i2b2 V1.7 Web Client New Features Summary

Academic Research Systems
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Introduction

This document summarizes changes and new features of the IDR resulting from the upgrade to i2b2 Version 1.7.

Using IDR with Pre-Existing Functionality

If you want to use the pre-existing functionality of the IDR, the functionality remains the same.

For example, to search for all cases with Antepartum hemorrhage, abruption Placenta or placenta previa, as shown above:

1. Drag the folder from the left top window, "Navigate Terms", to the right top window, "Group 1".
2. Click the Run Query button.

By accepting the default checkbox in the resulting dialog box, "Number of Patients", i2b2 displays the patient count for this query, as shown in the Query Status box on the lower right hand corner of the screen.
Constraining Query Conditions to the Same Encounter

Normally, when you create two constraints in two separate query groups (e.g., Group 1 and Group 2, on the top right corner above), the IDR will return all patients who have had both of the conditions, but those conditions may have taken place at any of their encounters.

The new system enables you to require that two or more conditions take place on the same encounter.

To implement this constraint, follow these steps:

1. Drag and drop your first constraints into Group 1, and your second constraints into Group 2.
2. In the top-right window, click the drop-down list for "Temporal Constraints" and select "Selected groups occur in the same encounter", as shown below.
i2b2 now displays the drop-down fields at the top of the boxes "Group 1", "Group 2", etc.

3. Change to "Occurs in Same Encounter", as shown below.

If you want to relax that constraint for some of the groups, click the drop box for that group and change it to the appropriate value:

- Treat Independently
- Item Instance will be the same [Not yet implemented in UCSF IDR]

For instance, if you run the above query, it searches for all patients with an encounter diagnosis of "Diabetes Mellitus" and a medication order for medication in the pharmaceutical classes "Antiinfectives" or "Antibiotics". It also requires that the encounter diagnosis take place at the same encounter as the medication order, we get (on 4/22/2014) 2816 patients.

If we remove this constraint of the "same encounter", and accept the default of "Treat Independently", we should get more patients matching the original search.

4. Click Run Query in the usual way.
Constraining Query Conditions to take place in a Chronological Sequence

Suppose we wanted to execute the same query as above, but we wanted to put conditions on the chronological sequence of events.

For instance, suppose we require:

- Patient has Diabetes Mellitus, and has a medication order (for an anti-infective or antibiotic medication), that takes place 2 or more days after the first diagnosis of Diabetes Mellitus.

1. With a blank query, Click the Temporal Constraint drop-down list and select Define Sequence of Events.

![Image of i2b2 Web Client with Temporal Constraint and Define Sequence of Events highlighted]
i2b2 displays a new list of options. The first option below our current field says **Population in which event occurs**.

2. Click that drop-down list to display the available choices. These choices represent the sequence of steps that we will fill-in, one at a time, to complete this query.

### Sequence of Steps Options

<table>
<thead>
<tr>
<th>Sequence of Steps Options</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population in which events occur</strong></td>
<td>This is the condition that should be true for all patients considered for the sequence of events. This can be a full query condition with multiple groups. By not completing this, it means that all people are the population that we are considering.</td>
</tr>
<tr>
<td><strong>Event 1</strong></td>
<td>This is the first event that we require in the sequence of events. This can be a full query composed of more than one group. We will use the diagnosis of Diabetes Mellitus as the first event.</td>
</tr>
<tr>
<td><strong>Event 2</strong></td>
<td>It takes at least two events to define a sequence. This is the second event, which can also be a full query with multiple groups. <strong>NOTE</strong>: If we need more than 2 events, we can click the button [New Event] to add as many additional events as we need</td>
</tr>
<tr>
<td><strong>Define order of events</strong></td>
<td>After we set event 1 and event 2, we select this menu item, and we will have a dialog box (shown below) that will show us how to define the chronological sequencing of our events in the query. After completing this dialog, we simply click [Run Query] and we are done.</td>
</tr>
</tbody>
</table>
3. Select **Event 1** and fill in **Diabetes Mellitus** for Group 1. See example below.

4. Select **Event 2** from the drop-down list (that currently says Event 1).

5. Enter the medication orders for antibiotics or anti-infective medications. See example below.

6. Finally, we go back to the drop-down, and select **Define Order of Events**.
The i2b2 displays the following set of fields from which you can select.

Notice the button at the bottom, **Add Temporal Relationship**. This button allows you have as many temporal relationships, on as many events, as you need.

7. Check the “By” box and complete the fields so they display "By >= 2 days". See example below.
8. You are now done specifying your query and can click **Run Query** button.

When i2b2 has completed running your query has completed, the number of matching patients displays in the **Query Status** box as shown below.

**NOTE:** The query finished in 12.4 seconds with a resulting patient count of 3944 patients.
New Options for Running a Query

With i2b2 V1.7, there are new options for displaying extra data when running a query. When you click the Run Query button, i2b2 displays the Run Query dialog box.

![Run Query Dialog Box]

You can leave the default name generated by i2b2 or give your query a unique name by clicking in the **Please type a name for the query:** box and clearing the field.

<table>
<thead>
<tr>
<th>Run Query Options</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>This is checked by default. The value will be NNNN + or – 3. The number is accurate to within plus or minus 3 patients. This is to prevent you from identifying the existence of a single patient, to protect patient privacy.</td>
</tr>
<tr>
<td>Gender patient breakdown</td>
<td>Results in a patient count by gender, with the results:</td>
</tr>
</tbody>
</table>
|                                    | • Gender patient breakdown for "4 years old [@16:00:15"
|                                    |   o Female [TTTTTT +/- 3]: NNNNN +/- 3
|                                    |     ➢ Where TTTTT is the total number of females in the database, and NNNNN is the number of females matching this query
|                                    |   o Male [TTTTTT +/-3]: NNNNNN +/- 3
|                                    |   o Undifferentiated [TTTTTT +/- 3]: NNNNN +/- 3
|                                    |   o Unknown [TTTTTT +/- 3]: NNNNN +/- 3
| Vital Status patient breakdown     | Vital Status patient breakdown for "4 years old [@16:00:15"
|                                    |   o Deceased [TTTTTT +/- 3]: NNNNN +/- 3
|                                    |   o Living [TTTTTT +/- 3]: NNNNN +/- 3
|                                    |   o Unknown [TTTTTT +/- 3]: NNNNN +/- 3
Canceling a Query

After clicking the OK button on the Run Query dialog box, your query begins to run.

If you want to stop your query before it completes, click the Cancel Query button at the bottom of the query tool window: