

# WONDERFUL WORLD OF TECHNOLOGY

## Research Access to UAB Patient Data through i2b2

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**Director**  
**UAB Informatics Institute**  
**(with thanks to Matt Wyatt)**

RDCC Seminar Series

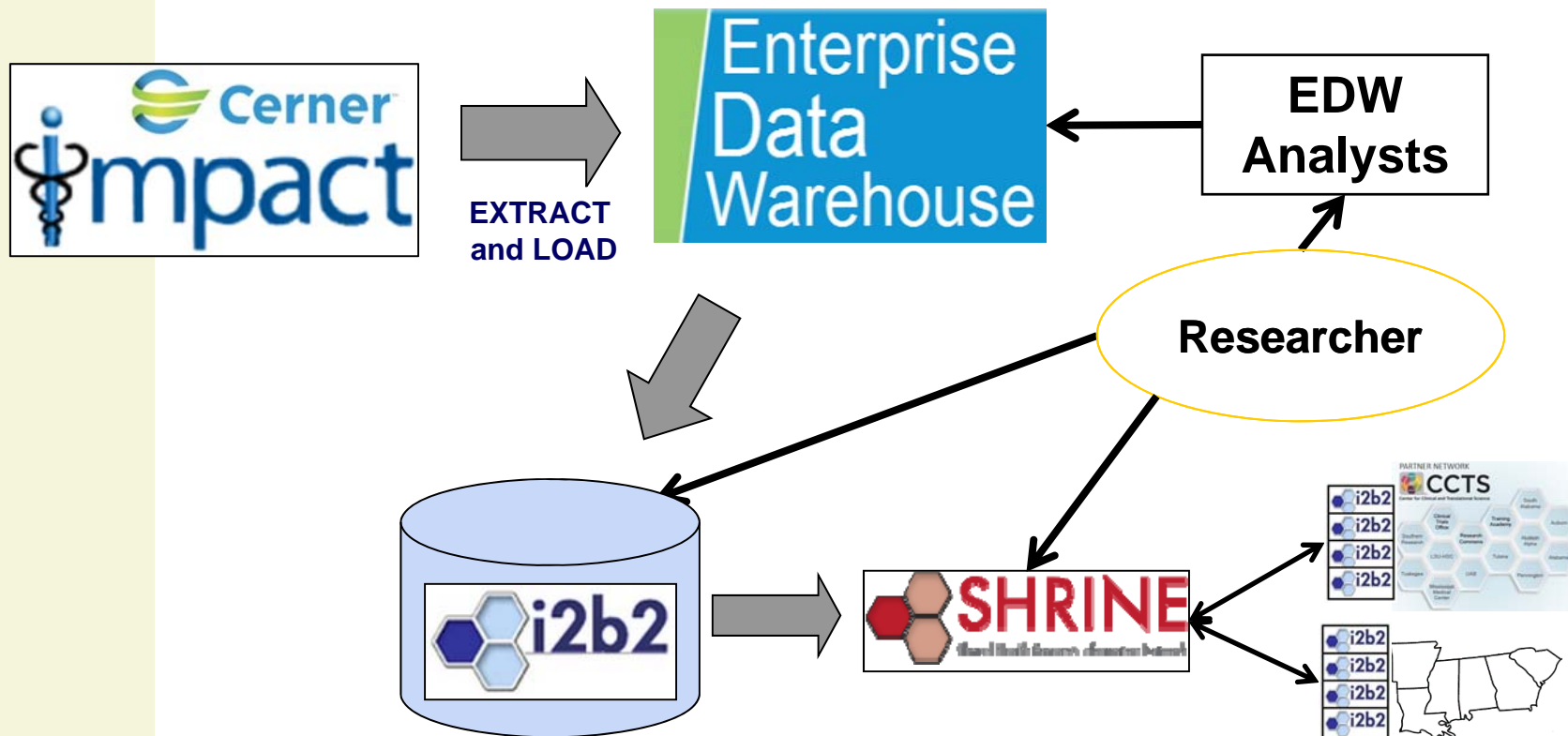
January 26, 2016

# Research Access to UAB Patient Data through i2b2

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- What is i2b2?
- Why i2b2?
- How do I use i2b2?
- Future plans

# What is i2b2?



## What's in i2b2?

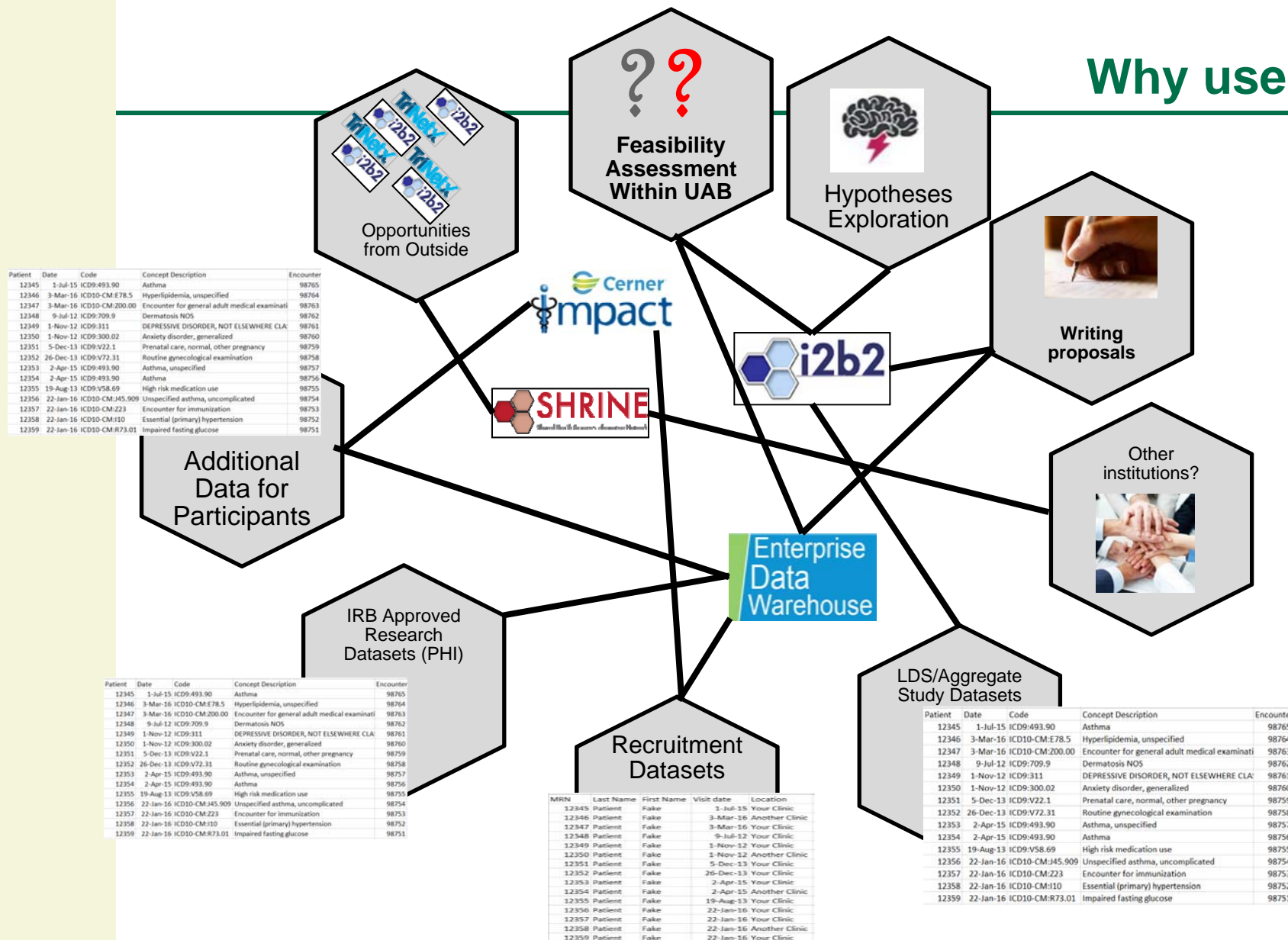
**Row counts by Row Data Type**

Fact Family	Total Fact Counts	Distinct Patients	Earliest Date
Allergies	1,646,780	818,638	7/30/2003
BMI and Waist Measurements	3,782,881	562,852	5/12/2008
Clinical Diagnoses	4,805,169	383,643	5/19/1995
Lab Orders	141,875,875	529,950	6/25/2009
Home/Discharge Medications	11,197,426	533,216	4/28/1998
Tumor/Cancer Data	8,008,157	123,917	12/31/1965
Long-Term Problems	2,976,735	432,530	11/22/1965
Procedures	526,184	136,227	2/17/2014
DRGs	134,461	48,752	1/14/2014
Blood Pressure Measurements	48,425,976	574,164	8/5/2003
Inpatient Medications	36,100,284	341,748	5/18/2008
Height/Weight Measurements	17,570,643	593,767	8/28/2003
Lab Panels	9,677,955	453,094	10/26/2009
Encounter Insurance	11,369,918	695,140	12/1/2003
Immunizations	203,480	101,336	7/26/2008
Microbiology Tests	992,190	171,723	1/26/2008
Less Common Clinical Events	296	75	6/29/2011
Lab Powerplans	1,880,573	297,420	5/18/2008

**Fact Counts by Year**

# Facts	Calendar Year
47,345,765	2016
51,534,937	2015
49,700,108	2014
47,958,801	2013
44,108,483	2012
37,569,899	2011
15,149,276	2010
856,823	2009
772,430	2008
384,785	2007
390,158	2006
403,529	2005
406,917	2004
349,931	2003

# Why use i2b2?



## How do I use i2b2?

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- Before you start: Certification



To Do

Completed

Profile ▾

Catalog

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Take a Tour

## My Completions

Print >

TOTAL COMPLETIONS: 33 EST. LEARNING TIME: 27h 20m

Date Range

Last 24 months ▾

Completions

All ▾

Jan 24, 2015 - Jan 23, 2017

Sort: Date ▴ ▾

**UAB/UABHS HIPAA Privacy and Security  
Online Training - HPAS**

COURSE EST. TIME: 45m

Mar 3, 2015

Certificate

**Rules of Behavior-Information Systems  
(UABHS)**

COURSE EST. TIME: 10m

Apr 24, 2016

Certificate

**Rules of Behavior-Information Systems  
(UABHS)**

COURSE EST. TIME: 10m

Apr 24, 2016

Certificate

**UAB Enterprise Code of Conduct -  
UAB\_COC\_NEW**

COURSE EST. TIME: 40m

Apr 24, 2016

Certificate

**Acknowledgement of Restrictions on the  
Use of Limited Data Sets - CCTS**

COURSE EST. TIME: 15m

Mar 28, 2016

Certificate

**Confidentiality Form UABHS**

COURSE EST. TIME: 6m

Apr 24, 2016

Certificate



You have enrolled successfully in a course

Acknowledgement of Restrictions on the Use of Limited Data Sets

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James Cimino

Campus (University)

Logout



3



# Acknowledgement of Restrictions on the Use of Limited Data Sets



STATUS: Not Yet Started EST. TIME: 15m

Learning Activities [Overview](#)

## Learning Activities *in this Course*

### Read Terms and Conditions of Limited Data Set (LDS)

COURSE ATTACHMENT STATUS: Not Yet Started

View

### Attestation

TEST STATUS: Not Yet Started

Locked

## Description

This course is an acknowledgement and attestation that users have read and understood the terms and conditions of receiving access to Limited Data Set (LDS) from the UAB i2b2 system.

Course Version: 1

## Options

Un-Enroll from Course

## Support

For assistance, please contact Learning System Support at 205.996.4444 or email [learningsystem@uab.edu](mailto:learningsystem@uab.edu)



## **Acknowledgement of Restrictions on the Use of Limited Data Sets**

As a condition of receipt of a Limited Data Set (LDS) from the UAB i2b2 system, you agree to the following terms and conditions:

1. The research is supported by and approved by your superiors.
2. You acknowledge and accept that UAB is not permitted to release to you the key to the code that links information to individual research subjects.
3. You are the individual responsible for the use of these data and any subsequent publications. You will follow the appropriate human subjects research, data security and privacy protections and will maintain the confidentiality of these data in compliance with all applicable UAB policies and procedures as the data sets may contain Protected Health Information (PHI).
4. Use and disclosure of an LDS:
  - a. As the Recipient, you agree that you will provide a full title and explanation of your research pertaining to the use of the LDS, as requested in the form provided at the time of data access.
  - b. You will only give access to the LDS to other individuals who are within UAB and have completed Human Subjects Research and HIPAA training; you will provide the names of these other individuals on request.
  - c. You agree to apprise all individuals that have access to the LDS of the terms and conditions of data use.
  - d. You shall use appropriate safeguards to protect the LDS from misuse or inappropriate disclosure and to prevent any use or disclosure of the LDS other than as provided by law or regulation.
  - e. You shall not attempt to identify individuals to whom the data pertain or attempt to contact such individuals.
  - f. That you are making use of previously collected ("on the shelf") data only and you shall not attempt to carry out subsequent data queries for the purposes of collecting data ("updates") about individuals whose data are in the LDS.
5. You will use the data only for the research use described and will maintain the LDS as per UAB policy.
6. You shall report to the UAB Privacy Office any unauthorized use or disclosure for the PII of which you become aware. You will take reasonable steps to any further use or disclosure. To contact the UAB Privacy Office, call (205) 996-5051 or e-mail ssearson@uabmc.edu.
7. You agree to these terms of use for as long as you retain the LDS, unless otherwise terminated by applicable law or regulation.

This Acknowledgement applies to the LDS resulting from the i2b2 query and shall continue as long as I retain the LDS, unless otherwise terminated by applicable law or regulation. I may terminate this Acknowledgement by returning or destroying the LDS and providing a written notice to the i2b2 administration at: Director of Research Commons, UAB CCTS, 111 PCAM, 1720 2nd Avenue South, Birmingham, AL 35294-0007. Should I commit a material breach of this Acknowledgement, which is not cured within thirty (30) days after I receive a notice of such a breach from i2b2, then i2b2 will discontinue disclosure of LDS and will report the breach to the UAB Privacy Office by phone at (205) 996-5051 or e-mail ssearson@uabmc.edu.

To Do

Completed

Profile ▾

Catalog

Connections

Help



## Attestation

STATUS: In Progress QUESTIONS: 1

### Question 1 *of 1*

By clicking Yes below, I acknowledge/attest that I have read and understand the terms, conditions, and restrictions on the Use of Limited Data Sets.

☒ Yes

☐ No

Complete Test

## How do I use i2b2?

---

- Before you start: Certification
- Type I: Summary data – not human subjects data

# i2b2 Self Service Query Builder

The screenshot displays the i2b2 Self Service Query Builder interface, showing two overlapping windows. The top window is the main query builder, and the bottom window is a detailed view of a specific query.

**Top Window (Main Query Builder):**

- Project:** UAB LDS (Early Feb 2016) **Fresh Data Load starting end of May 2016**
- User:** MATTHEW WYATT
- Query Name:** Gastro--esomepr@10:12:10
- Temporal Constraint:** Treat all groups independently
- Groups:** Group 1, Group 2, Group 3 (each with Dates, Occurs > 0x, and Exclude options)
- Search by Names:** Search by Codes
- Containing:** proton pump
- Find:** Medications (Multum Ontology)
- Search Results:** proton pump inhibitors
  - dextansoprazole - 3386
  - esomeprazole - 94153
  - lansoprazole - 7399
  - omeprazole - 65050
  - omeprazole-sodium bica
  - pantoprazole - 69107
  - rabeprazole - 1380

**Bottom Window (Detailed Query View):**

- Query Name:** Gastro--proton @10:10:46
- Temporal Constraint:** Treat all groups independently
- Groups:** Group 1, Group 2, Group 3 (each with Dates, Occurs > 0x, and Exclude options)
- Search Results:** proton pump inhibitors
  - dextansoprazole - 3386
  - esomeprazole - 94153
  - lansoprazole - 7399
  - omeprazole - 65050
  - omeprazole-sodium bicarbonate - 1035
  - pantoprazole - 69107
  - rabeprazole - 1380
- Query Logic:** one or more of these AND one or more of these AND drop a term on here
- Run Query:** Clear Print Query 2 Groups
- Show Query Status:** Graph Results
- Number of patients:** 30170
- For Query:** "Gastro--proton @10:10:46"



# Complex Query by Value

The image shows a complex query interface with three overlapping dialog boxes. The top dialog box is titled "Choose value of BMI Range (Test:BMI)". It contains a text area with the instruction "Searches by Lab values can be constrained by the high/low flag set by the performing laboratory, or by the values themselves." Below this, there are two radio buttons: "No Value" and "By Value", with "By Value" selected. To the right, there is a "Please select operator:" dropdown menu showing "LESS THAN (<)" and a "Please enter a value:" text input field. The middle dialog box is titled "Choose value of RBC (Blood) (UABLABS:317212) (Test:UABLABS:317212)". It has the same instruction text and radio buttons. It also has the same operator dropdown and value input field. At the bottom of this dialog, there is a "Units =" dropdown menu showing "10^6/cmm". The bottom dialog box is partially obscured but shows a "Please select a value" dropdown menu with a list of values: "81 mg,= 1 tab(s)", "81 mg = 1 tab(s),", "325 mg,Tab,Oral", "81 mg,= 1 tab(s),", and "81 mg = 1 tab(s),Tab,EC". At the bottom right of the RBC dialog, there are "OK" and "Cancel" buttons.

**Choose value of BMI Range (Test:BMI)**

Searches by Lab values can be constrained by the high/low flag set by the performing laboratory, or by the values themselves.

☐ No Value

☒ By Value

Please select operator:  
LESS THAN (<)

Please enter a value:

**Choose value of RBC (Blood) (UABLABS:317212) (Test:UABLABS:317212)**

Searches by Lab values can be constrained by the high/low flag set by the performing laboratory, or by the values themselves.

☐ No Value

☒ By Value

Please select operator:  
LESS THAN (<)

Please enter a value:

Units = 10^6/cmm

OK Cancel

**Choose value of RBC (Blood) (UABLABS:317212) (Test:UABLABS:317212)**

Please select a value:

- 81 mg,= 1 tab(s)
- 81 mg = 1 tab(s),
- 325 mg,Tab,Oral
- 81 mg,= 1 tab(s),
- 81 mg = 1 tab(s),Tab,EC,

# Aggregate Results

Query Name: Your Query Name Goes Here  
Temporal Constraint: Treat all groups independently

## Group 1

Date From: none Date To: none Excluded? false Occurs X times: > 0 Relevance %: 100 Temporal Constraint: Treat Independently

Path	Concept/Term	Other Information
Diagnoses \ Certain infectious and parasitic diseases (a00-b99) \ Mycoses (b35-b49) \ Dermatophytosis \ Dermatophytic onychia	* Dermatophytic onychia (ICD10:B35.1)	

## Group 2

Date From: none Date To: none Excluded? false Occurs X times: > 0 Relevance %: 100 Temporal Constraint: Treat Independently

Path	Concept/Term	Other Information
Medications \ Multum \ analgesics \ aspirin \	* aspirin	

## Group 3

Date From: none Date To: none Excluded? false Occurs X times: > 0 Relevance %: 100 Temporal Constraint: Treat Independently

Path	Concept/Term	Other Information
Vital Signs \ Blood Pressure Readings \ Diastolic Blood Pressure - Sitting \	* Diastolic Blood Pressure	

## Group 4

Date From: none Date To: none Excluded? false Occurs X times: > 0 Relevance %: 100 Temporal Constraint: Treat Independently

Path	Concept/Term	Other Information
Demographics \ Gender \ \ MALE	* MALE	

Finished Query: "Your Query Name Goes Here"  
Compute Time: 52 secs

Number of patients for "Your Query Name Goes Here"  
patient\_count: 9

Gender patient breakdown for "Your Query Name Goes Here"

- \* FEMALE: 0
- \* MALE: 9
- \* UNKNOWN: 0
- \* Unknown: 0
- \* UNSPECIFIED: 0

Vital Status patient breakdown for "Your Query Name Goes Here"

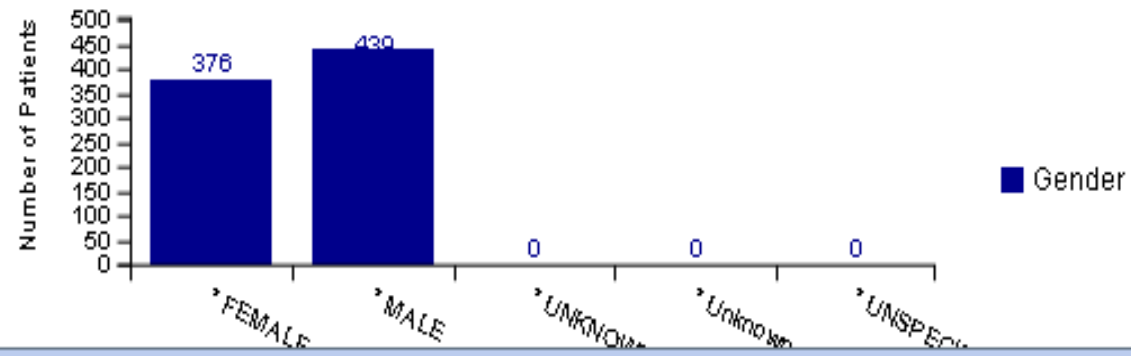
- \* Alive: 9
- \* Deceased: 0

Race patient breakdown for "Your Query Name Goes Here"

- \* American Indian or Alaska Native: 0
- \* Asian: 0
- \* Black or African American: 3

Show Query Status

Graph Results



Number of patients

107

For Query "\*\* Sick!-\* Creat@15:29:33"

## How do I use i2b2?

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- Before you start: Certification
- Type I: Summary data – not human subjects data
- Type II: Limited Data Sets (“deidentified”) – IRB Exempt

# Downloading Detailed Data

--Select a Code Family--

--Select a Code Family--

MEDS: Home and Discharge Medications

MEDS: Inpatient Medications

LABS: Lab Orders

LABS: Lab Panels

LABS: Lab Powerplans

ALLERGIES: Allergies, including NKA

VITALS: BMI and Waist Measurements

VITALS: Blood Pressure Readings

VITALS: Height and Weight Measurements

VITALS: Other, Less Common Clinical Events

DIAGS: Clinical/Encounter-Specific Diagnoses

DIAGS: Long-Term Problems

Immunizations

Microbiology Tests


Procedures


DRGs

Patient Data

Patient Data Download and Consultation Request

Self-Service Limited  
Data Set Download

 **INFORMATICS  
INSTITUTE**

 **CCTS**  
Center for Clinical and Translational Science

- **Patient sets in the dropdown list below belong to you.** Only patient sets containing 500 or fewer distinct patients are available for download on this page. If your patient set is larger than 500 distinct patients, you should contact the i2b2 team for assistance.
- **IMPORTANT:** With each download, you acknowledge that you have read and understood the terms and conditions of receiving access to Limited Data Set (LDS) from the UAB i2b2 system. This agreement applies for as long as you retain the LDS.
- **NEED HELP?:** [Click here to email the i2b2 team at UAB](#)

Select a Fact Group for Download

--Select a Code Family-- ☐ I want patient counts by concept, not all details

Information Recorded with this Download

*Displaying your most recently recorded project information; you may alter this information for each download request.*

\*Title of Research Project

carsons isis

\*Description of the Research Project

dogs and cats

List Blazer IDs of Others Who Will View/Use This Data ( comma separated )

blazer1, blazer2, blazer3,...

\*Select One Data Set

*Only completed queries that return patient sets with 500 or fewer distinct patients are listed below. Most recent listed first.*

--Select a Patient Set--

Submit



## Detailed Data

i2b2DataDownload-1 - Notepad					
File Edit Format View Help					
sep=					
Distinct Patient Count Concept Description Concept					
34 Morbid obesity	Patient	Date	Code	Concept Description	Encounter
8 Disease due to	12345	1-Jul-15	ICD9:493.90	Asthma	98765
1 Mucositis due	12346	3-Mar-16	ICD10-CM:E78.5	Hyperlipidemia, unspecified	98764
2 Current smoker	12347	3-Mar-16	ICD10-CM:Z00.00	Encounter for general adult medical examination	98763
6 Allergic rhinitis	12348	9-Jul-12	ICD9:709.9	Dermatosis NOS	98762
4 Acquired pancytopenia	12349	1-Nov-12	ICD9:311	DEPRESSIVE DISORDER, NOT ELSEWHERE CLASSIFIED	98761
2 Night sweats ICD9:58.4	12350	1-Nov-12	ICD9:300.02	Anxiety disorder, generalized	98760
19 Anemia SNOMED	12351	5-Dec-13	ICD9:V22.1	Prenatal care, normal, other pregnancy	98759
25 CML (chronic myeloid leukemia)	12352	26-Dec-13	ICD9:V72.31	Routine gynecological examination	98758
1 Bundle branch block	12353	2-Apr-15	ICD9:493.90	Asthma, unspecified	98757
1 Atrial tachycardia	12354	2-Apr-15	ICD9:493.90	Asthma	98756
1 Squamous cell carcinoma	12355	19-Aug-13	ICD9:V58.69	High risk medication use	98755
1 Hydrocephalus	12356	22-Jan-16	ICD10-CM:J45.909	Unspecified asthma, uncomplicated	98754
13 GIST - Gastrointestinal stromal tumor	12357	22-Jan-16	ICD10-CM:Z23	Encounter for immunization	98753
1 Ankle swelling	12358	22-Jan-16	ICD10-CM:I10	Essential (primary) hypertension	98752
1 Scleroderma	12359	22-Jan-16	ICD10-CM:R73.01	Impaired fasting glucose	98751
1 Uterine fibroid					
2 Secondary hypertension					
3 Depression ICD9:296.2					
15 Anemia ICD9:280.9					
1 Leukemia, chronic					
10 Benign hypertension					
1 Pain syndrome, chronic ICD9:558.4					
1 Trophoblastic disease SNOMED:416402001					
2 Past history of procedure SNOMED:416940007					
1 Diabetic nephropathy SNOMED:127013003					
1 Hyperglycemia SNOMED:80394007					

### UAB Central Authentication System

Enter your BlazerID and Password:

BlazerID



Password

Log In

#### Having trouble logging in?

Visit [BlazerID Central](#) for help or to reset your password.

Contact AskIT at 205-996-5555 if you have any problems using this system or your BlazerID.

#### Security Notice

For security reasons, quit your web browser when finished accessing services that require authentication. Be wary of any program or web page that asks for your BlazerID and password. Legitimate UAB web pages prompting for your BlazerID and password should have addresses that begin with [https://](#) (not [http:](#)) and contain "uab.edu". Also, your browser should visually indicate that you are accessing a secure page, usually a padlock icon.

This system is available only for authorized purposes by authorized users. Use for any other purpose may result in disciplinary action or criminal prosecution against the user.

	A	B	C	D	E	F	G
1	Patient	Date	Concept Description	Result	Value	Units	Encounter
2	745187	19-Aug-13	MPV (Blood) (UABLABS:316980)	E	10	fL	6339838
3	745187	1-Mar-15	Chloride (Blood) (UABLABS:316182)	E	98	mMol/L	10568361
4	745187	22-Feb-16	U Nitrite (Urine) (UABLABS:752807)	Negative		Unspecified	21179790
5	745187	4-Aug-12	BUN (Blood) (UABLABS:316068)	E	51	mg/dL	3506683
6	745187	22-Feb-16	U Sq Epi (Urine) (UABLABS:752828)	Many		/LPF	21179790
7	745187	15-Nov-11	MCH (Blood) (UABLABS:316930)	E	34	pg	974213
8	745187	23-May-14	GFR Calc (Blood) (UABLABS:138863120)	E	9	mL/min/1.73 m2	7904838
9	745187	1-Dec-15	AUTOVALIDATED	NO		Unspecified	11758392
10	745187	3-Dec-15	Monocytes (Blood) (UABLABS:316976)	E	12	%	11758392
11	745187	25-May-14	Sodium (Blood) (UABLABS:317298)	E	139	mEq/L	7904838
12	745187	22-Jun-15	Glucose Level (Blood) (UABLABS:316558)	E	137	mg/dL	11179672
13	745187	23-Jun-15	AUTOVALIDATED	NO		Unspecified	11179672
14	745187	4-Dec-15	Ovalocytes (Blood) (UABLABS:689101)	Rare		Unspecified	11758392
15	745187	13-Jun-16	Monocytes (Blood) (UABLABS:316976)	E	7	%	24959178
16	745187	14-Jun-16	Hgb (Blood) (UABLABS:316660)	E	6.3	gm/dL	24959178
17	745187	15-Nov-11	RBC (Blood) (UABLABS:317212)	E	1.42	10^6/cmm	974213
18	745187	26-Jun-15	Hgb (Blood) (UABLABS:316660)	E	7.1	gm/dL	11179672
19	745187	2-Sep-15	HBsAb DOSE	E	48.8	Unspecified	11330153
20	745187	4-Oct-16	Potassium (Blood) (UABLABS:317144)	E	4.3	mMol/L	99742998
21	745187	10-Jan-13	Bicarbonate (Blood) (UABLABS:316582)	E	18	mEq/L-Historical	4634948
22	745187	13-Jan-13	Eosinophils (Blood) (UABLABS:316396)	E	2	%	4634948
23	745187	25-May-14	Platelet (Blood) (UABLABS:317116)	E	244	10^3/cmm	7904838
24	745187	26-May-14	AGAP (Blood) (UABLABS:315828)	E	9	mEq/L	7904838
25	745187	6-Mar-15	BUN (Blood) (UABLABS:316068)	E	48	mg/dL	10568361
26	745187	29-Jun-15	MCV (Blood) (UABLABS:316924)	E	95	fL	11179672

## How do I use i2b2?

---

- Before you start: Certification
- Type I: Summary data – not human subjects data
- Type II: Limited Data Sets (“deidentified”) – IRB Exempt
- Type III: Fully identified – IRB approval required



## Example: Assessment

- Dana Golson, Nurse Research Manager, Nutrition Science
  - ◆ "It has been great for us , we are able to more effectively evaluate based on the feasibility query whether we can recruit for a study & be a viable site. "
  - ◆ Exceeded goal for recruitment in ongoing NovoNordisk study

The image displays two screenshots of the CCTS Query Tool interface, which is used for building and running clinical queries.

**Top Screenshot: Diabetes-HGB A1C@12:17:12**

- Query Name:** Diabetes-HGB A1C@12:17:12
- Temporal Constraint:** Treat Independently
- Groups:**
  - Group 1:** Diabetes mellitus due to underlying condition (ICD10:E08), Drug or chemical induced diabetes mellitus (ICD10:E09), Type 2 diabetes mellitus (ICD10:E11), diabetes nos (ICD10:E11), Long term (current) use of insulin (ICD10:Z79.4). Label: one or more of these.
  - Group 2:** HGB A1C (Blood) (UABLABS:753473) 6 - 10. Label: one or more of these.
  - Group 3:** (Empty). Label: drop a term on here.
- Run Query:** 2 Groups
- Show Query Status:** Number of patients: **22281** For Query "Diabetes-HGB A1C@12:17:12"

**Bottom Screenshot: Mixed hyperlipi@07:41:25**

- Query Name:** Mixed hyperlipi@07:41:25
- Temporal Constraint:** Treat Independently
- Groups:**
  - Group 1:** Mixed hyperlipidemia, Mixed hyperlipidemia, Chylomicron retention disease (ICD10:E78.3), Hyperchylomicronemia (ICD10:E78.3), Fredrickson's hyperlipoproteinemia, type I or V (ICD10:E78.3), Hyperlipidemia (ICD10:E78), Mixed hyperlipidemia (ICD10:E78.3). Label: one or more of these.
  - Group 2:** (Empty). Label: drop a term on here.
  - Group 3:** (Empty).
- Run Query:** 1 Group
- Show Query Status:** Number of patients: **15** For Query "Mixed hyperlipi@07:41:25"

Both screenshots show a 'Navigate Terms' panel on the left with categories like Allergies, CPT Procedures, Diagnoses, DRGs, Immunizations, Lab Tests, Medications, Microbiology Tests, Patient Details, and Procedures. A 'Workplace' panel below it lists user names. A 'Previous Queries' panel at the bottom shows a list of saved queries.

## Example: Research

- Claudette Poole, MD, Pediatric Infectious Disease
  - ◆ Used i2b2 to explore patient populations and then received more detailed data from an EDW Analyst
  - ◆ Won first place for an oral abstract at the South Eastern Medical Scientist Symposium

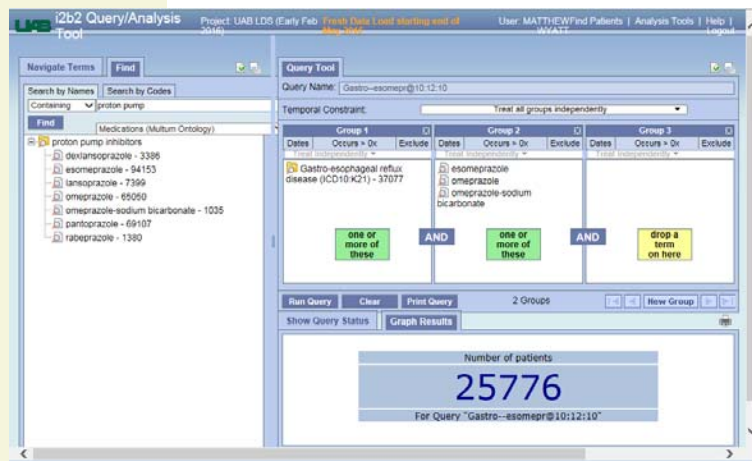
The screenshot shows the i2b2 Query Tool interface. On the left, there's a 'Navigate Terms' pane with a tree view of medical categories like Allergies, CPT Procedures, Diagnoses, etc. Below it is a 'Workplace' pane showing a list of users. The main area is the 'Query Tool' where a query named 'NICU RVP' is defined. It includes temporal constraints for three groups of terms, all set to 'Treat Independently'. The first group contains 'Infectious agent detection by nucleic acid (DNA or RNA); respiratory virus (eg, adenovirus, influenza virus, coronavirus, metapneumovirus, parainfluenza virus, respiratory syncytial virus, rhinovirus), multiplex reverse transcription and amplified probe technique, multiple types or subtypes, 6-11 targets'. The second group contains 'Patient Age <= 1 years'. The third group is empty. The query is run, and the result shows 'Number of patients: 0 For Query "NICU RVP"'. Below the query tool, there's a 'Previous Queries' pane showing a list of queries, including 'NICU RVP [7-5-2016] [clpoole]'.

TVAL_CHAR	START_DATE
Enterocolitis due to Clostridium difficile	10/23/2015 05:00:
Infectious gastroenteritis and colitis, unspecified	10/23/2015 05:00:
Air embolism (traumatic), initial encounter	12/16/2005 06:00:
Encounter for screening for malignant neoplasm of colon	03/22/2016 14:19:
MALIGNANT NEOPLASM OF CERVIX UTERI, UNSPECIFIED	09/18/2014 05:00:
Hb-SS disease without crisis	10/22/2013 05:00:
Parkinson disease	05/14/2013 00:00:
Benign hypertension	11/13/2013 06:00:
Benign hypertension	11/20/2013 17:19:

B	C	D	E	F	G	H	I	J	K	L
ORDERABLE_DISPLAY	TEST_TEXT	FORMATTED_MEDICAL	ADMIT_DT_TM	REASON_FOR_VISIT	AGE_IN_DAYS	LOCATION_NAME	EVENT_START_DT_TM	ORDER_DATE	CULTURE_START_DT_TM	BIRTH_DATE
CULTURE CSF & GS	No growth at 24 hours	000002786911	03/15/2013 21:59:00	PREMATURITY	60	UAB HOSPITAL.RNIC	03/16/2013 17:17:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00
CULTURE CSF & GS	No growth at 48 hours	000002786911	03/15/2013 21:59:00	PREMATURITY	60	UAB HOSPITAL.RNIC	03/16/2013 17:17:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00
CULTURE CSF & GS	No bacteria seen on direct gram stain.	000002786911	03/15/2013 21:59:00	PREMATURITY	63	UAB HOSPITAL.RNIC	03/19/2013 15:41:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00
CULTURE CSF & GS	No growth at 24 hours	000002786911	03/15/2013 21:59:00	PREMATURITY	63	UAB HOSPITAL.RNIC	03/19/2013 15:41:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00
CULTURE CSF & GS	No growth at 24 hours	000002786911	03/15/2013 21:59:00	PREMATURITY	61	UAB HOSPITAL.RNIC	03/17/2013 12:53:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00
CULTURE CSF & GS	No growth at 4 days.	000002786911	03/15/2013 21:59:00	PREMATURITY	62	UAB HOSPITAL.RNIC	03/18/2013 15:21:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00
CULTURE CSF & GS	No growth at 72 hours	000002786911	03/15/2013 21:59:00	PREMATURITY	63	UAB HOSPITAL.RNIC	03/19/2013 15:41:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00
CULTURE CSF & GS	No growth at 72 hours	000002786911	03/15/2013 21:59:00	PREMATURITY	64	UAB HOSPITAL.RNIC	03/20/2013 15:39:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00
CULTURE CSF & GS	No growth at 48 hours	000002786911	03/15/2013 21:59:00	PREMATURITY	64	UAB HOSPITAL.RNIC	03/16/2013 03:27:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00

# Example: Grant Preparation

- Carolyn Williams, Emergency Medicine
  - Used for K24, K08, UH2/UH3 and Industry sponsored (Urticaria Phase II, multi-center)



Patient	Date	Code	Concept Description	Encounter
12345	1-Jul-15	ICD9:493.90	Asthma	98765
12346	3-Mar-16	ICD10-CM:E78.5	Hyperlipidemia, unspecified	98764
12347	3-Mar-16	ICD10-CM:Z00.00	Encounter for general adult medical examination	98763
12348	9-Jul-12	ICD9:709.9	Dermatosis NOS	98762
12349	1-Nov-12	ICD9:311	DEPRESSIVE DISORDER, NOT ELSEWHERE CLASSIFIED	98761
12350	1-Nov-12	ICD9:300.02	Anxiety disorder, generalized	98760
12351	5-Dec-13	ICD9:V22.1	Prenatal care, normal, other pregnancy	98759
12352	26-Dec-13	ICD9:V72.31	Routine gynecological examination	98758
12353	2-Apr-15	ICD9:493.90	Asthma, unspecified	98757
12354	2-Apr-15	ICD9:493.90	Asthma	98756
12355	19-Aug-13	ICD9:V58.69	High risk medication use	98755
12356	22-Jan-16	ICD10-CM:J45.909	Unspecified asthma, uncomplicated	98754
12357	22-Jan-16	ICD10-CM:Z23	Encounter for immunization	98753
12358	22-Jan-16	ICD10-CM:I10	Essential (primary) hypertension	98752
12359	22-Jan-16	ICD10-CM:R73.01	Impaired fasting glucose	98751

Estimates of ED Patients at UAB Hospital, Birmingham, AL  
ICD9 conversions from [www.icd10data.com](http://www.icd10data.com)

Condition	ICD9	ICD10	No. of ED Patients 1/1/2015-12/31/2015
Urticaria	708.0 urticaria* 708.0 allergic urticaria 708.1 idiopathic urticaria 708.2 urticaria from cold/heat 708.3 dermatographic urticaria 708.4 vibratory urticaria 708.5 cholinergic urticaria 708.8 urticaria nec 708.9 urticaria nos	L50.0 Allergic urticaria L50.1 Idiopathic urticaria L50.2 Urticaria due to cold and heat L50.3 Dermatographic urticaria L50.4 Vibratory urticaria L50.5 Cholinergic urticaria L50.6 Contact urticaria L50.8 Other urticaria L50.9 Urticaria, unspecified	74
Hives (Listed as urticarial)	N/A	N/A	
Angioedema (Listed under "angioneurotic edema")	995.1 angioneurotic edema 277.6 defic circuli enzyme nec	T78.3XXA Angioneurotic edema, initial encounter D84.1 Defects in the complement system	17
Allergic reaction (Better cross-lists to "anaphylaxis")	995.3 allergy, unspecified	T78.40XA Allergy, unspecified, initial encounter	47
Anaphylaxis	995.0 other anaphylactic react 999.4 anaphylactic shock-serum# 999.41 anaphyl d/t adm bld/prod 999.42 anaphyl react d/t vacc 999.49 anaph react d/t qt serum 995.60 anaphylct react food nos 995.61 anaphylct react peanuts 995.62 anaphylct react crustacs 995.63 anaphylct react frs veg 995.64 anaphylct react fr nts seed 995.65 anaphylct reaction fish 995.66 anaphylct react food addy 995.67 anaphylct react milk prod 995.68 anaphylct reaction eggs 995.69 anaphyl react gth sp food	T78.2XXA Anaphylactic shock, unspecified, initial encounter T80.51XA Anaphylactic reaction due to administration of blood and blood products, initial encounter T80.52XA Anaphylactic reaction due to vaccination, initial encounter T78.00XA Anaphylactic reaction due to unspecified food, initial encounter T78.01XA Anaphylactic reaction due to peanuts, initial encounter T78.02XA Anaphylactic reaction due to shellfish (crustaceans), initial encounter T78.04XA Anaphylactic reaction due to fruits and vegetables, initial encounter T78.05XA Anaphylactic reaction due to tree nuts and seeds, initial encounter T78.03XA Anaphylactic reaction due to other fish, initial encounter T78.06XA Anaphylactic reaction due to food additives, initial encounter T78.07XA Anaphylactic reaction due to milk and dairy products, initial encounter T78.08XA Anaphylactic reaction due to eggs, initial encounter T78.09XA Anaphylactic reaction due to other food products, initial encounter	2
Drug Allergy	995.27 drug allergy nec	T50.995A Adverse effect of other drugs, medicaments and biological substances, initial encounter	9

## How do I use i2b2?

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- Before you start: Certification
- Type I: Summary data – not human subjects data
- Type II: Limited Data Sets (“deidentified”) – IRB Exempt
- Type III: Fully identified – IRB approval required
- How do I become an expert user?



The screenshot shows a web browser window with a YouTube search bar at the top containing the text "uab i2b2". Below the browser window is the UAB Center for Clinical and Translational Science website. The website header includes the UAB logo, the text "CENTER FOR CLINICAL AND TRANSLATIONAL SCIENCE", the tagline "Knowledge that will change your world", a search bar, and a navigation menu with links: Home, Research Commons, Training Academy, Clinical Translation, Partners, Community, Events, News, and Contact Us. The main content area is titled "i2b2 Training" and contains the following text:

**Accessing Clinical Data for Research with i2b2**

**Did you know there is a tool called i2b2 that can help investigators:**

- Determine study feasibility (sample cohort size)?
- Identify potential participants for recruitment?
- Perform simple data analyses of de-identified patient data?
- Explore hypotheses for clinical studies/trials?

Join one of our hands-on training with i2b2 to explore using UAB's electronic health record data for your research data needs!

**When:** 1:00 pm - 3:00 pm  
**Where:** Cudworth 305

**Registration is required!**

Thursday, February 2 | Filled  
Tuesday, February 21 | Filled  
Thursday, March 2 | Filled  
Tuesday, March 21 | [Register](#)  
Thursday, April 6 | [Register](#)  
Tuesday, April 18 | [Register](#)

At the bottom of the screenshot, there is a video player showing a thumbnail of a presentation slide and a timestamp of 4:51. Below the video player is a link labeled "i2b2 Application Overview".

# Questions?

**[i2b2support@uabmc.edu](mailto:i2b2support@uabmc.edu)**