BRICS

14

BRICS USER GUIDE

UMLS Tool

CHAPTER 14 – UMLS Tool

14.1 UMLS Objective

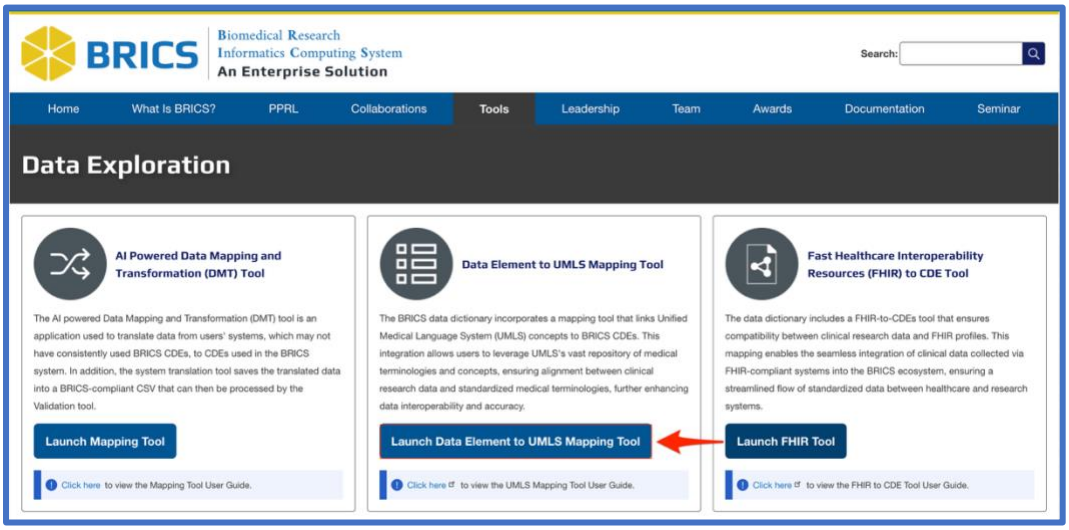
The BRICS data dictionary incorporates a mapping tool that links Unified Medical Language System (UMLS) concepts to BRICS CDEs. This integration allows users to leverage UMLS's vast repository of medical terminologies and concepts, ensuring alignment between clinical research data and standardized medical terminologies, further enhancing data interoperability and accuracy.

For more information regarding UMLS, refer to the following resources:
Unified Medical Language System (UMLS)
Metathesaurus
Semantic Network

14.2 Navigation to UMLS Tool

1. Navigate to the BRICS webpage
2. Select the Tools page at the top of the page

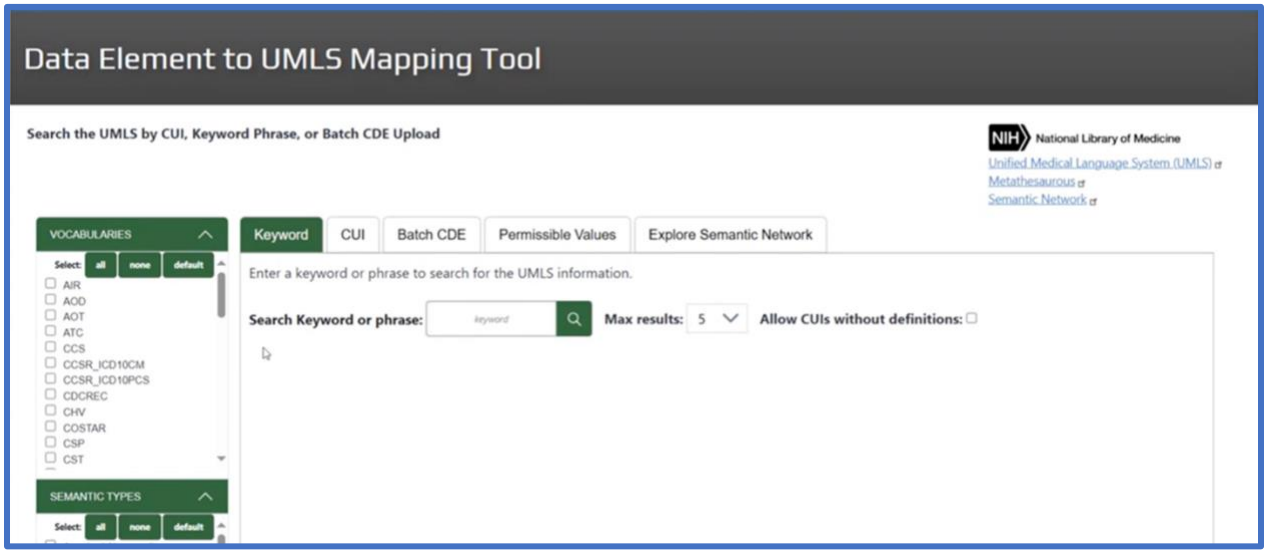
3. Select the **Launch Data Elements to UMLS Mapping Tool** button to open the page



14.3 Using the UMLS Tool

The UMLS Tool provides several tabs for viewing data. Users may

1. Search by keyword
2. Use Concept Unique Identifiers (CUI) to search
3. Upload multiple CDEs for mapping
4. Map permissible values
5. Explore the UMLS Semantic Network.



14.3.1 Filters

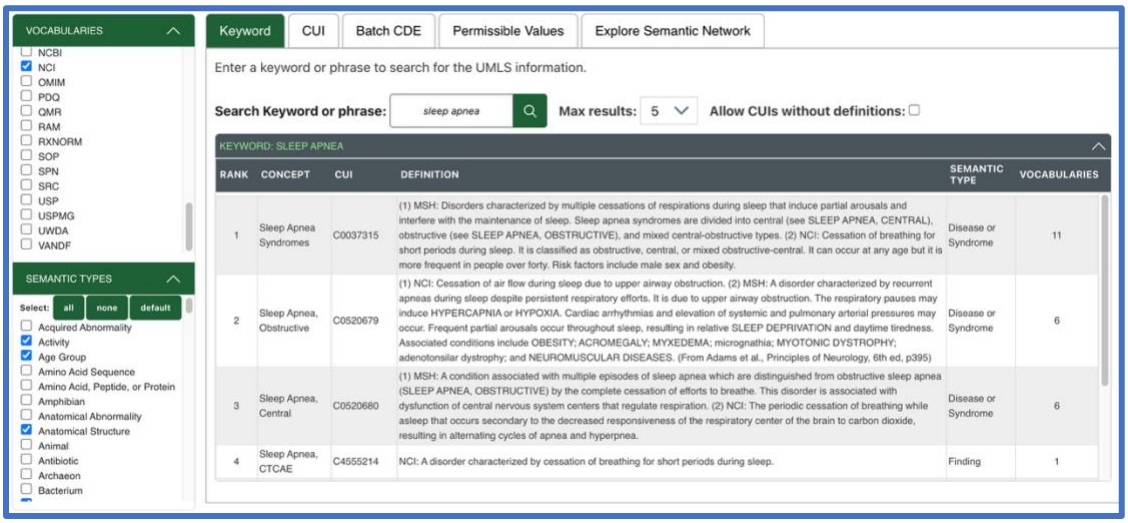
There are 2 sets of filters on the left of the page which are prefiltered to fit the most common use cases.

1. **Vocabularies** which contain different vocabularies of terms. Hovering over the term will show more information about that term.
   NOTE: Some vocabularies are restricted and are prefiltered out. Only unrestricted vocabularies will be available in the list.

2. **Semantic Types** which contain a list of different semantic types that UMLS CUI's are sorted into. Hovering over the semantic type will give more details about what it is.

14.3.2 Keyword search

1. To do a keyword search simply type in the Keyword or phrase you wish to search, and press enter. Users can also adjust the max results and the ability to include CUIs without definitions.

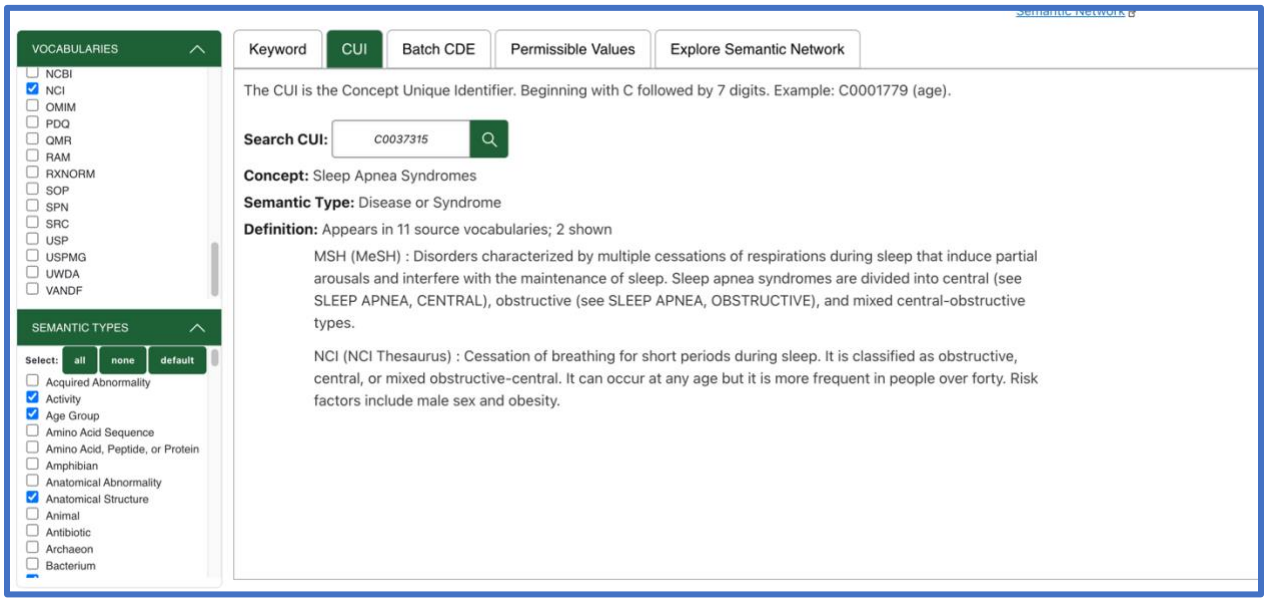


The data in the table is described as:
RANK – The resulting data is sorted by rank which is the most relevant concept given your search.
CONCEPT – The name of the concept
CUI – The Concept unique identifier
Definition – The definition column shows the definition of the concept. If multiple Vocabularies have definitions for the same concept, then you will see them shown in the definition like so:
(1) VOCAB1: … **(2) VOCAB2: …**
Semantic Type – Shows the semantic type of this concept.
Vocabularies – Shows the total number of vocabularies that this concept is associated with.

14.3.3 CUI search

The **CUI (Concept Unique Identifier) tab** allows searching by the CUI.

1. Enter the **Concept Unique Identifier** to see the information for the **CUI**.
   The Concept, Sematic Type(s), and Definition(s) for the selected vocabularies will be displayed.



14.3.4 Batch CDE (Common Data Elements)

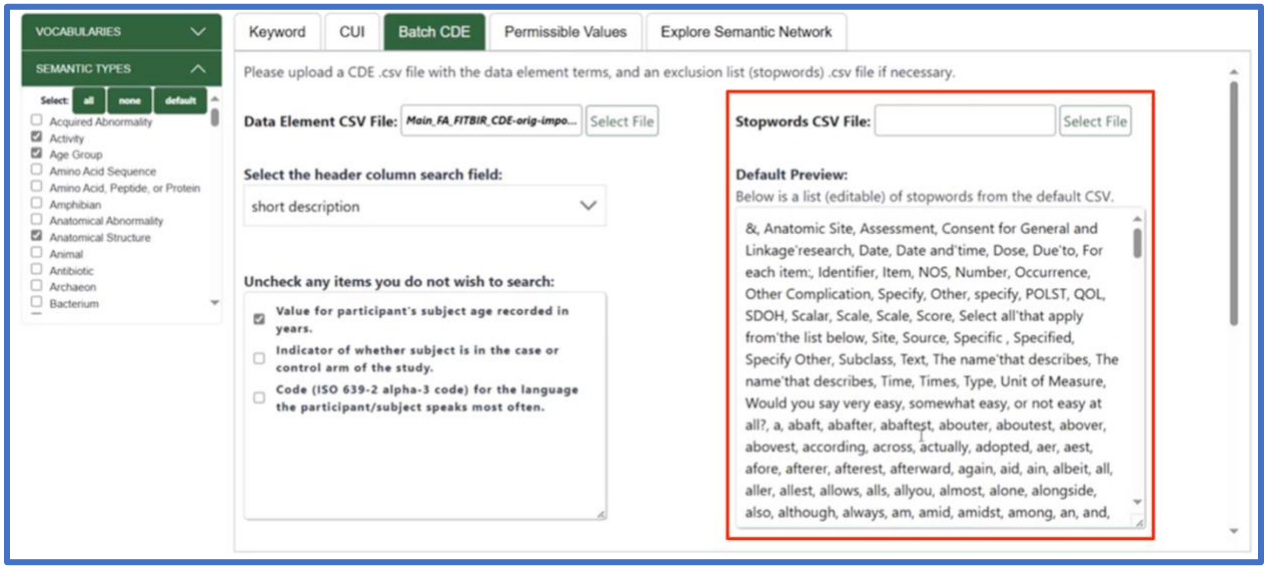
This tab allows **uploading a csv of data elements** to view the **UMLS data for each data element** in the csv.

A common use case for the Batch CDE page is:

Find data elements that do not have CUIs assigned to them in Data Dictionary.
Export those data elements from Data Dictionary.
Upload that file here to search for the CUIs and select them.
Export the selected CUIs for the Data Element(s) using the Export BRICS CSV button.
Reupload the Data Elements to BRICS which will now contain the CUIs selected.

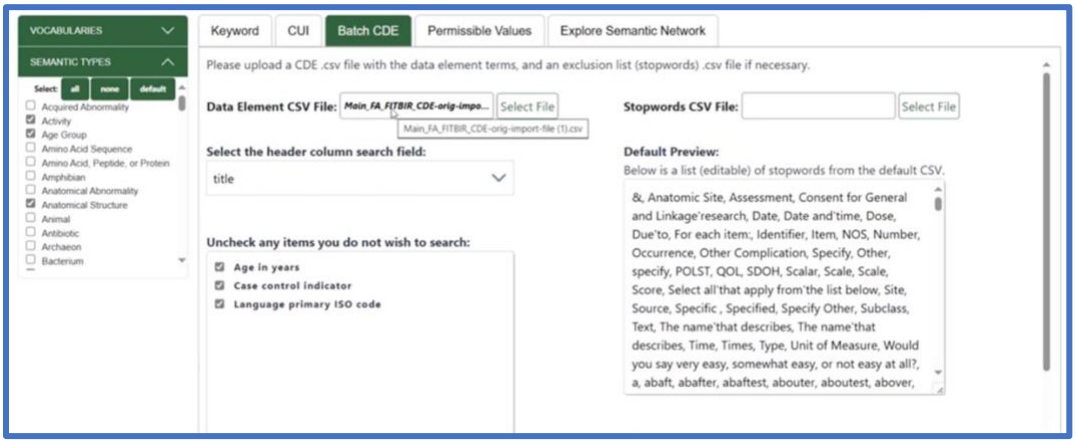
First let's go over the **Stopwords** section that you see on the right side of the page.
Stopwords are words that we do not wish to be part of our CUI search because they are unhelpful or commonly misspelled words/phrases.

We are able to **upload a csv file** for our stopwords or manually edit them in the text box.
NOTE A default list of stop words/phrases is provided.

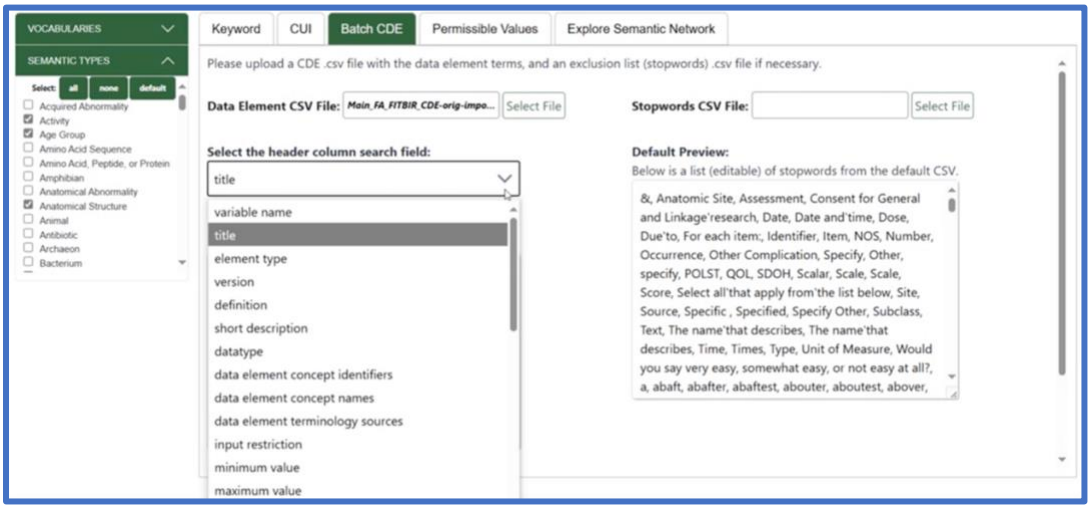


Now let's upload a file and find the CUI's for the data elements in that file.

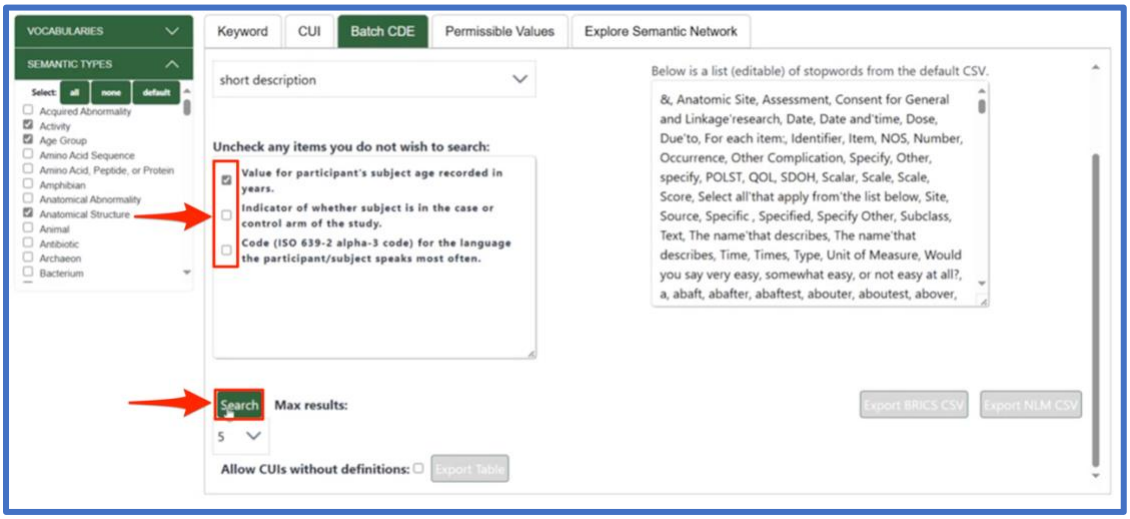
1. Click **Select File** and upload a **Data Elements CSV**.



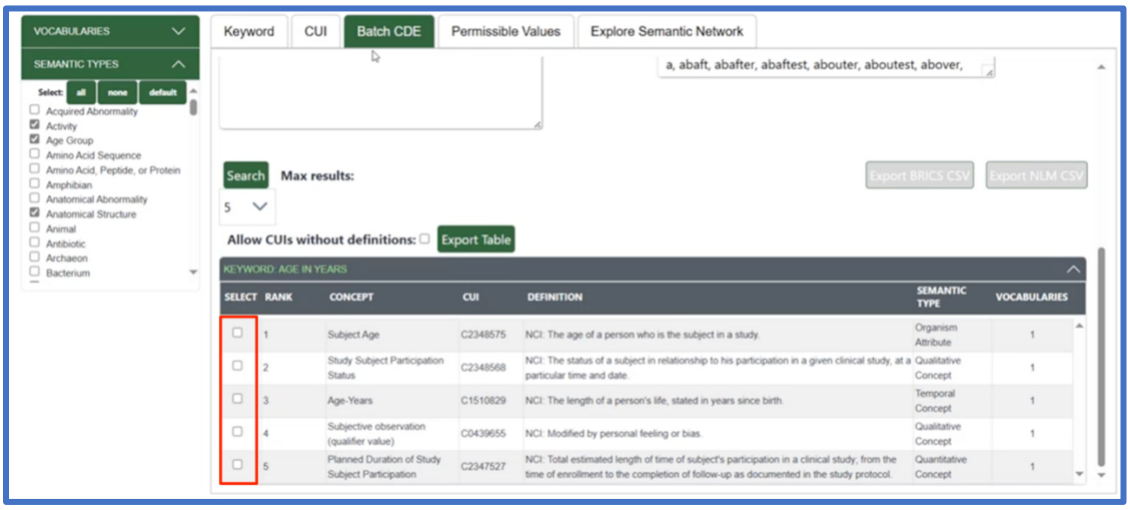
2. Change the header column to view that column for the data elements shown.



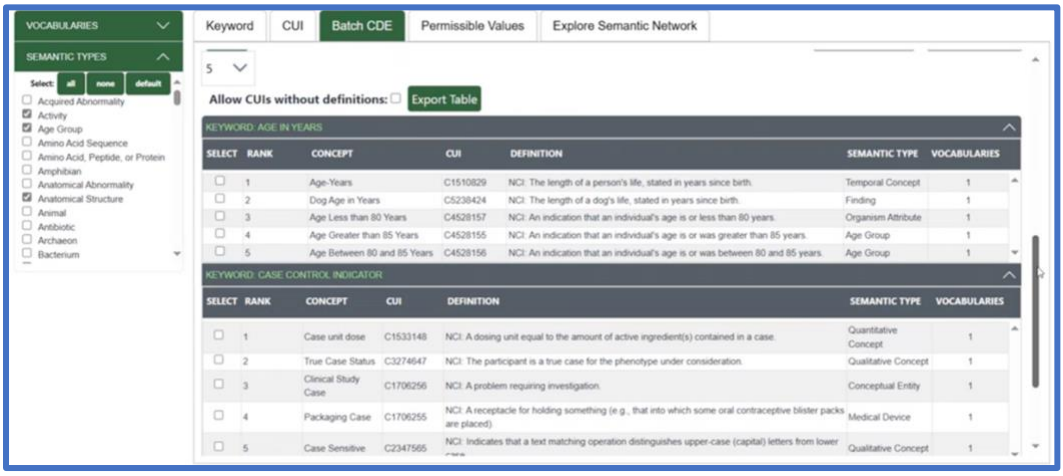
3. Deselect the element(s) that you do not wish to search for and then click the **Search** button.



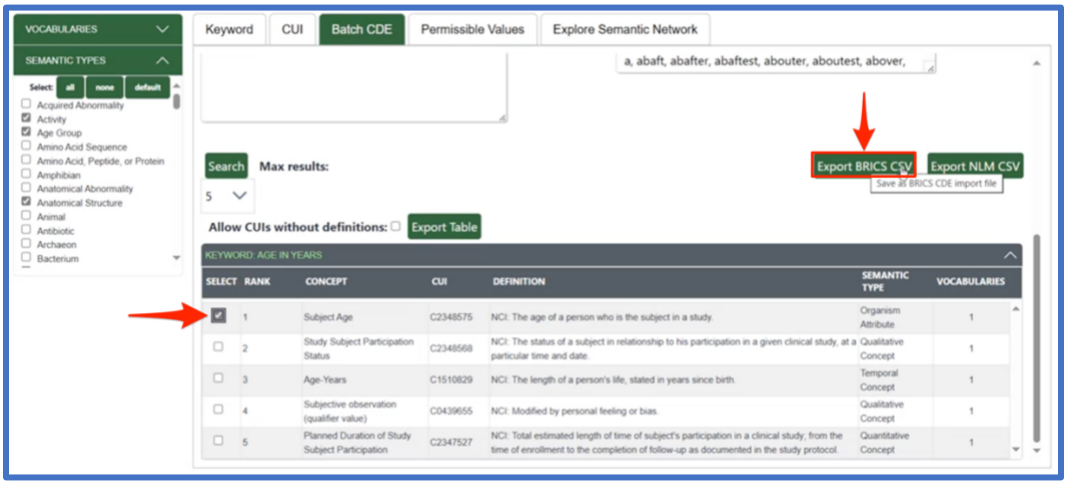
4. The table of CUIs will show. Use the select box to associate the CUIs with a data element.
NOTE: We can select up to 3 CUIs to be associated with each Data Element.



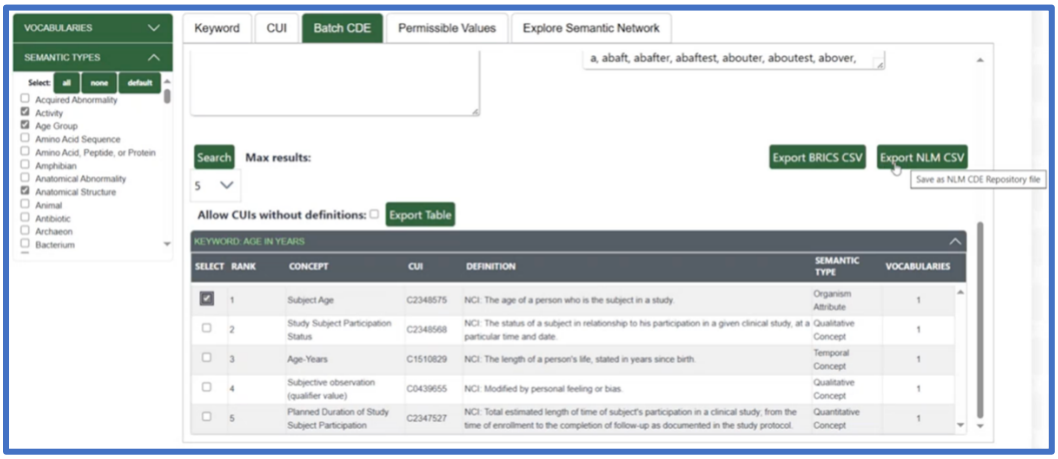
NOTE: If there are multiple Data Elements selected, then a table for each data element will show, allowing users to select the CUIs for the different data elements:



5. To create a BRICS CSV for uploading the Data Elements with the selected CUIs back in then select the **Export BRICS CSV** button.

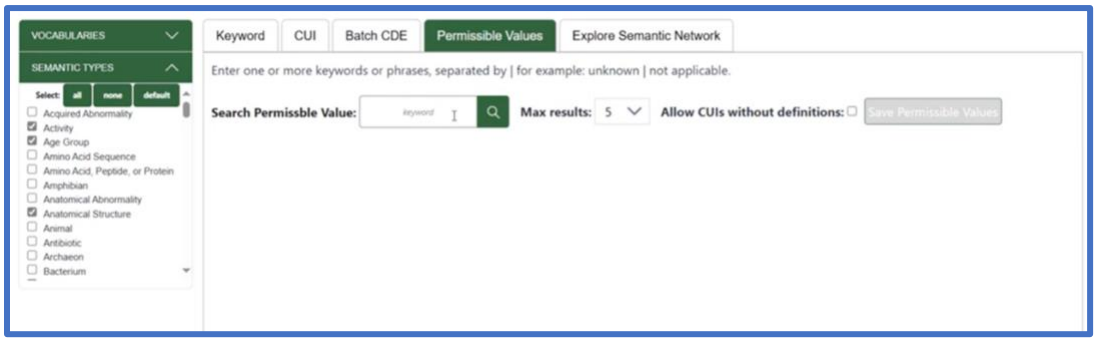


6. To create a NLM (National Library of Medicine) CSV then click **Export NLM CSV**.

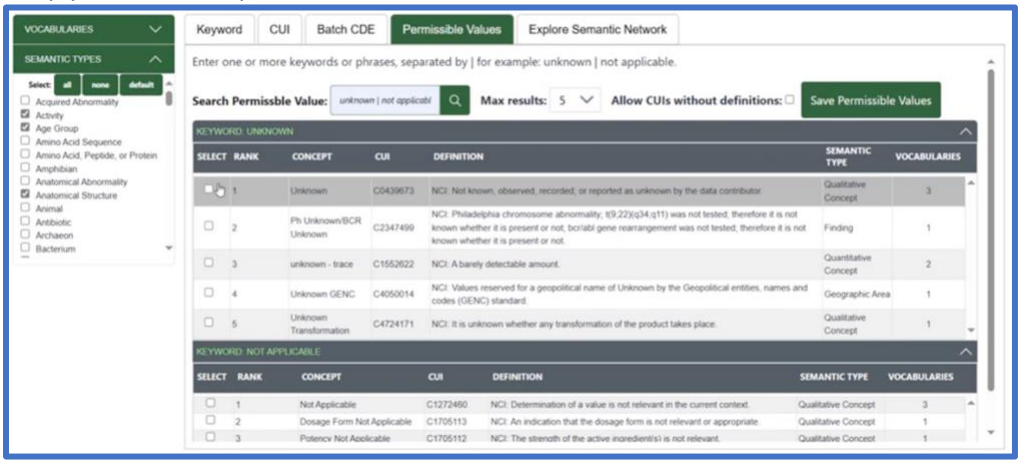


14.3.5 Permissible Values

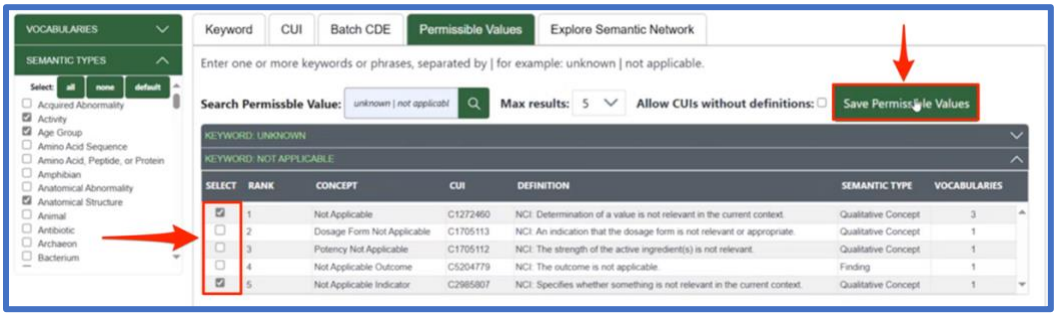
This page allows us to find CUI(s) by searching for a **Permissible Values**, selecting CUIs for that Permissible Value and saving a file to upload to BRICS to update the permissible value to have the selected CUI(s).



1. We can search for a Permissible Value or multiple Permissible Values by separating them with the pipe character (|).



2. We can **select up to 3 CUI(s) for each Permissible Value**. Then press Save Permissible Values to save a CSV file that can be uploaded to BRICS to update the Permissible Values with the selected CUI(s).



14.3.6 Explore Semantic Network

This page visualizes the semantic types, allowing users to see the selected Semantic Types drawn out as a tree.

This can help disambiguate when there is confusion of what **CUI** to assign.

The graph is interactive allowing to expand/collapse nodes by clicking on them as well as viewing additional information when hovering over each node.

NOTE: Leaf Nodes will be green while non leaf nodes will be blue.