

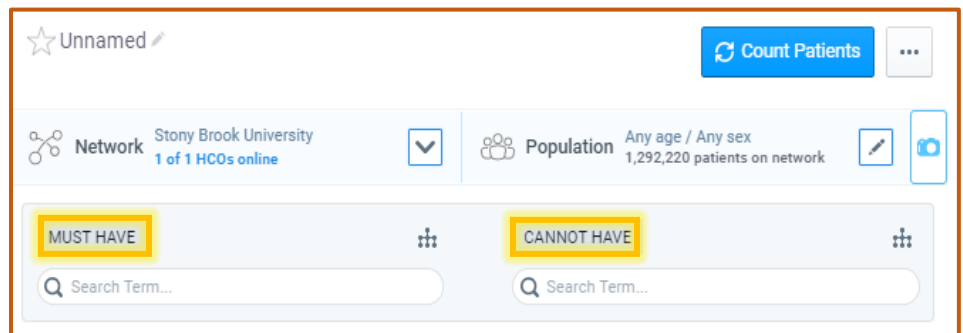
QUERIES: THE MEAT OF A STUDY

A TNX study's meat in is the query. Your study can have just one, or multiple queries. Your queries can be almost identical to one another, but run on differing data networks, age groups, or time periods. They may also be wholly different from one another in the same study.

Once your query is built, you will enjoy the analytics features in TNX to gain insights. Your insights might encourage you to move ahead with a research project, to edit your query, or to take a new direction with your research.

WHAT IS A QUERY IN TNX?

A query asks the details for your specified patient population. You define your patient population by Must Have and Cannot Have criteria, just like Inclusion and Exclusion Criteria in a written study protocol.

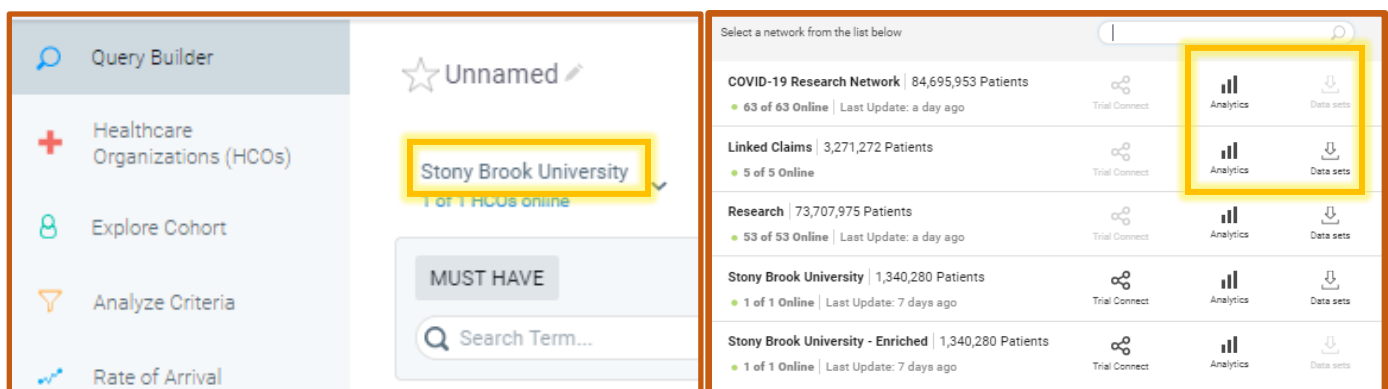


BUILD A BASIC QUERY

Choose a Network

At the top of your Query Builder Screen, you can select a network of data. Pull down on the arrow to make your choice.

Any network will permit you running analytics on your query-defined cohorts, but not all will allow downloads of datasets. Each of your study's queries can have different network associations, and you can always edit your query to be run on a different network if you change your mind.



Finding Terms

Use the search boxes to find your parameters. You can enter known codes, or text if you do not know the code. Using general text gives you the chance to further specify based on the results. For example, here is a text search for "Liver".

The screenshot shows the TrinetX search interface. At the top, there are two tabs: 'MUST HAVE' and 'CANNOT HAVE'. Below these are search boxes. The first search box contains 'Liver'. Below the search boxes are filter buttons for 'All', 'D Demographics', 'Dx Diagnoses', 'P Procedures', 'M Medications', 'L Labs', and 'G Genomics'. The 'Dx Diagnoses' button is highlighted. Below the filters is a table with columns for 'Code', 'Term Description', and 'Patients'. The table lists several liver-related terms and their patient counts. A yellow box highlights the '760' patient count for the term 'Liver kidney microsomal 1 igg ab [units/volume] in serum by immunoassay'. At the bottom of the table, there are checkboxes for 'Show Terms with Zero Patients' and 'Show Deprecated', and buttons for 'Add To Query' and 'Cancel'.

| Code | Term Description | Patients |
|----------------------------------|---|----------|
| <input type="checkbox"/> K76.9 | Dx Liver disease, unspecified | 3,230 |
| <input type="checkbox"/> 9838-4 | L Liver kidney microsomal ab [titer] in serum by immunofluorescence | 1,250 |
| <input type="checkbox"/> C22.0 | Dx Liver cell carcinoma | 870 |
| <input type="checkbox"/> 47318-1 | L Liver kidney microsomal 1 igg ab [units/volume] in serum by immunoassay | 760 |
| <input type="checkbox"/> 026.6 | Dx Liver and biliary tract disorders in pregnancy, childbirth and the puerperium | 720 |
| <input type="checkbox"/> 026.61 | Dx Liver and biliary tract disorders in pregnancy | 610 |
| <input type="checkbox"/> 026.62 | Dx Liver and biliary tract disorders in childbirth | 520 |
| <input type="checkbox"/> 026.613 | Dx Liver and biliary tract disorders in pregnancy, third trimester | 490 |

The returns include the Diagnoses, Labs, Procedures, Medications and Genomics. You can quickly filter if you only want to see Diagnoses by clicking on the highlighted Diagnoses filtering button.

Drill down to a more specific liver disease diagnosis by clicking on the blue tree for that code.

Once you open up a tree, you may also see codes with sideways arrows. Click on those, and they will further expand to show subcodes.



Add terms by clicking the white box, and Add to Query. The new term will appear on the side on which you performed the search, either Must Have or Cannot Have. Lab terms will allow you to enter values and whether you want the most recent lab result to meet those values, or any value in the history of the patient. Terms can be dragged from one side to another as needed.

Pay attention to the "AND"s and "OR"s. Inclusions default to AND between each list term, and exclusions default to ORs, but you can click to switch from one to the other.

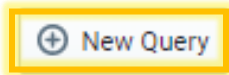
The screenshot shows a query card. At the top, it says 'Unnamed' with a star icon and a pencil icon. Below that, it says 'Jul 14, 2021 at 12:08 pm by Keister' with an 'Edit' button. At the bottom, it says 'Network Stony Brook University 1 of 1 HCOs online'.

Name each query so you can find it again easily among your other study's queries. Click the pencil to edit at any time.



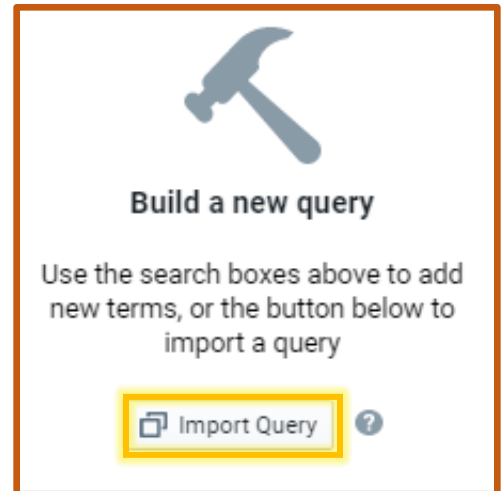
Now, hit Count Patients to see how many fit your query criteria. Note that anytime you change a query, and then Count Patients, a new query is generated and added to your growing list on the right of the screen.

Note: Anytime you edit an existing query, and hit Count Patients anew, a new query is generated, and adds to a growing list on the right of your screen. You may find this ever-expanding pile a bit confusing. Delete junky queries as you work, and name those you want to track. You can also click the star ☆ on important queries to identify them easily.



Click New Query in the upper right of the Query Builder to add a brand new query to the study.

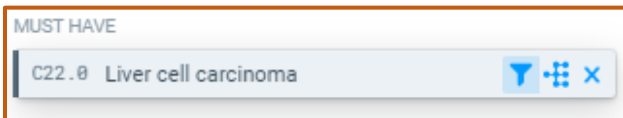
Timesaver tip: You can import an existing query from any study that you created or is shared with you. In your new blank query, select Import Query. You choose a study from those available to you (other studies, or the one you are currently working), then choose a specific query to import it as your new query. This may save you effort if you want to simply edit the original as your new query.



BUILD A COMPLEX QUERY

Real study questions are rarely simple. Some more advanced tricks for fine tuning your queries:

Filter a single term



This funnel symbol means that you can add some filtering to this term, such as Age at Event or details related to cancer diagnoses.

Search by Age or Sex

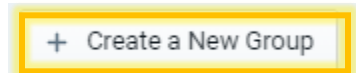


At the top of every query page, you can select the patient population sex or age range.

The Power of the Group

Creating groups for your terms helps you fine-tune your query. Described is the use of groups for setting Time Constraints, defining a Number of Instances for terms, and creating time dependences between two Related Groups.

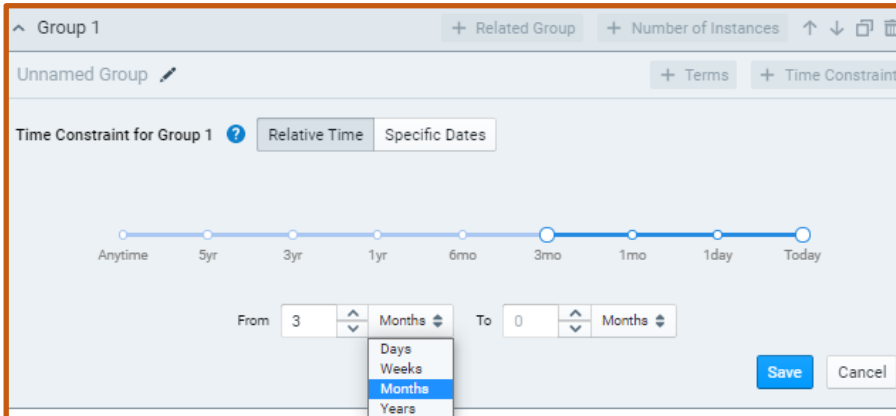
Click the button at the bottom of your query to create a New Group. Terms need to be searched and added from the main search box to your main query. Then, drag one, some, or all of your terms into the box, or use the Add Terms button to fill from an easy checklist of your query's ungrouped terms.



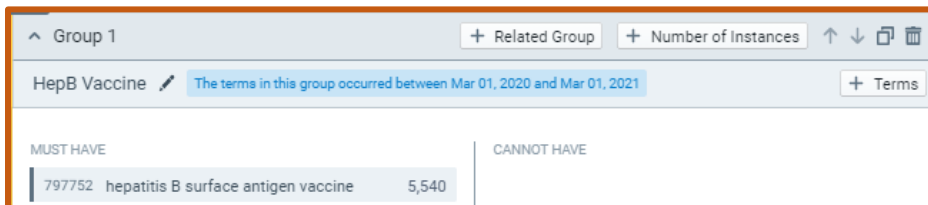
Set a Time Constraint

Now that you have a group with terms, you can filter for WHEN these terms occurred.

Click Time Constraint and set Relative Time (say, within the last 3 months), or set Specific Dates (maybe 01Mar2020 – 01Mar2021). You can have multiple groups, each with different constraints.

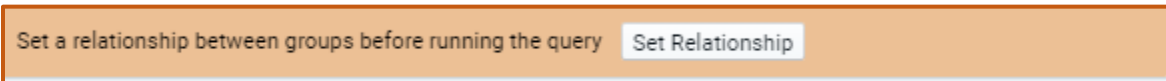


Any terms captured within that group will have this filter applied. Any terms not moved into this group will not be affected by this time constraint.

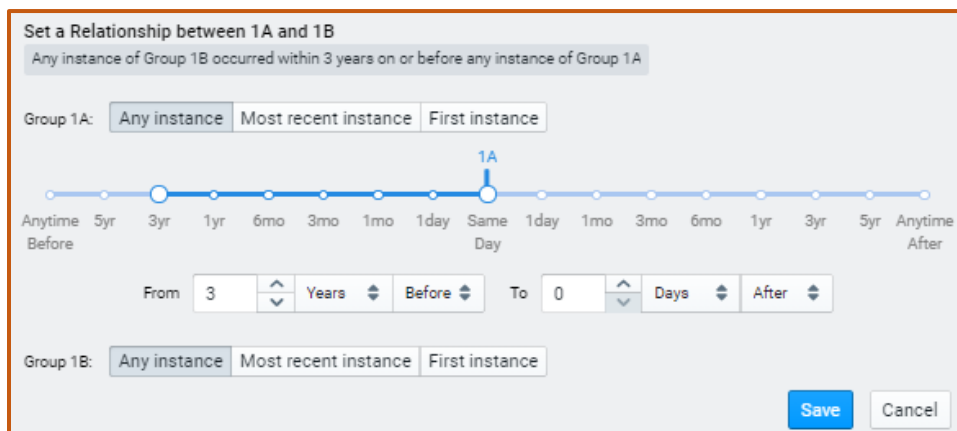


Create a Related Group

You may ask for patients who had an occurrence of your term(s) in a time relationship to another term(s). Create a group for your first terms, then click Related Group. Now you have Groups A and B. Add the terms you would like to relate to Group A into Group B. Click to set the relationship.



Imagine Group A stays firmly in place. Group B can move either ahead or behind Group A by the time period you define.



You can also define the instance type of each group. For example, if your term was a Myocardial Infarction, you might want to specify the Most Recent Instance, or perhaps First Instance.

Tip
You can add the same term more than once to a query to capture all the relationships between terms.