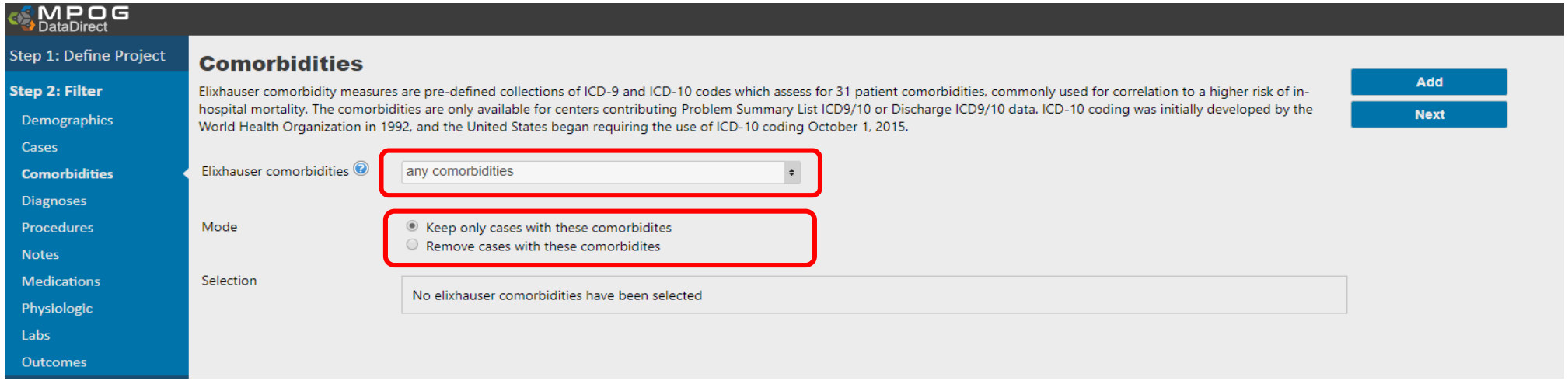
Start 12,210,067
All Patients 55

Demographics
Gender: Female or Unknown
Age: 20 years - 60 years
BMI: 0.0 - 100.0
Institution: University of Michigan Health System
285,032 cases
1 institutions

Cases
Procedure Date: 01/01/2000 - 10/11/2019
Anesthesia time: 1 minute - 1440 minutes
283,840 cases
1 institutions

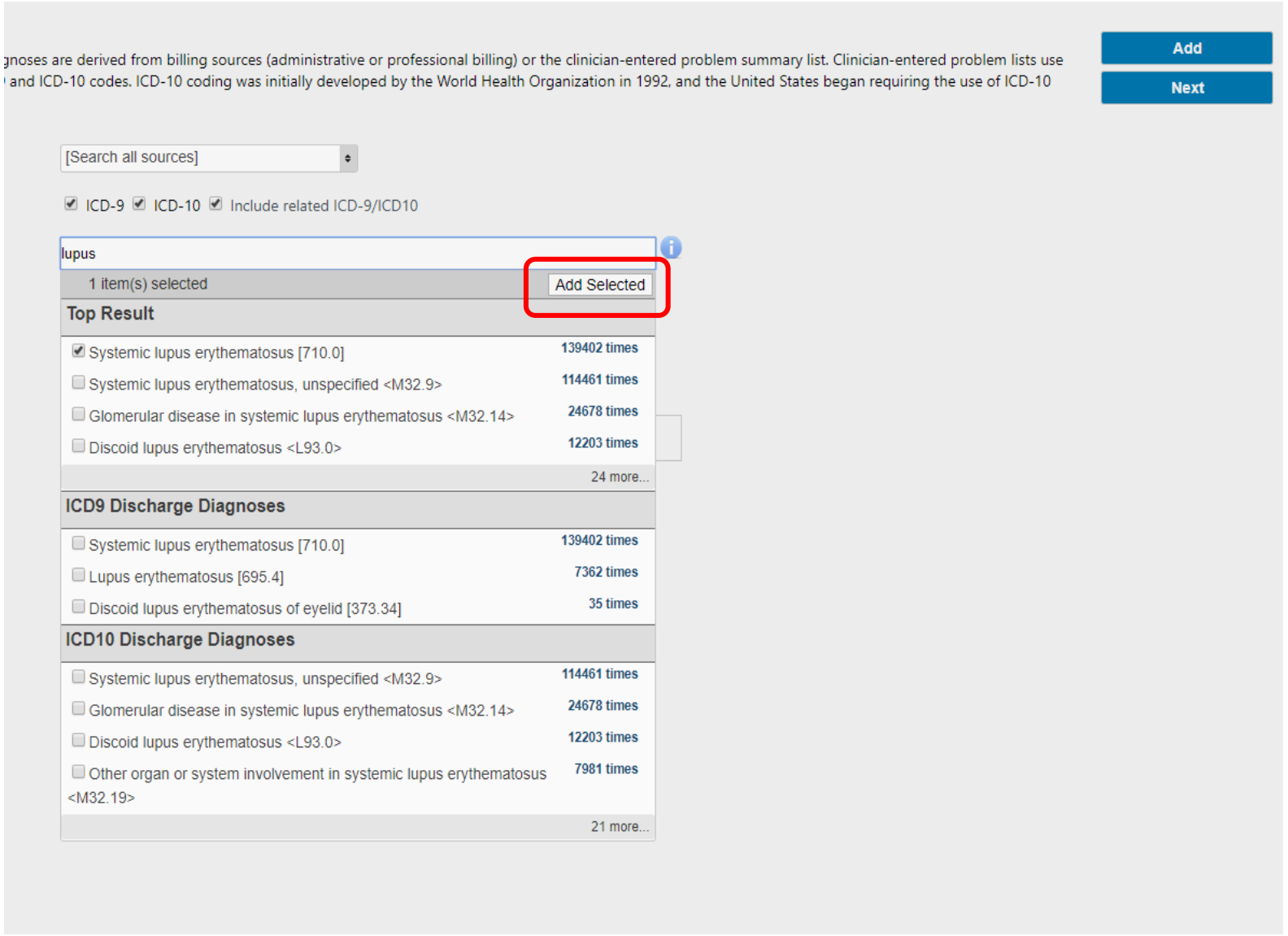
Comorbidities

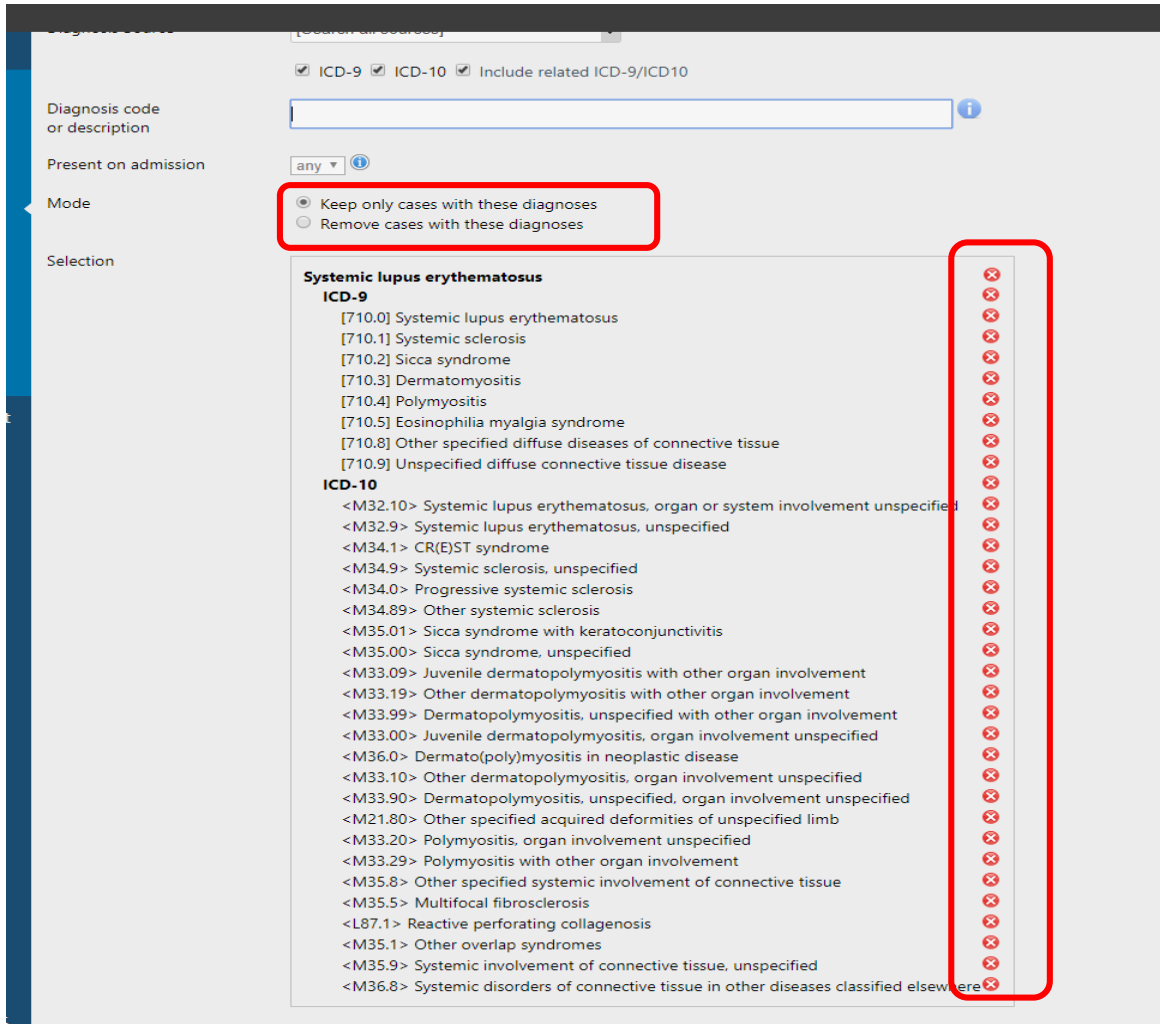
- Check the boxes from the dropdown menu of comorbidities you want to include in your query. Select if you would like to keep only cases with those comorbidities or remove cases with the selected comorbidities.



Diagnoses

- Begin typing the desired diagnosis name (or associated ICD-9 and ICD-10 codes) into the Diagnosis Code field. ICD-10 codes were required as of October 1, 2015, therefore historical data may only include ICD-9 codes.
- If you are interested in capturing diagnosis data for a case that occurred before this date, please choose both ICD-9 and ICD-10 codes. Select the codes you desire, then click "**Add Selected"** (see next slide)

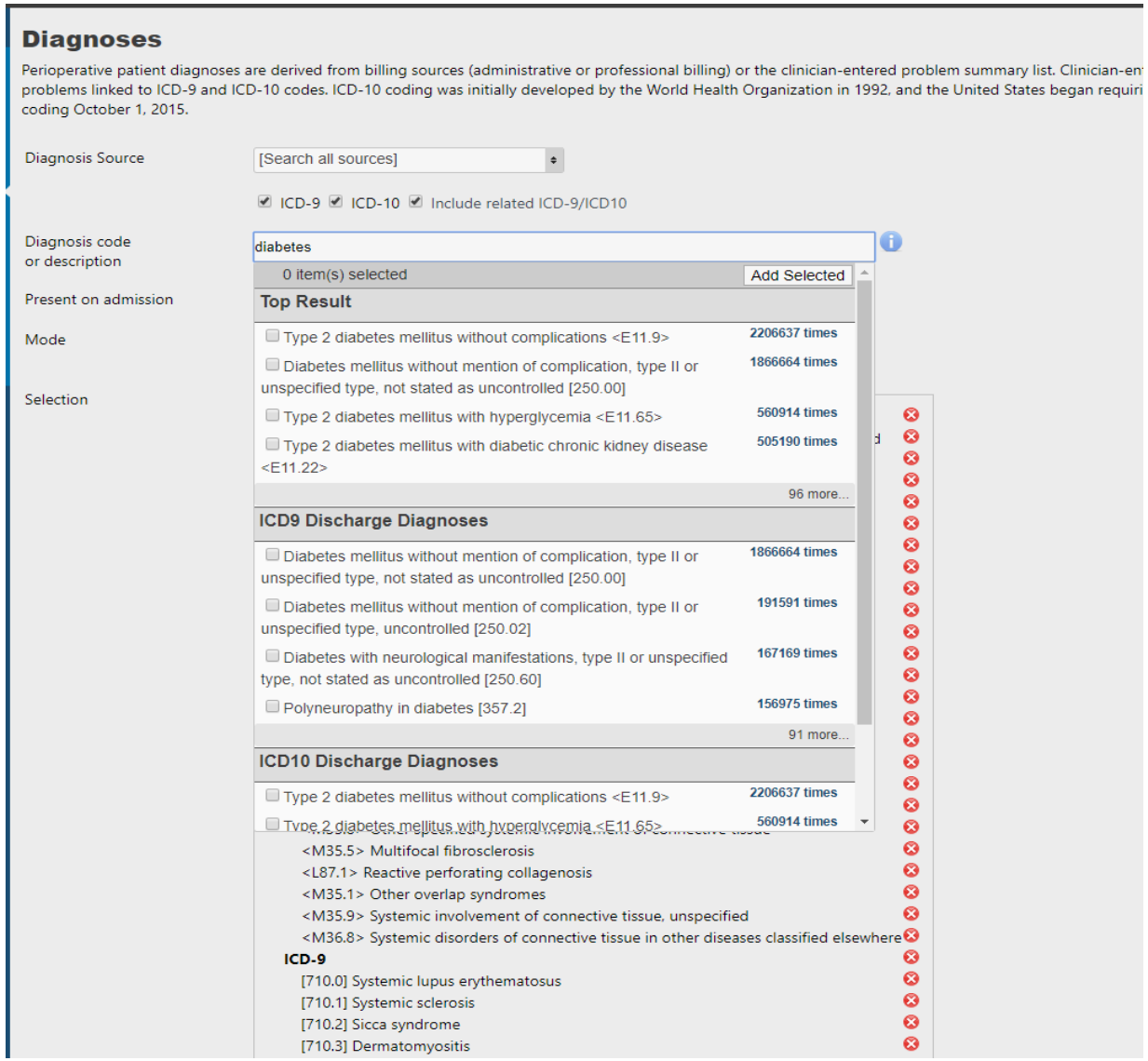

gnoses are derived from billing sources (administrative or professional billing) or the clinician-entered problem summary list. Clinician-entered problem lists use
and ICD-10 codes. ICD-10 coding was initially developed by the World Health Organization in 1992, and the United States began requiring the use of ICD-10
Add
Next
[Search all sources]
ICD-9 ICD-10 Include related ICD-9/ICD10
lupus
1 item(s) selected
Add Selected
Top Result
Systemic lupus erythematosus [710.0] 139402 times
Systemic lupus erythematosus, unspecified <M32.9> 114461 times
Glomerular disease in systemic lupus erythematosus <M32.14> 24678 times
Discoid lupus erythematosus <L93.0> 12203 times
24 more...
ICD9 Discharge Diagnoses
Systemic lupus erythematosus [710.0] 139402 times
Lupus erythematosus [695.4] 7362 times
Discoid lupus erythematosus of eyelid [373.34] 35 times
ICD10 Discharge Diagnoses
Systemic lupus erythematosus, unspecified <M32.9> 114461 times
Glomerular disease in systemic lupus erythematosus <M32.14> 24678 times
Discoid lupus erythematosus <L93.0> 12203 times
Other organ or system involvement in systemic lupus erythematosus <M32.19> 7981 times
21 more...



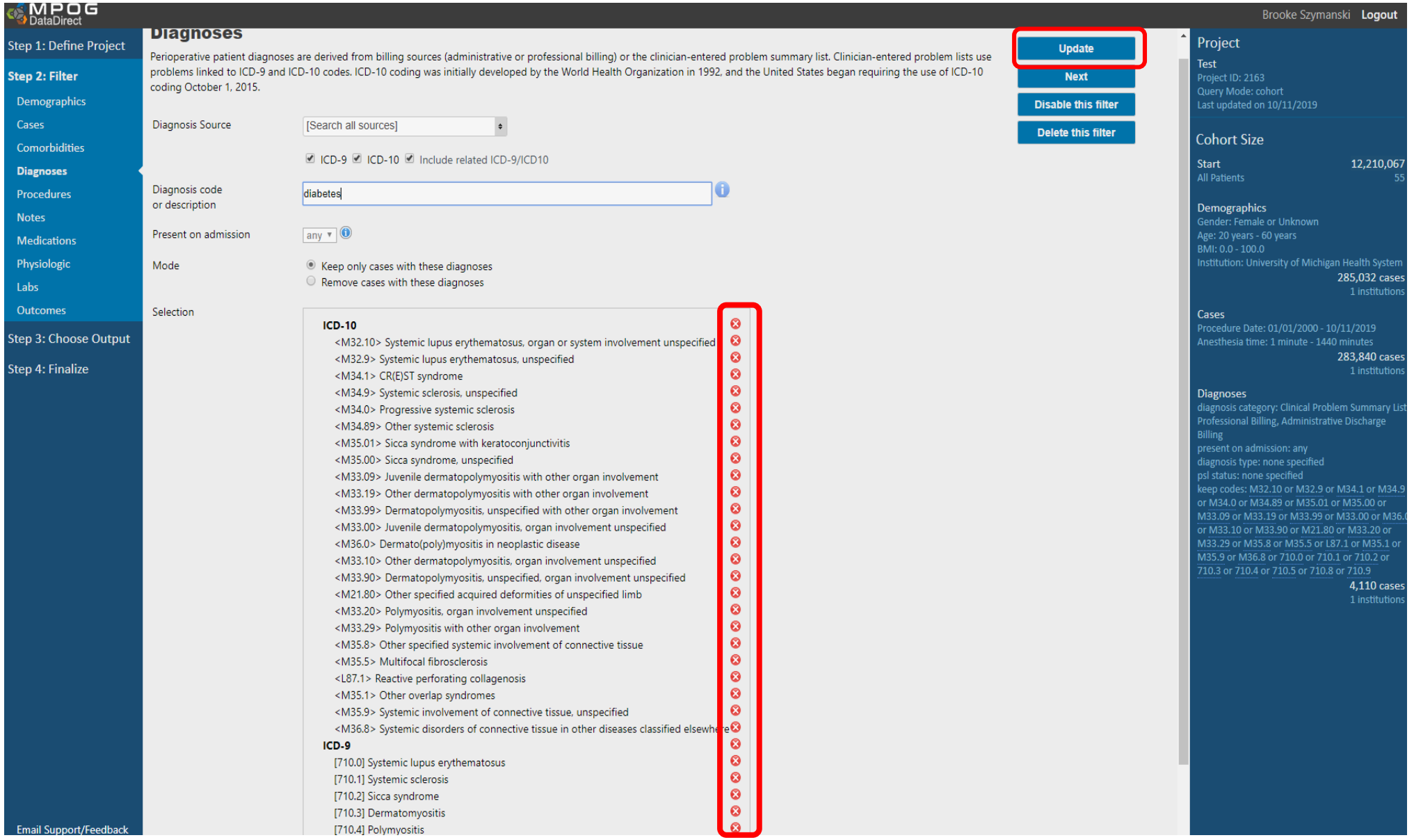
- As you select a diagnosis code, the ‘parent’ ICD-9 and ICD-10 codes and the associated ‘child’ ICD-9 and ICD-10 codes will be displayed and automatically **included**.
- De-select (click the red X) any individual code you wish to remove from the suggested list “Keep only cases with these diagnoses” is the default selection.
- To exclude cases based on diagnosis code, choose “remove cases with these diagnoses.” Click “**Add**” when finished.

Adding “OR” Logic

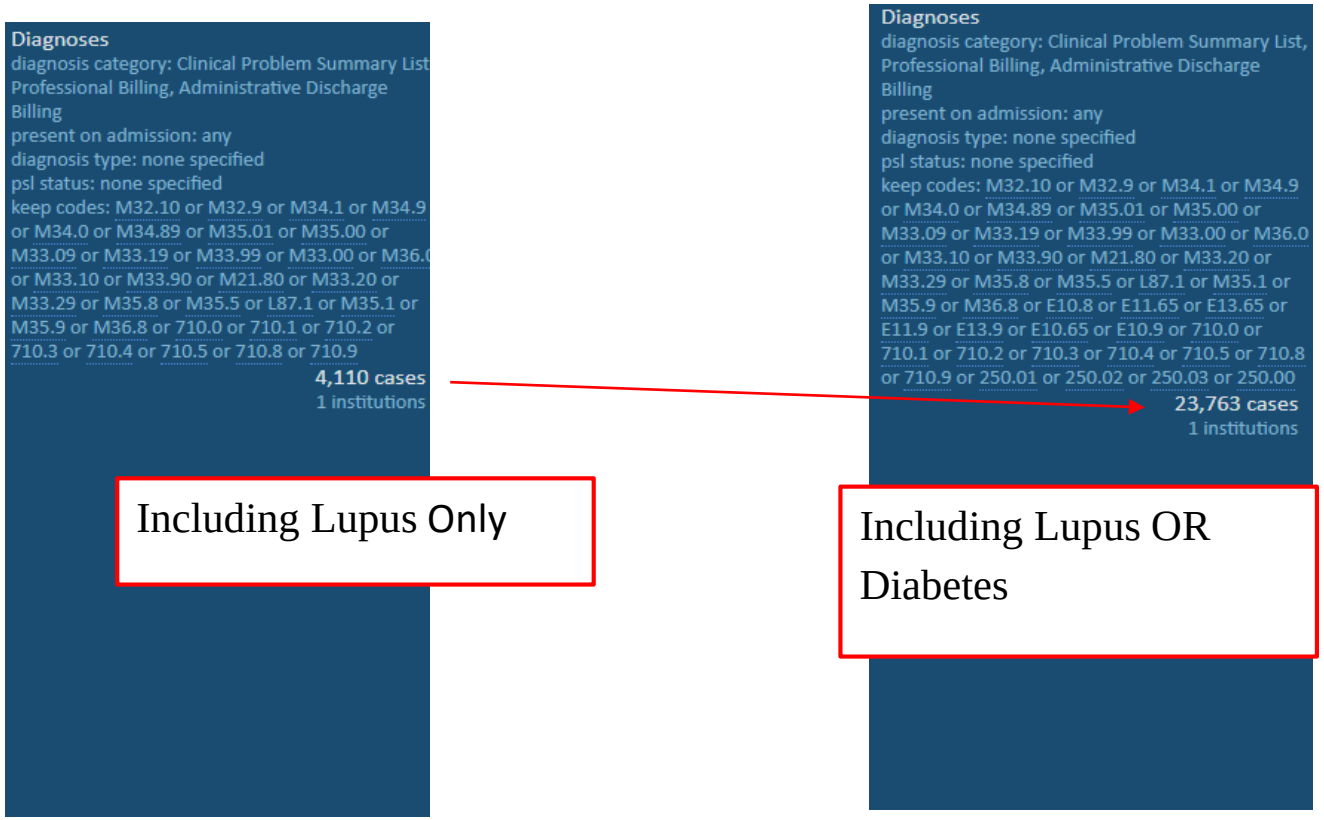
- You may be interested in patients who have ***either*** one condition ***or*** a second condition.
- For example, if you were interested in patients with Lupus **OR** patients with Diabetes, use “OR” logic.
- To achieve this, include the Diabetes criteria in the “same criteria box” as the Lupus diagnoses.
- Open the existing Diagnoses query Lupus. To add an additional diagnosis, enter the second criteria in the search box and click *Enter.* (see next slide)



- Select the desired codes again and click **Add Selected.**
- As before, remove any “child” ICD-9 and ICD-10 codes that you do not wish to keep (by clicking the red X for each). Click **Update** (both conditions will be listed). (see next slide)

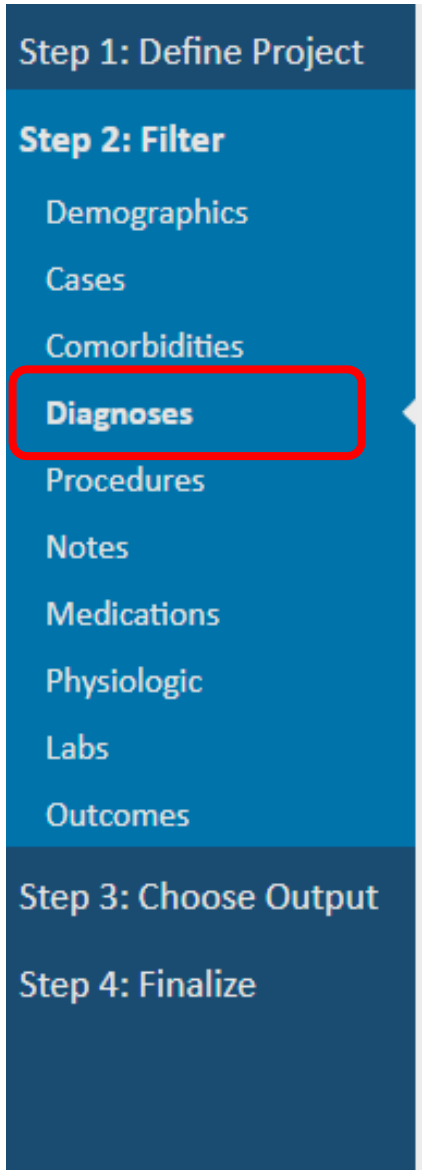

MPOG DataDirect
Brooke Szymanski Logout
Step 1: Define Project
Step 2: Filter
Demographics
Cases
Comorbidities
Diagnoses
Procedures
Notes
Medications
Physiologic
Labs
Outcomes
Step 3: Choose Output
Step 4: Finalize
Email Support/Feedback
Diagnoses
Perioperative patient diagnoses are derived from billing sources (administrative or professional billing) or the clinician-entered problem summary list. Clinician-entered problem lists use problems linked to ICD-9 and ICD-10 codes. ICD-10 coding was initially developed by the World Health Organization in 1992, and the United States began requiring the use of ICD-10 coding October 1, 2015.
Update
Next
Disable this filter
Delete this filter
Diagnosis Source
[Search all sources]
ICD-9 ICD-10 Include related ICD-9/ICD10
Diagnosis code or description
diabetes
Present on admission
any
Mode
Keep only cases with these diagnoses
Remove cases with these diagnoses
Selection
ICD-10
<M32.10> Systemic lupus erythematosus, organ or system involvement unspecified
<M32.9> Systemic lupus erythematosus, unspecified
<M34.1> CR(E)ST syndrome
<M34.9> Systemic sclerosis, unspecified
<M34.0> Progressive systemic sclerosis
<M34.89> Other systemic sclerosis
<M35.01> Sicca syndrome with keratoconjunctivitis
<M35.00> Sicca syndrome, unspecified
<M33.09> Juvenile dermatopolymyositis with other organ involvement
<M33.19> Other dermatopolymyositis with other organ involvement
<M33.99> Dermatopolymyositis, unspecified with other organ involvement
<M33.00> Juvenile dermatopolymyositis, organ involvement unspecified
<M36.0> Dermato(poly)myositis in neoplastic disease
<M33.10> Other dermatopolymyositis, organ involvement unspecified
<M33.90> Dermatopolymyositis, unspecified, organ involvement unspecified
<M21.80> Other specified acquired deformities of unspecified limb
<M33.20> Polymyositis, organ involvement unspecified
<M33.29> Polymyositis with other organ involvement
<M35.8> Other specified systemic involvement of connective tissue
<M35.5> Multifocal fibrosclerosis
<L87.1> Reactive perforating collagenosis
<M35.1> Other overlap syndromes
<M35.9> Systemic involvement of connective tissue, unspecified
<M36.8> Systemic disorders of connective tissue in other diseases classified elsewhere
ICD-9
[710.0] Systemic lupus erythematosus
[710.1] Systemic sclerosis
[710.2] Sicca syndrome
[710.3] Dermatomyositis
[710.4] Polymyositis
Project
Test
Project ID: 2163
Query Mode: cohort
Last updated on 10/11/2019
Cohort Size
Start 12,210,067
All Patients 55
Demographics
Gender: Female or Unknown
Age: 20 years - 60 years
BMI: 0.0 - 100.0
Institution: University of Michigan Health System
285,032 cases
1 institutions
Cases
Procedure Date: 01/01/2000 - 10/11/2019
Anesthesia time: 1 minute - 1440 minutes
283,840 cases
1 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: M32.10 or M32.9 or M34.1 or M34.9 or M34.0 or M34.89 or M35.01 or M35.00 or M33.09 or M33.19 or M33.99 or M33.00 or M33.10 or M33.90 or M21.80 or M33.20 or M33.29 or M35.8 or M35.5 or L87.1 or M35.1 or M35.9 or M36.8 or 710.0 or 710.1 or 710.2 or 710.3 or 710.4 or 710.5 or 710.8 or 710.9
4,110 cases
1 institutions

- As expected, by adding Diabetes to the filters through “OR” logic, the number of cases has increased as compared to the number of cases only including Lupus

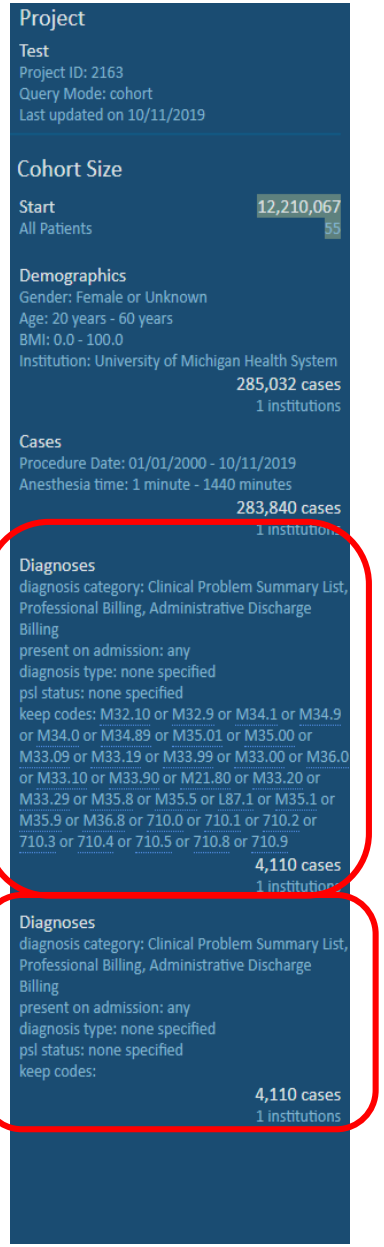


Adding “AND” Logic

- In contrast, if you are interested in patients who have BOTH Lupus AND Diabetes diagnoses, use “**AND**” logic.
- To find these patients, build two separate filters (i.e. one for Lupus, and a separate one for Diabetes).
- Start with an initial Diagnosis filter including Lupus.



- Build an additional Data Source (Diagnosis) by *returning* to the main filter list (see left).
- Click **Diagnoses**, enter Diabetes into the Diagnosis code field, and click **Add Selected** to create new, separate criteria.
- Follow the same steps as above to remove any “Child” criteria you would not like to include.

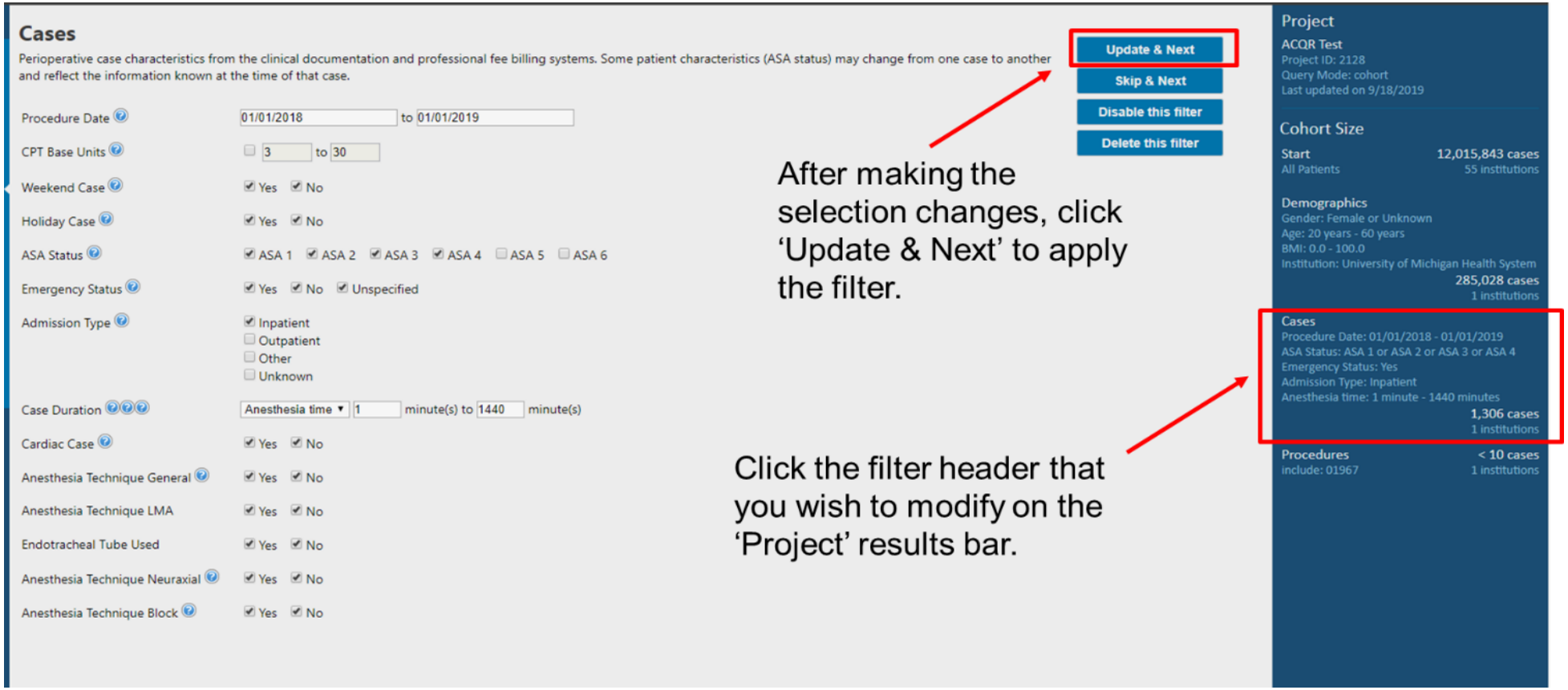


- The additional required criteria appear as a separate criteria box in the right hand panel, and the narrowed query results show a far more limited population of patients – only those patients who possess BOTH of the listed diagnosis codes
- Each filter will appear as a separate Diagnosis filter on the right hand side (see left).

Other Filters

- Continue to work through the filters on the left hand side and apply as necessary.
- Continue to build and refine your query using Data Sources on the left-hand panel.
- Refer to the instructions inside each filter panel to determine the source and details for the information available.

Modifying selected filters

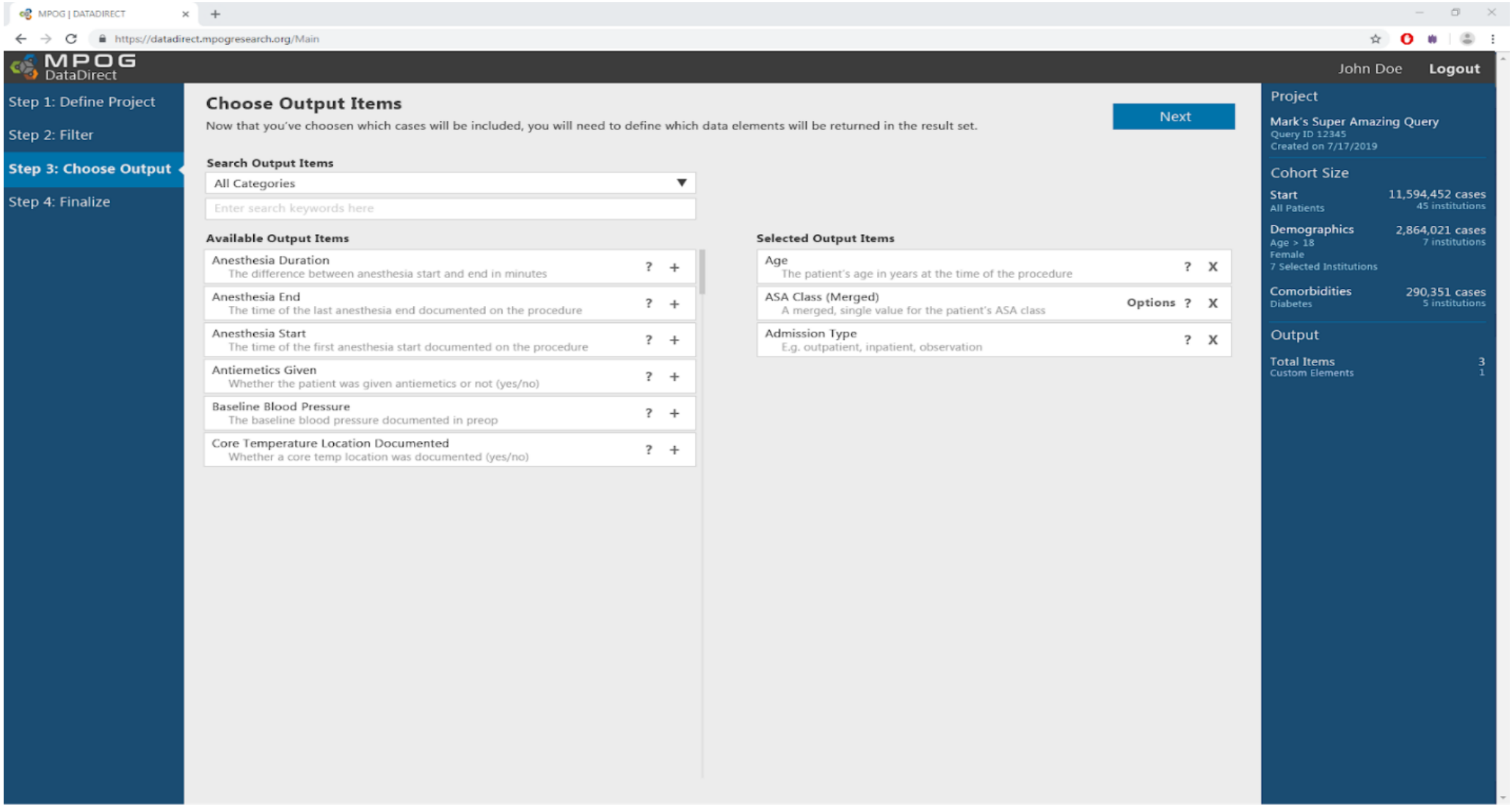


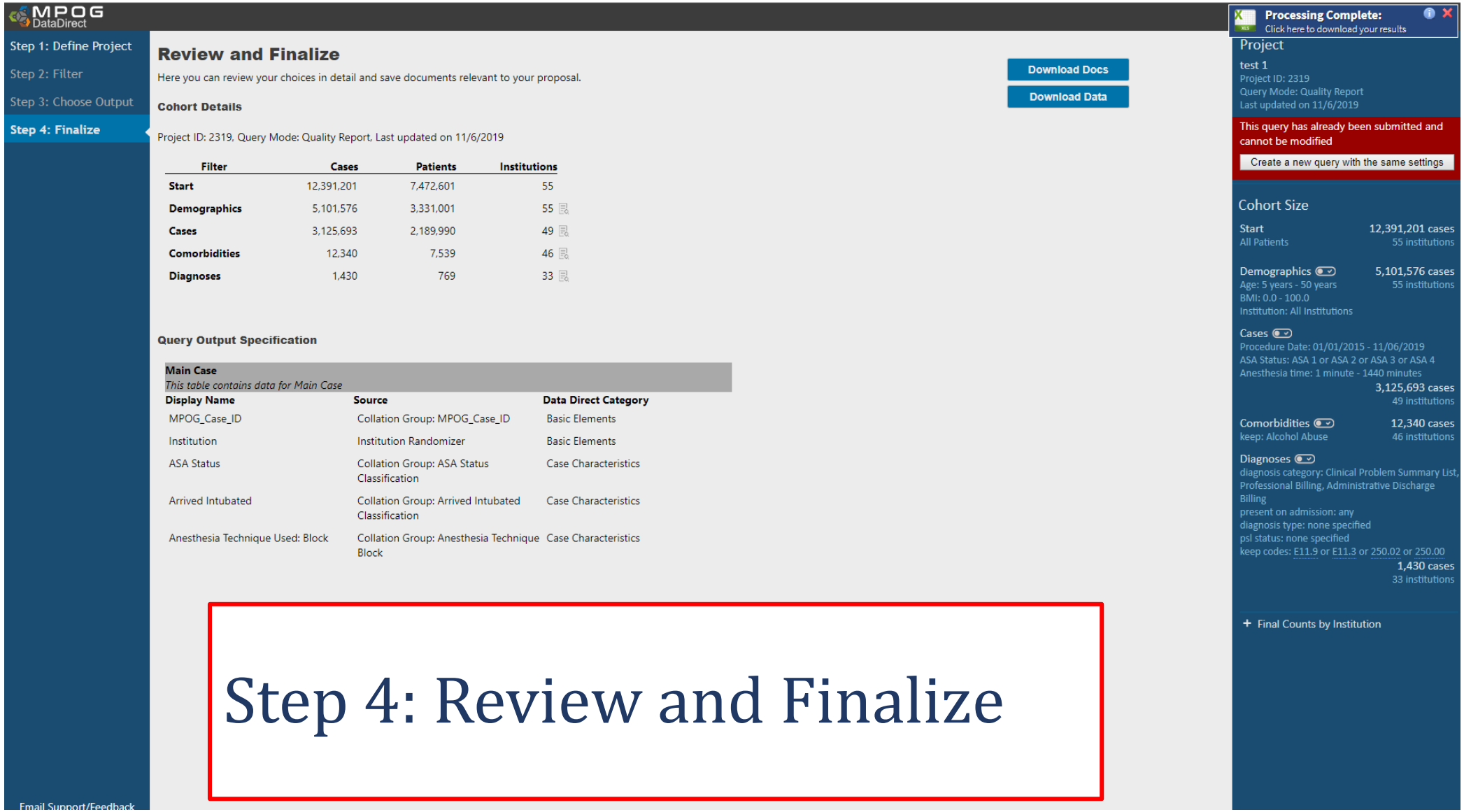
Filtering Cases Summary

- Finalize all filters as prompted by the guided step-by-step process.
- As filters are added, counts for the cohort size will continue to refresh in real-time.
- Click directly on the filter headers to modify previously selected filters.
- Move on to Step 3 once filters are selected and cohort size seems plausible.

Step 3: Define Outputs

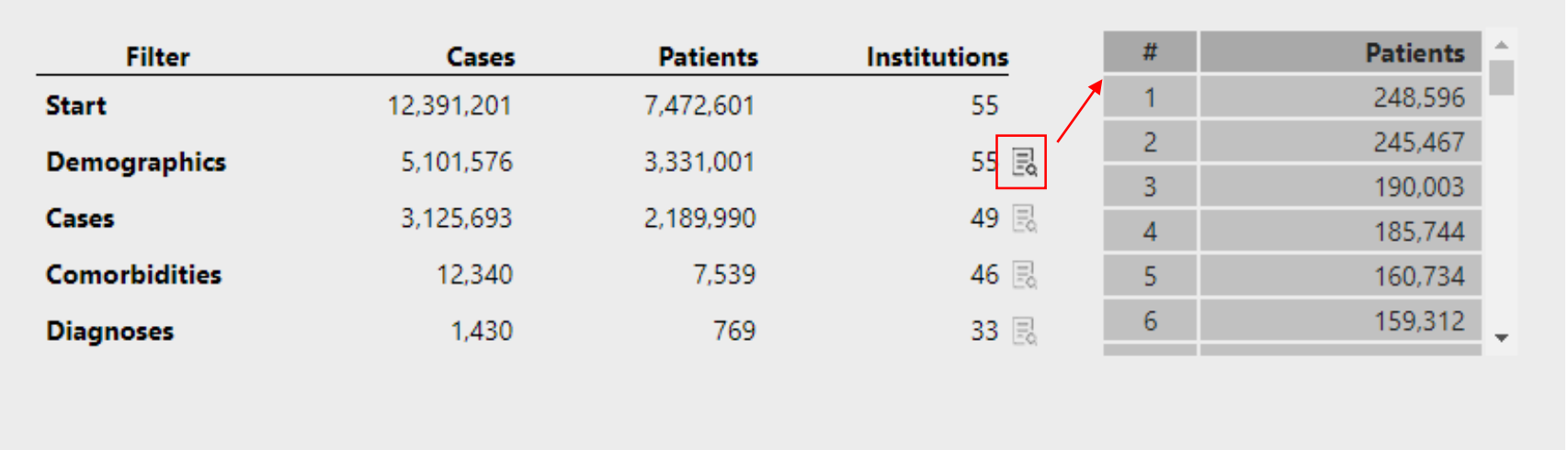
- **Outputs** are column headers for your downloadable Excel file.
- They are available on the left side of the screen.
- Choose the (+) to add an output.
- Final selection of outputs are listed on the right, some are defaults that can be removed as needed. (see next slide)


MPOG | DATADIRECT
https://datadirect.mpogresearch.org/Main
MPOG DataDirect
John Doe
Logout
Step 1: Define Project
Step 2: Filter
Step 3: Choose Output
Step 4: Finalize
Choose Output Items
Now that you've choosen which cases will be included, you will need to define which data elements will be returned in the result set.
Next
Search Output Items
All Categories
Enter search keywords here
Available Output Items
Anesthesia Duration
The difference between anesthesia start and end in minutes
Anesthesia End
The time of the last anesthesia end documented on the procedure
Anesthesia Start
The time of the first anesthesia start documented on the procedure
Antiemetics Given
Whether the patient was given antiemetics or not (yes/no)
Baseline Blood Pressure
The baseline blood pressure documented in preop
Core Temperature Location Documented
Whether a core temp location was documented (yes/no)
Selected Output Items
Age
The patient's age in years at the time of the procedure
ASA Class (Merged)
A merged, single value for the patient's ASA class
Options
Admission Type
E.g. outpatient, inpatient, observation
Project
Mark's Super Amazing Query
Query ID 12345
Created on 7/17/2019
Cohort Size
Start
All Patients
11,594,452 cases
45 institutions
Demographics
Age > 18
Female
7 Selected Institutions
2,864,021 cases
7 institutions
Comorbidities
Diabetes
290,351 cases
5 institutions
Output
Total Items
Custom Elements
3
1



Step 4: Review and Finalize

- To see anonymized counts by institution, click on the icon to the right of the number to open a list.



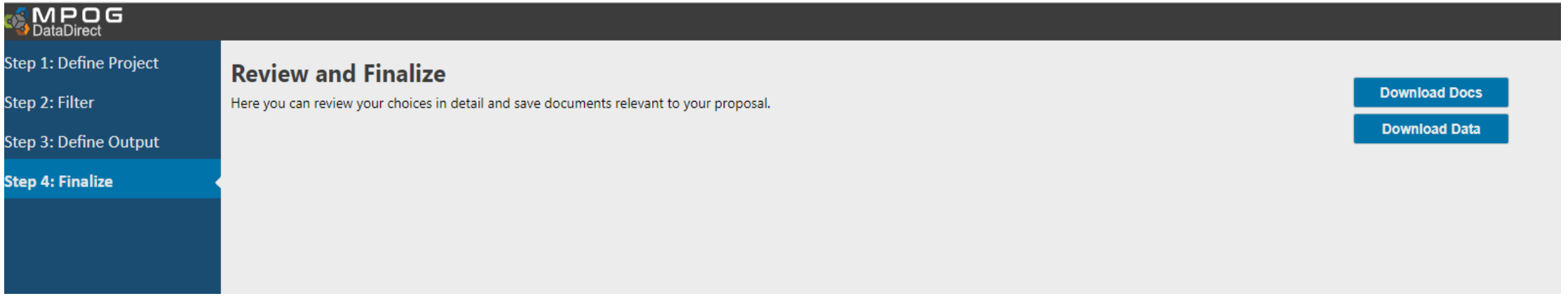
Filter	Cases	Patients	Institutions
Start	12,391,201	7,472,601	55
Demographics	5,101,576	3,331,001	55
Cases	3,125,693	2,189,990	49
Comorbidities	12,340	7,539	46
Diagnoses	1,430	769	33

#	Patients
1	248,596
2	245,467
3	190,003
4	185,744
5	160,734
6	159,312

Based on query mode, different options are available:

- **Download Docs:** Output is a “Query Specification”, i.e. a document of the query itself (Quality Report Mode, Single Center Research Mode, Multi-Center Research Mode)
- **Download Data**: Output is your institution’s data for the query for Quality Report Mode or Single-Center Research Mode (local sites only). *Note: for Multi-Center Research Mode, data queries are specified by the MPOG Central analyst team, and available to Researchers via a secure data enclave following PCRC approval*
- **No download option** (Cohort Only Mode)

- Click **Download Docs**



Step 1: Define Project
Step 2: Filter
Step 3: Choose Output
Step 4: Finalize

Review and Finalize

Here you can review your choices in detail and save documents relevant to your proposal.

Download Docs
Download Data

Cohort Details

Project ID: 2163 Query Mode: cohort Last updated on 10/11/2019

Filter	Cases	Patients	Institutions
Start	12,210,067	7,376,216	55
Demographics	285,032	151,949	1
Cases	283,840	151,651	1
Diagnoses	4,110	1,289	1
Diagnoses	4,110	1,289	1

Query Output Specification

Table 1 - Main Case List

This table contains a single row for each case in the researc

Display Name	Source	
MPOG_Case_ID	Collation	
Institution	Institution Randomizer	Basic Elements
Anesthesia Technique Used: General	Collation Group: Anesthesia Technique General	Case Characteristics
Anesthesia Technique Used: Neuraxial	Collation Group: Anesthesia Technique Neuraxial	Case Characteristics

Download Query Specification Documents

If you are finished editing your project and selecting your output items click 'Download Documents' below. Otherwise, click 'Cancel' to go back and make additional changes.

Download Documents

Cancel

Project

Test
Project ID: 2163
Query Mode: Cohort
Last updated on 10/11/2019

Cohort Size

Start — 12,210,067 cases
All Patients — 55 institutions

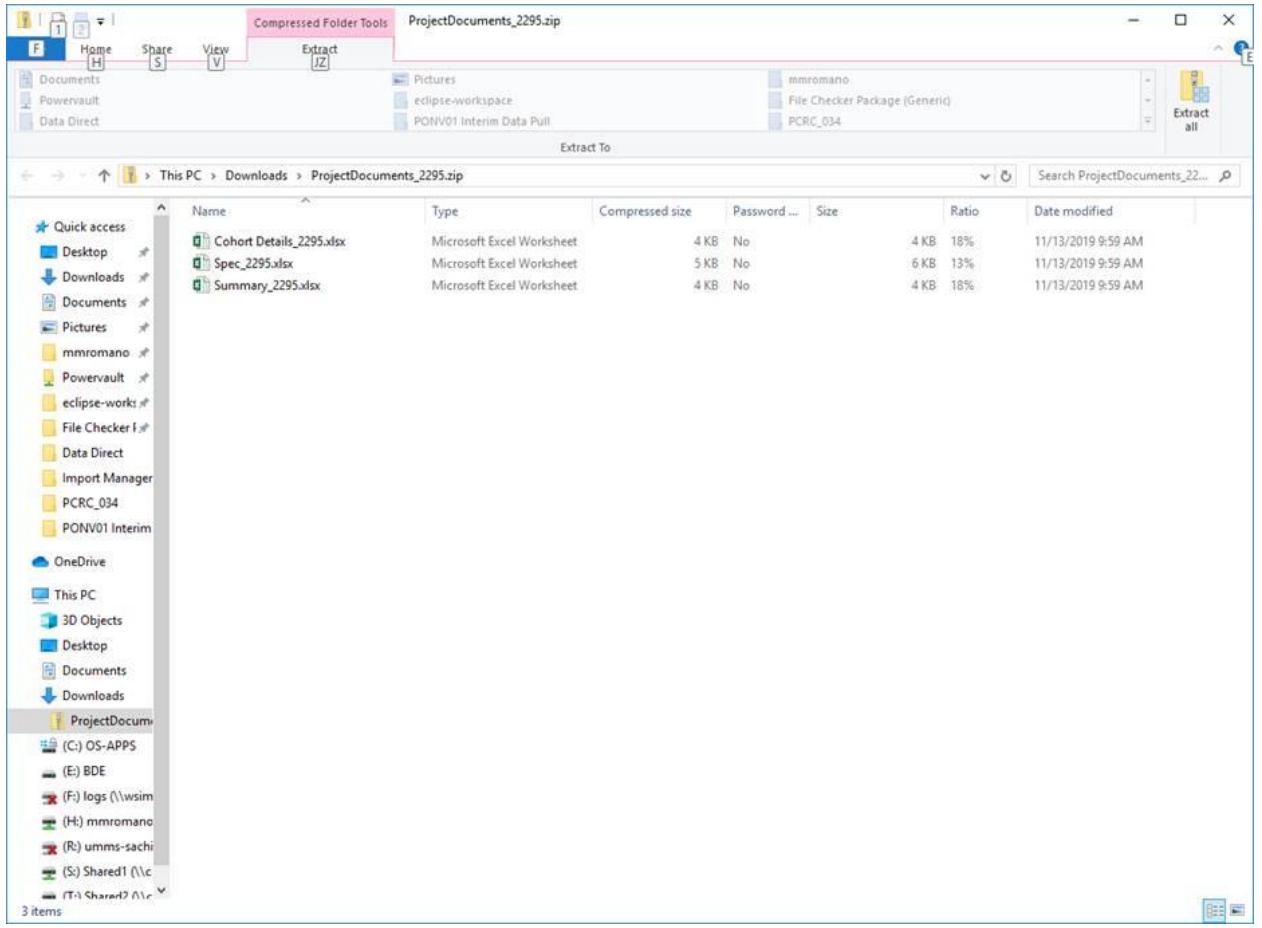
Demographics
Gender: Female or Unknown
Age: 20 years - 60 years
BMI: 0.0 - 100.0
Institution: University of Michigan Health System
285,032 cases
1 institutions

Cases
Procedure Date: 01/01/2000 - 10/11/2019
Anesthesia time: 1 minute - 1440 minutes
283,840 cases
1 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: M32.10 or M32.9 or M34.1 or M34.9 or M34.0 or M34.89 or M35.01 or M35.00 or M33.09 or M33.19 or M33.99 or M33.00 or M36.0 or M33.10 or M33.90 or M21.80 or M33.20 or M33.29 or M35.8 or M35.5 or L87.1 or M35.1 or M35.9 or M36.8 or 710.0 or 710.1 or 710.2 or 710.3 or 710.4 or 710.5 or 710.8 or 710.9
4,110 cases
1 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:
4,110 cases
1 institutions

- Download Docs will generate/auto download a zip file that contains 3 excel files

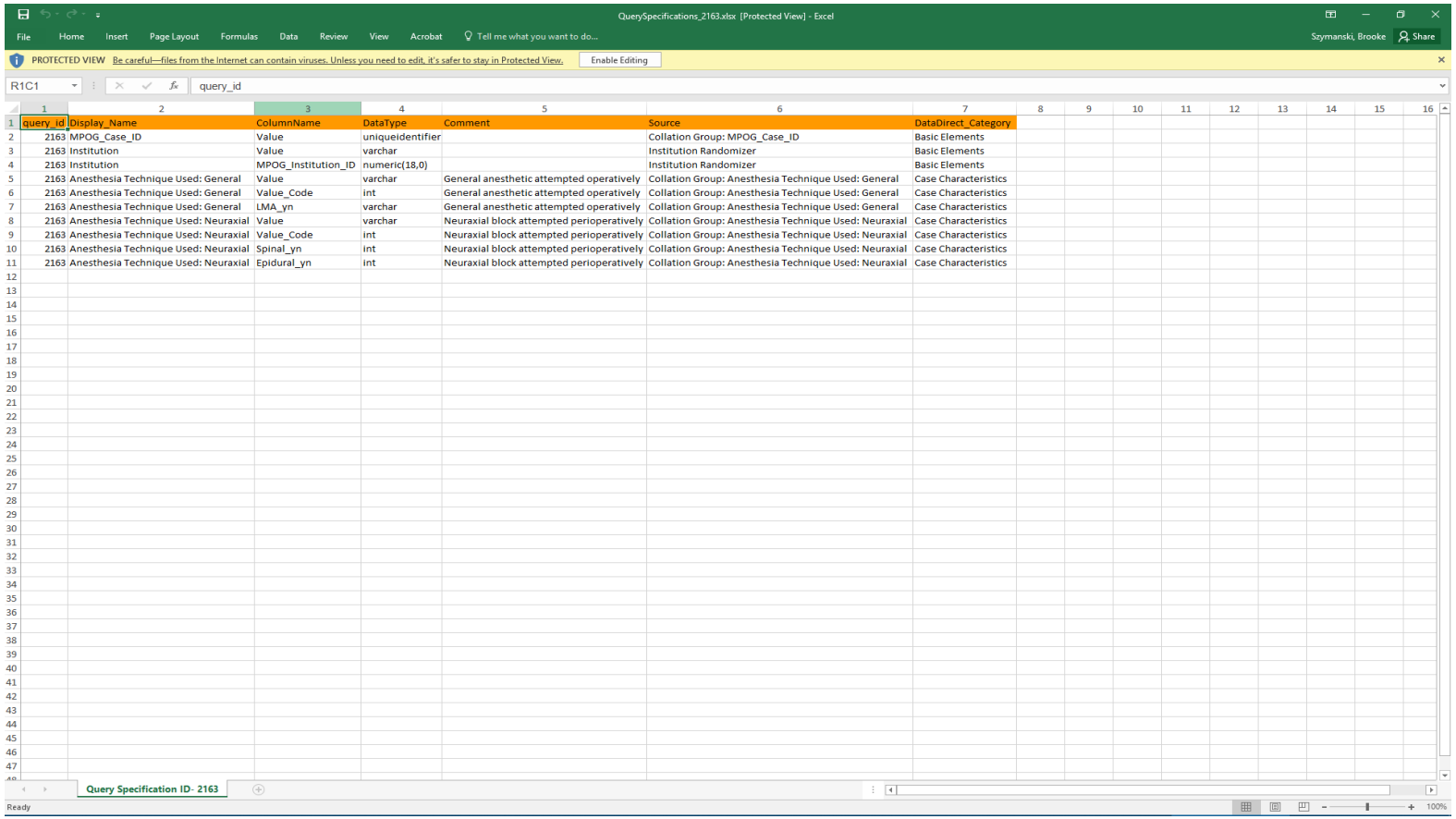


Data Query Specification

- Upon downloading the “Query Specification” for a particular project, a summary of the data, and characteristics of the data queried, are available in spreadsheet form.

Data Summary

- Example of Excel file generated through DataDirect



QuerySpecifications_2163.xlsx [Protected View] - Excel

PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View. Enable Editing

R1C1 query_id

query_id	Display_Name	ColumnName	DataType	Comment	Source	DataDirect_Category
2163	MPOG_Case_ID	Value	uniqueidentifier		Collation Group: MPOG_Case_ID	Basic Elements
2163	Institution	Value	varchar		Institution Randomizer	Basic Elements
2163	Institution	MPOG_Institution_ID	numeric(18,0)		Institution Randomizer	Basic Elements
2163	Anesthesia Technique Used: General	Value	varchar	General anesthetic attempted operatively	Collation Group: Anesthesia Technique Used: General	Case Characteristics
2163	Anesthesia Technique Used: General	Value_Code	int	General anesthetic attempted operatively	Collation Group: Anesthesia Technique Used: General	Case Characteristics
2163	Anesthesia Technique Used: General	LMA_yn	varchar	General anesthetic attempted operatively	Collation Group: Anesthesia Technique Used: General	Case Characteristics
2163	Anesthesia Technique Used: Neuraxial	Value	varchar	Neuraxial block attempted perioperatively	Collation Group: Anesthesia Technique Used: Neuraxial	Case Characteristics
2163	Anesthesia Technique Used: Neuraxial	Value_Code	int	Neuraxial block attempted perioperatively	Collation Group: Anesthesia Technique Used: Neuraxial	Case Characteristics
2163	Anesthesia Technique Used: Neuraxial	Spinal_yn	int	Neuraxial block attempted perioperatively	Collation Group: Anesthesia Technique Used: Neuraxial	Case Characteristics
2163	Anesthesia Technique Used: Neuraxial	Epidural_yn	int	Neuraxial block attempted perioperatively	Collation Group: Anesthesia Technique Used: Neuraxial	Case Characteristics

Query Specification ID- 2163

Ready