LEAF USER GUIDE

Version 1.3
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1. LEAF INTRODUCTION

Leaf is a powerful self-service tool which provides UChicago investigators a user-friendly interface for querying de-identified electronic health record (EHR) data sourced from the UChicago Medicine (UCM) patient population. Leaf interacts directly with a regularly refreshed subset of data, derived from the EHR and encoded in the OMOP Common Data Model (CDM), and gives users the ability to build and explore cohorts in real time. Simple drag-and-drop functionality lets users quickly build an ad hoc query of the EHR and execute the query and provide a breakdown of the cohort it discovered. The data in Leaf (including demographics, encounters, procedures, diagnoses, labs, medications) can help investigators answer a variety of preparatory-to-research questions about the patient population. The primary use case for Leaf is cohort discovery. For example, Leaf is a useful tool to help an investigator determine if there are enough patients within the hospital system who have a given set of conditions matching the recruitment criteria for a trial. It can also help with planning and designing an existing study or submitting a grant proposal.

Please note, Leaf includes patient data from 1/1/2012 to the present date.

2. ACCESSING LEAF

Leaf is only available to UChicago affiliates with valid BSD account credentials at this time. Phases 2 and 3 will include expansion of this user group (Pritzker and UCM affiliates).

The website to access Leaf is: https://bsdleaf.cri.uchicago.edu/

After logging into Leaf, users will need to agree to the usage terms shown below:
3. LEAF QUERIES
After logging in, a query building canvas is displayed. There is a list of concepts along the left-hand side of the screen where users have the ability to search for concepts by keyword, drill into concepts in a hierarchical tree structure, and then drag those concepts to the groups on the right-hand side of the screen, building a query to obtain the cohort counts.

4. CONCEPT TREES
Shown below are the current first level concepts of the concept hierarchy. Further concept levels are available by drilling into each level by clicking on the > arrow to the left of the concept level.
5. SEARCHING CONCEPTS

The search box (shown below) can be used to search for specific terms in the concept hierarchy. Here is an example of searching for the term **diabetes**. The search box shows all the possible concept entries that match the searched term.

And selecting the entry **diabetes 249.61** will display the diagnosis concept tree hierarchy for that term:

NOTE: Search terms can appear in several branches of the concept hierarchy tree. For example, searching the term **atorvastatin** will produce results on both the **Labs** branch and **Medications** branch. Keep this in mind when viewing the search results:
6. CREATING QUERIES

In this example, we expanded the Demographics > Age at Encounter, clicked on the term Pediatric, and dragged it over to the right-hand side first group box. Likewise, we expanded > Race, clicked on Black/African American, and dragged it over to the second group box:

Next, we searched leukemia, while maintaining our Age and Race selections. We selected Lymphoid Leukemia from the Diagnosis branch, and dragged it over to the right-hand side third group box:

Additional concept tree terms can be added to each of the group boxes depending on your search needs. Please note, terms follow AND or AND NOT across the group boxes, and within the boxes, the operator is an OR.
Additional filters are available for each group box. For example, we could limit when the diagnosis occurred:

Additional filters are available in this section. For example, we could limit our search to living patients:
7. RUNNING QUERIES

Now that we have built our query, we are ready to run the query and view the search results. Click Run Query:

![Image of the query interface]

Depending upon the complexity of the query and the attributes selected, queries may take a while to run; the time elapsed is shown. The query can be cancelled at any time by clicking Cancel Query:

![Image of the query interface with a cancellation option]

8. QUERY RESULTS

When the query is finished running, the total count of patients found, with our search terms, will be displayed at the top, center. Reminder, Leaf includes patient data from 1/1/2012 to the present date.

We can also choose to save our query:

![Image of the query interface with a save option]
Provide a **Query Name**, **Category**, and click **Save**:

![Saved query interface]

Saved queries will appear at the very bottom of the concept hierarchy tree:

![Saved query tree]

*It is also recommended to save queries in the event that you would like to submit a request for a full data set.*

### 9. SAVED QUERIES

To obtain results for long/large queries, the use of ‘Saved Queries’ is suggested as an alternative method. For example, when trying to find all patients who’ve had renal cancer along with several surgical procedures, first search for all patients who’ve had renal cancer, and save that query. Then perform another query that includes the saved renal cancer query while applying additional filters for the surgical procedures of interest.
10. VISUALIZE
On the left-hand side menu, the Visualize feature will display the graphical stats of the patients found in your query:

11. PATIENT LIST
On the left-hand side menu, the Patient List feature will display the de-identified patients found in your query:
Please note, although your query will display the total number of patients found, viewability is limited to 500 records. Any dates will be date-shifted as well.

You can choose to display or hide columns on the screen with this selection feature:
You can also choose to add additional datasets based on **Observations** and **Procedures**:

What is **de-identification**? See explanation below:
You can also click on any of the column headings to sort the dataset by that element:

12. LEAF SUPPORT

Leaf is supported and administered by the Biological Sciences Center for Research Informatics (CRI). The CRI is responsible for the maintenance and the administration of the application.

Documentation

For a link to support documentation, please click on the Need Help? button on the lower left-hand side of the screen (shown below).
Request Assistance

To request assistance with Leaf (access related or questions) please submit a request at: https://bit.ly/30d629A. See steps below.

Choose Data extracts and analytic reports

The form will populate with your user information. Please complete the additional fields according to the screenshots below.
Please ensure the **Requester Department or Workgroup field** is completed.

<table>
<thead>
<tr>
<th>Requested For</th>
<th>Requested By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tiffany Cyrus</td>
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<td>Requester ID</td>
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<tr>
<td>tcyrus</td>
<td><a href="mailto:tcyrus@bsd.uchicago.edu">tcyrus@bsd.uchicago.edu</a></td>
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<td>Requester Department or Workgroup</td>
</tr>
<tr>
<td>IT Project Management, Sr. Analyst - ITIPMP2E</td>
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</tr>
</tbody>
</table>
Will DATA or RESULTS of this request be presented or shared outside the organization?

Data and Results Definitions

DATA: Raw data from internal UCM databases
RESULTS: Interpretation, insights, or analysis drawn from raw data

No, neither DATA or RESULTS will be presented or shared outside the

Does data from this request contain Personally Identifiable information (including PHI, such as MRN, patient names, dates of service; to see full list of PHI, select "Yes"), finance, employee/human resources, UCM confidential or strategic data?

No

Does data from this request contain any "restricted" or "internal use only" information as defined under the UCM IT Data Classification Policy?

UCM IT Data Classification Policy

-- None --

Has a request similar to this one been successfully completed in the past?

No

Have you already spoken with a fulfillment team regarding this request?

Yes

Please select the team with whom you have spoken regarding this request:

Center for Research Informatics (Julie Johnson/Tiffany Cyrus)

Is this an urgent request?

No
Select Order Now to submit the request.

Your request will be routed to the CRI and a member of our team will contact you to assist with your request.
To request a **full data set**, please ensure that you have saved your queries and submit a request following the regular request process at [https://cri.uchicago.edu/crdw/#getstarted](https://cri.uchicago.edu/crdw/#getstarted)
## 13. DOCUMENT CHANGE HISTORY

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<thead>
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<th>VERSION</th>
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<td>5/20/21</td>
<td>Julissa Acevedo</td>
<td>Initial Document</td>
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<td>1/27/22</td>
<td>Brian Furner</td>
<td>Updates and map feature removal</td>
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<tr>
<td></td>
<td></td>
<td>Tiffany Cyrus</td>
<td>Added steps for requesting support</td>
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