The NIH Biomedical Translational Research Information System (BTRIS)

Town Hall Meeting - Information Session

February 26, 2008

Lipsett Auditorium

The Reuse of Biomedical Data

- Secondary uses of clinical data for:
  - Patient care
  - Research
  - Administrative processes

- Use of patient data for research

- Use of research data for patient care ("translational research")

- Data may require transformation:
  - De-identification and Re-identification
  - Indexing
  - Aggregation by time
  - Abstraction by classification
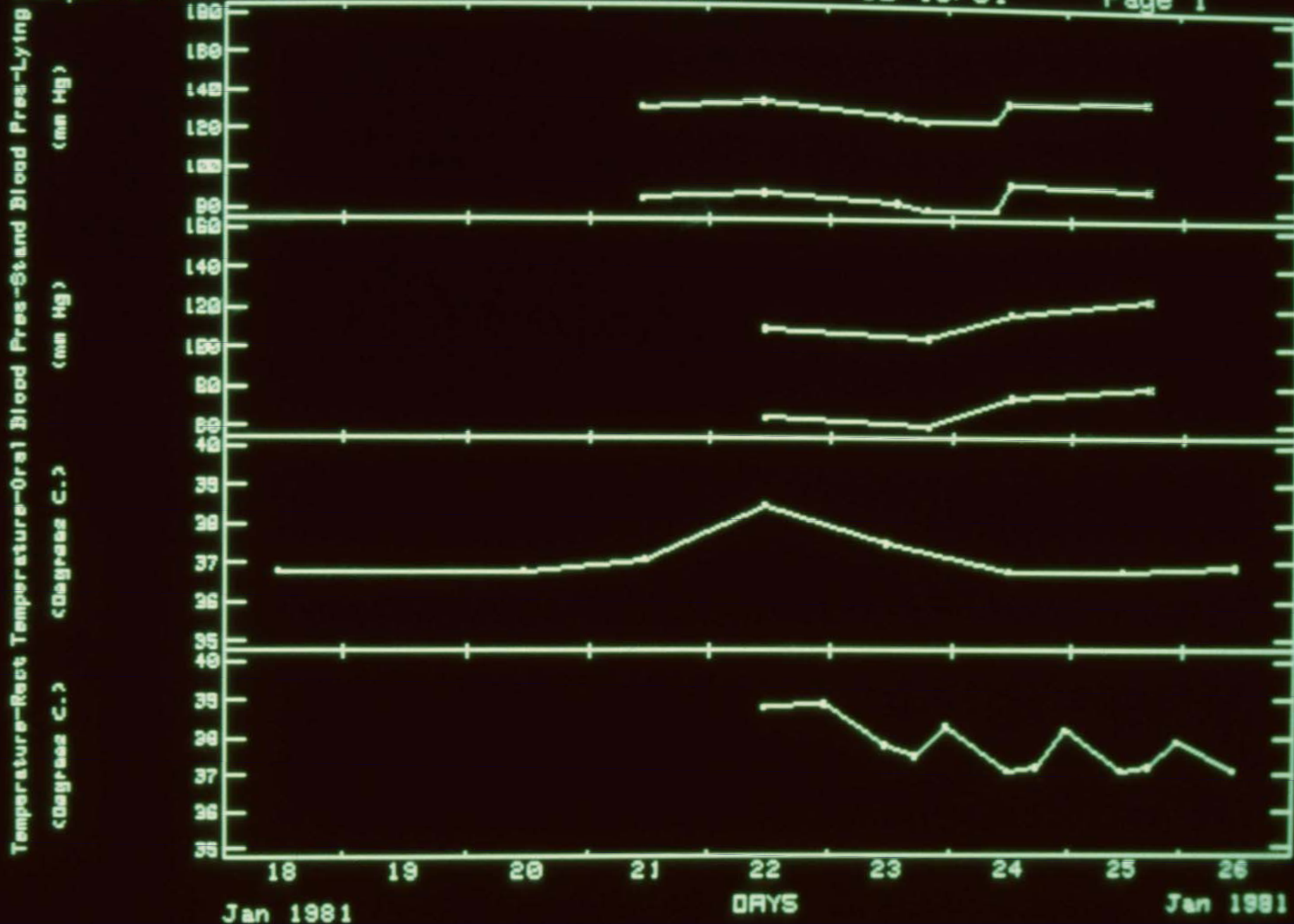 - Conversion to relevant concepts

XSS   TUESDAY FEBRUARY 24 1981   11:19AM
O-17   CLINICAL CENTER NIH HIS
      XRAY,DENTAL, & HOC.MED. UP IN OPD
ADV CARDIAC LIFE SUPPORT COURSE:
MAR 30-APR 1, CALL 496-9649 FOR INFO

NOTE: NURSING: CHECK ANNOUNCEMENTS
      FOR SCHEDULED MEETINGS

HELP/TRAINING: MIS CADRE 496-9174
SIGN ON CODE CALL OCAMS 496-1988
PRACTICE HOSPITAL SIGN ON : JUCY4
                          (2/23)

Patient Information Graphics System

Function Keys

Patient Information Graphics System

Sampela Patiente   25-624   02/18/81   Page 1
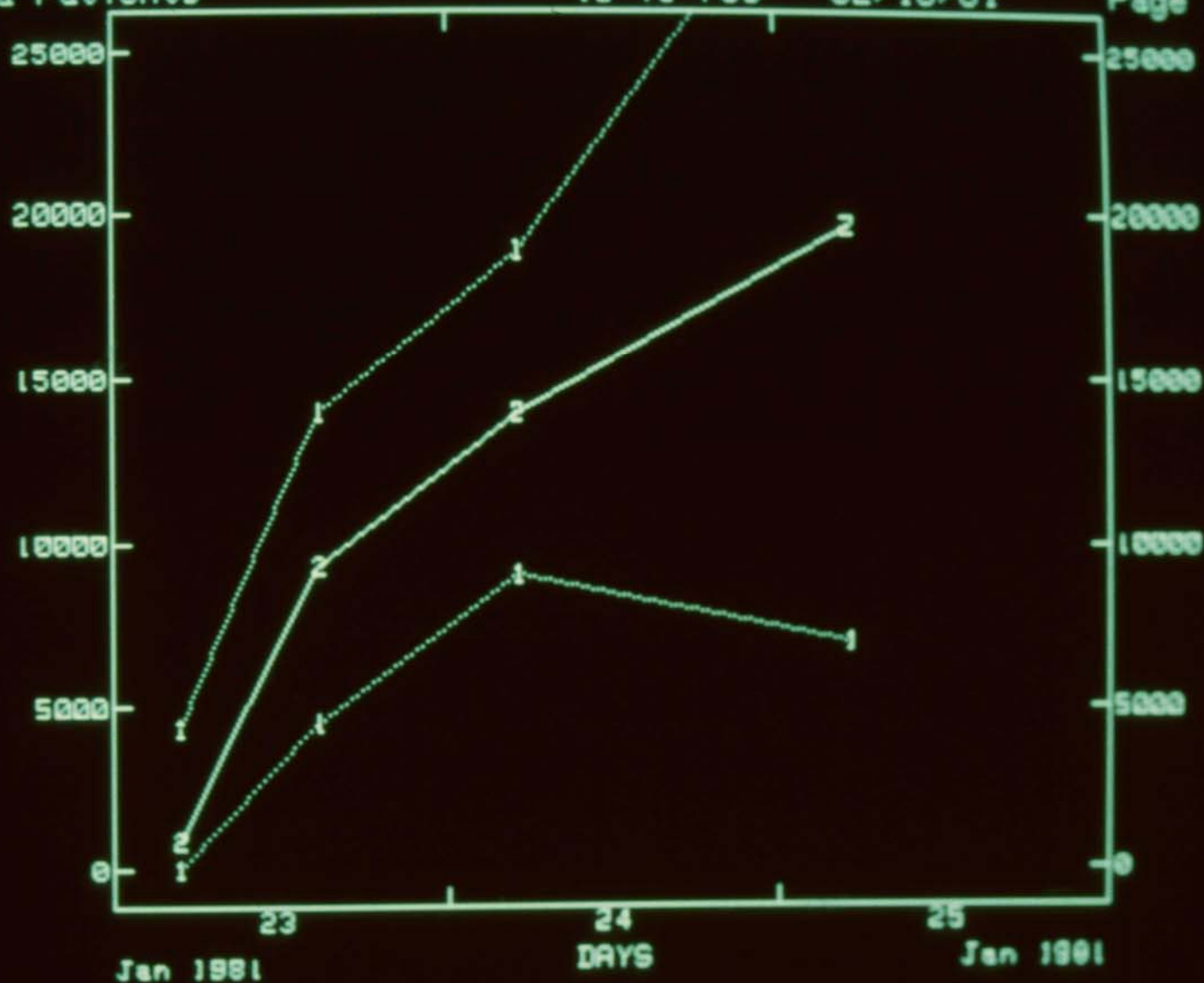
Brief Bio

- Internal medicine residency (St. Vincent's, NY)
- Medical informatics fellowship (Harvard/MGH)
- 20 years at Columbia
  - Informatics research
  - Building clinical systems
  - Teaching informatics and medicine
  - Clinical practice
- Clinical data repository and warehouse
  - 25+ data sources
  - 2,000,000 patients
  - 20 years of data
  - Innovations in coding and organization
  - Concept-based queries
  - Natural language processing (NLP)

How often are patient with the diagnosis of myocardial infarction started on beta blockers?

Clinical Data Warehouse at CPMC

Mediated Query

Please see Important Riders, Approval Requirement and a Fee Policy at the bottom of this page.

NAME	James J. Cimino
DEPARTMENT	Biomedical Informatics
TITLE&RANK	Professor
ROLE IN PROJECT	Principal Investigator
OFFICE ADDRESS	Vanderbilt Clinic 558
TELEPHONE	212-305-8127
EMAIL	jjc7@columbia.edu
PROTOCOL (PROJECT) NAME AND A BRIEF DESCRIPTION	Testing the use of MED Codes in the Warehouse

(255 chars max. Use comments if you need more space)

PROJECT SPONSORSHIP/REASON	Investigator Initiate
PRINCIPLE INVESTIGATOR	James J. Cimino
DATE of REQUEST	3/31/2005
DATE REPORT IS REQUIRED	04/05/2005 e.g. 12/31/2005
DATA REQUESTED	1) Number of patients with discharge diagnosis of Myocardial Infarction (MED Code 2618 or descendants, ICD9-CM Code 410.00 to 410.99), by year from 2000-2004.
APPROVAL LEVEL	Summary/Non-identify info only (No restriction)
HUMAN SUBJECT INVOVLED?	○ YES ● NO
IF YES, IRB #	

How often are patient with the diagnosis of myocardial infarction started on beta blockers?
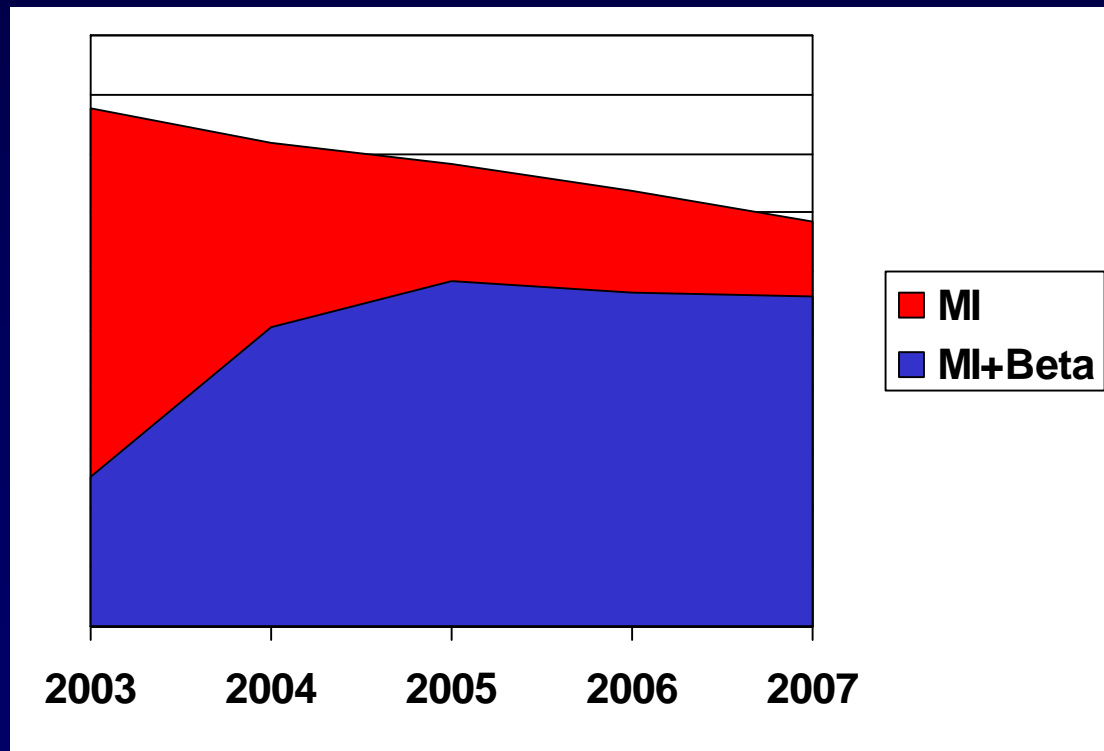
Find all patients with
Diagnosis in class *MYOCARDIAL INFARCTION*

Find all patients with
Diagnosis in class *MYOCARDIAL INFARCTION*
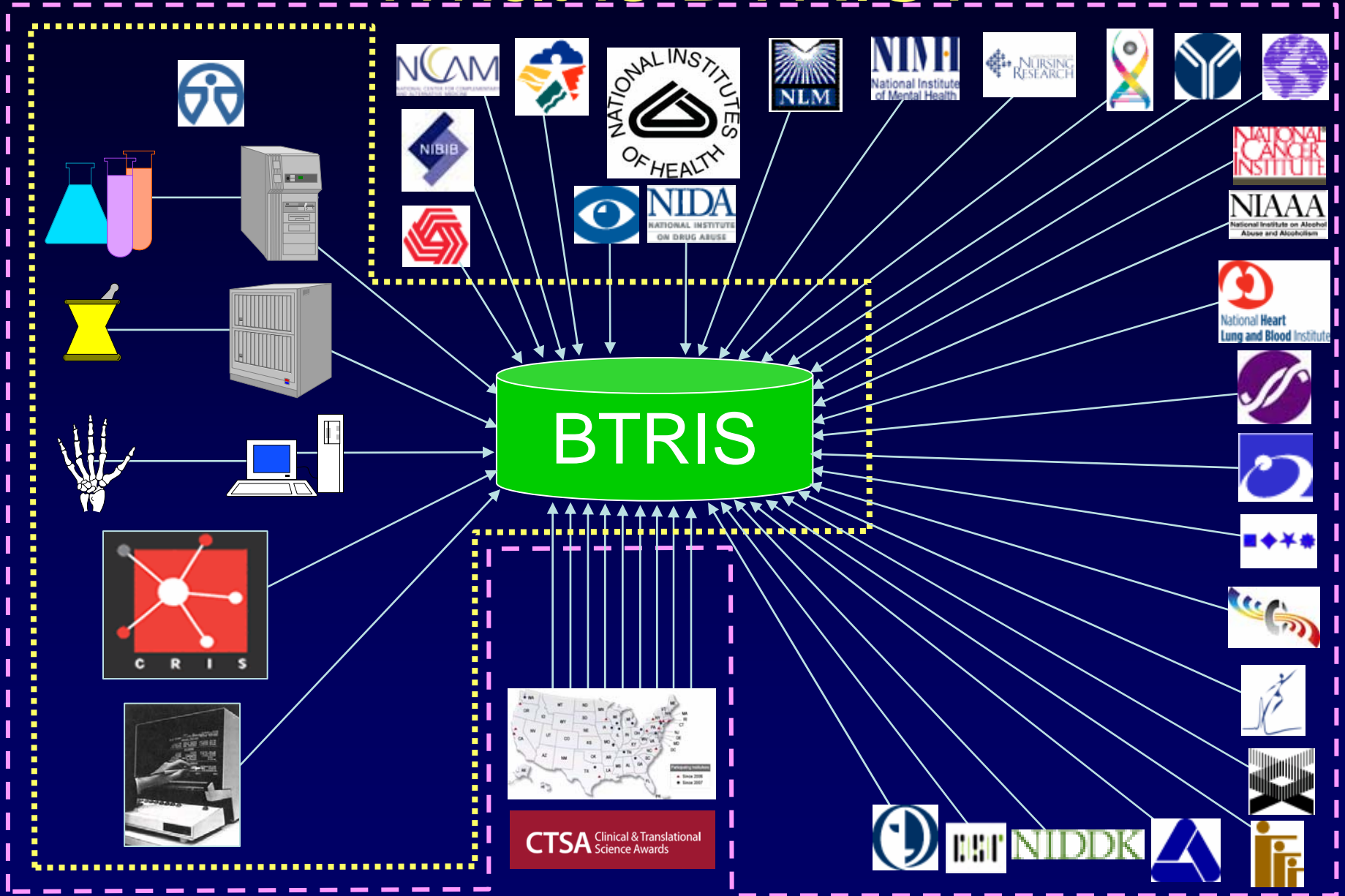AND with
Medication in class *BETA BLOCKER*

Legend:
- ■ MI
- ■ MI+Beta

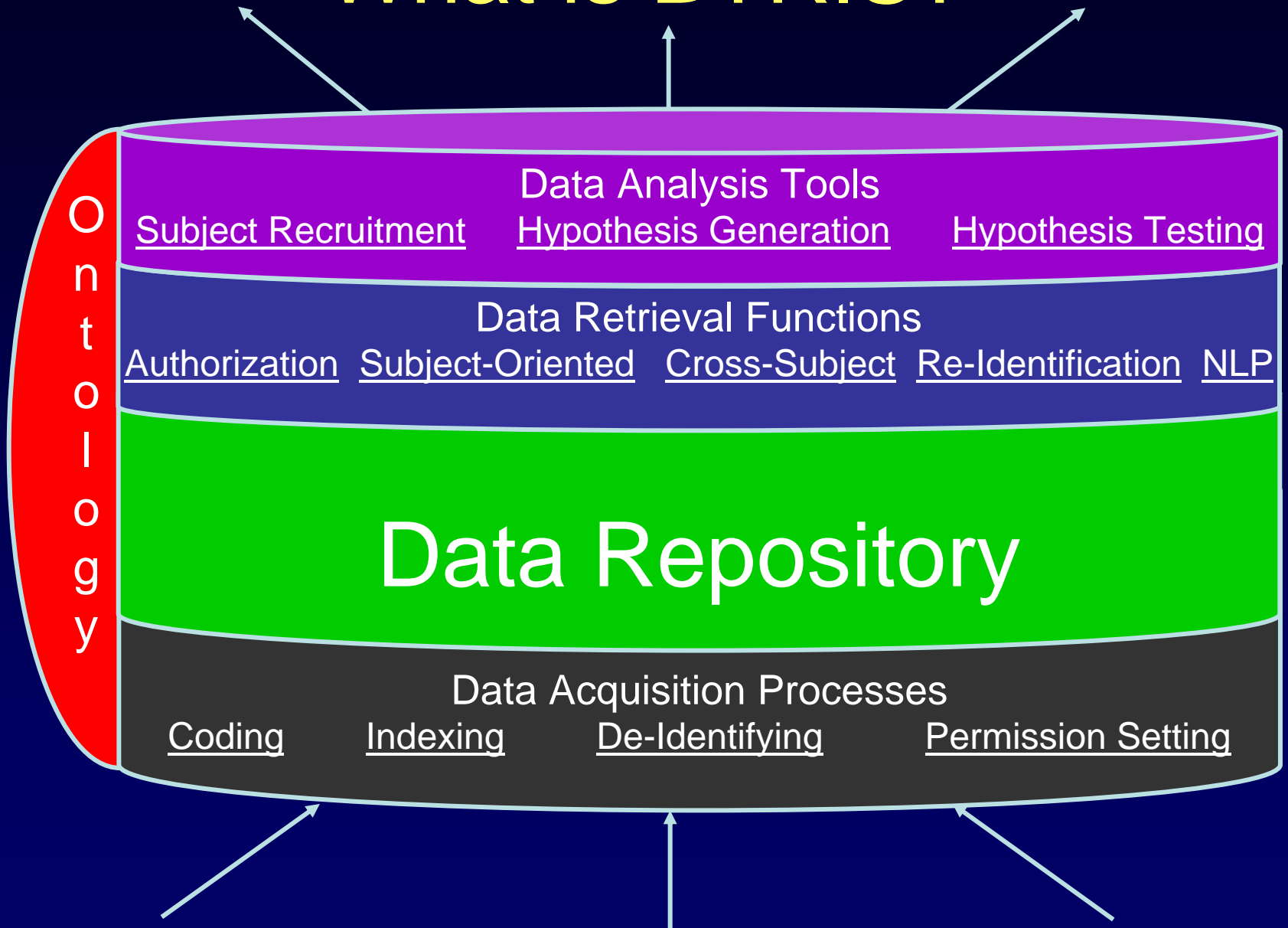2003   2004   2005   2006   2007

What is BTRIS?

- Formerly "CRIS-II"
- Not "Son of CRIS"
- Not just clinical
- Includes focus on translational research
- Hence: *Biomedical* <u>T</u>ranslational <u>R</u>esearch <u>I</u>nformation <u>S</u>ystem

What is BTRIS?

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Ontology

Data Analysis Tools
Subject Recruitment   Hypothesis Generation   Hypothesis Testing

Data Retrieval Functions
Authorization   Subject-Oriented   Cross-Subject   Re-Identification   NLP

Data Repository

Data Acquisition Processes
Coding   Indexing   De-Identifying   Permission Setting

Queries from Requirements-Gathering

- Provide Medication lists at time of patient encounters. Include drug diaries for inpatient, outpatient and in-between encounters in the patient medical record. Include all chemo and non-chemo drugs from CRIS and IC systems
- Provide Medication administration documentation (drug diaries) with times as part of patient record
- Provide ability to compare patient results, Medication Administration Records between dates and/or encounters
- Provide drug randomization info, compliance records and drug accountability info for all investigational, study and prescription drugs
- Provide all Clinical Center lab results with times of specimen draws
- Provide external lab results
- Provide archival images
- Provide demographics data including age, BMI, race, gender, contact info, etc
- Provide access to genomics and bio-markers data
- Provide cumulative blood volumes, research drugs and radiation for subject over a given period
- Provide ability for ICs to feed expanded diagnosis/problem lists
- Provide searching and filtering patients' data by all diagnosis, tests, procedures, protocol & protocol classifications

- Standardize medication and lab test codes.
- Provide integration of adverse events data in the data warehouse,
- Provide integration of protocol census, status and subject accrual tracking data from Protrak in the data warehouse
- Provide ability to attribute different events to protocols, viz., consent signed, protocol activated, orders, observations, adverse events, etc
- Provide integration of staff, patient and user index data across source systems in data warehouse.
- Provide original informed consent, and updated consents for re-contact of patients for research for all protocols. Provide searchable consents and image of consents in database. Provide answers to:
  - Can tissues be used for cancer/genetic research, other research, germ line testing
  - Can patient be re-contacted for questions?
- Provide single patient amendments
- Provide access and track biological specimen data
- Provide access to Appointment Data
- Provide "Review of Systems" info for each patient visit.
- Provide patient de-identification services
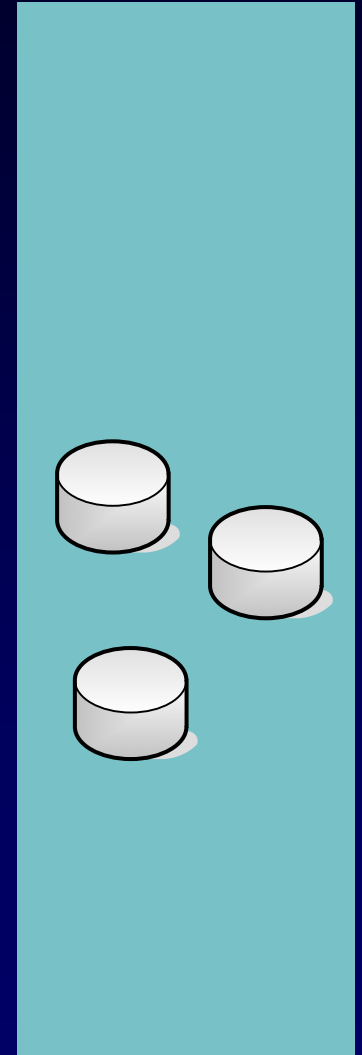- Standardize Units Of Measure

Access Control Issues

- Ownership of data

- Authorization for re-use

- Confidentiality and re-Identification of data
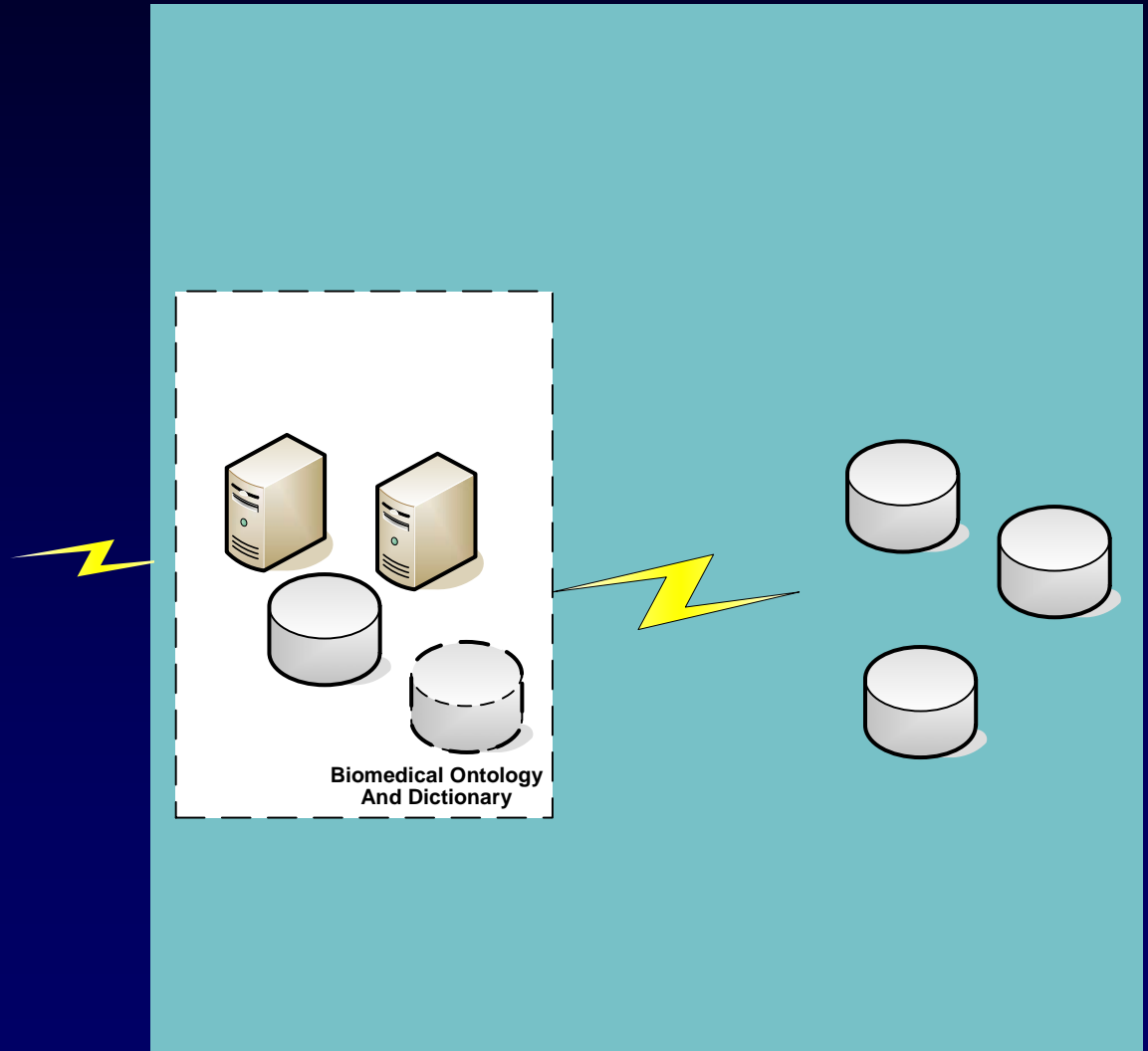
The PI User Group

- Volunteers from NIH community
- Most likely to benefit from BTRIS
- Help set requirements and priorities
- Commitment to participate
  - Weekly meetings
  - Review materials, screen shots, demos
- Beta testers – first access to demonstration
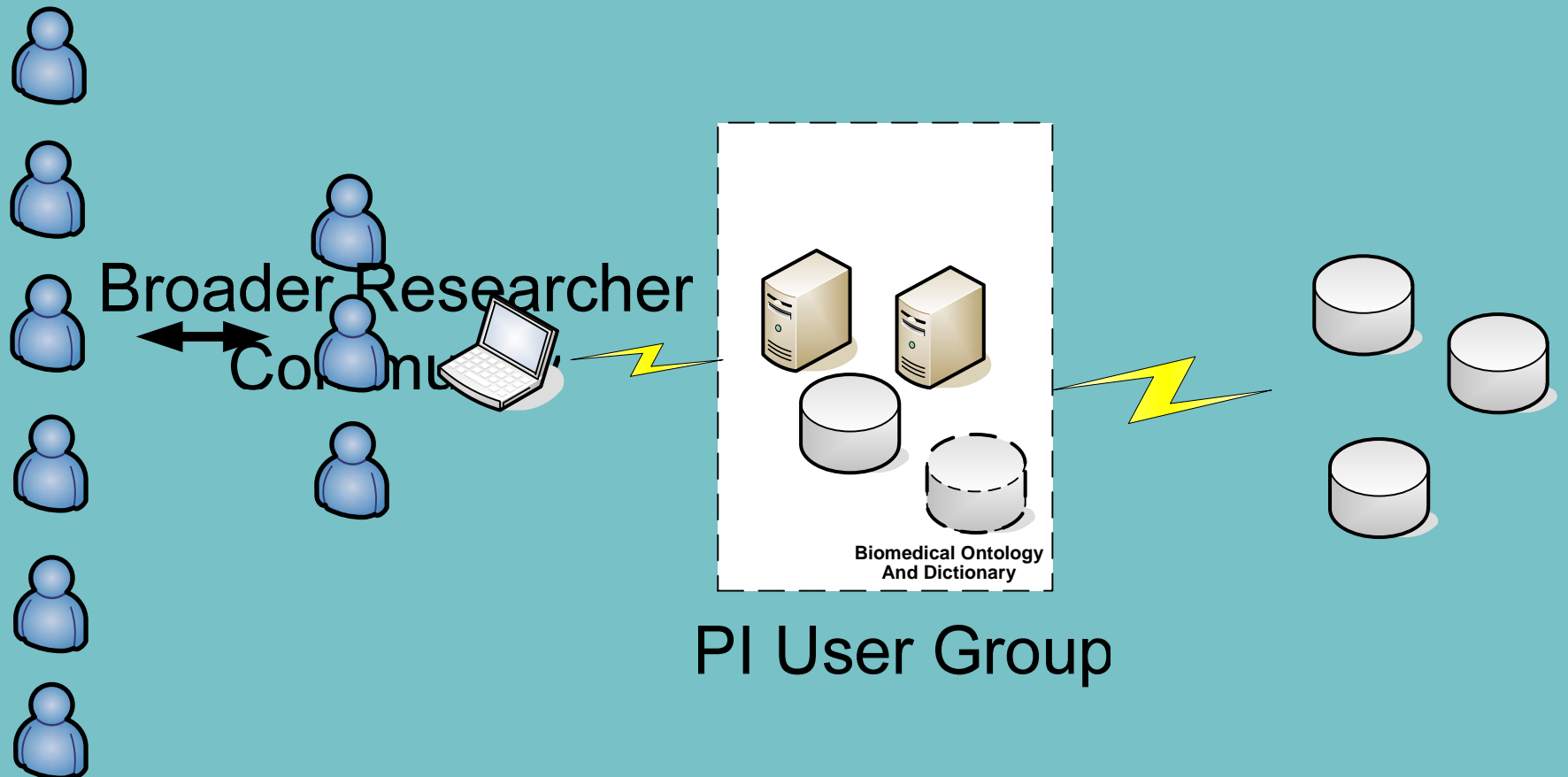
BTRIS Demonstration Environment

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Biomedical Ontology And Dictionary

BTRIS Demonstration Environment

Broader Researcher Community

Biomedical Ontology And Dictionary

PI User Group

Demonstration Project

- Sources:
  - Current laboratory data
  - Old laboratory data (CDW/CDR or MIS)
  - Pharmacy orders (CRIS-I or MIS)
- Terminology Services
  - Code look-up
  - Simple class-based queries
- Data services
  - Data aggregation across sources
  - Data summarization by concept class
  - Patient identification for possible recruitment
  - …as per PI User Group

Timeline for Initial Rollouts

- Demonstration Project: July 2008

- BTRIS: July 2009

BTRIS Will:

- Be the preferred system to analyze NIH clinical and non-clinical data

- Aggregate and standardize disparate and isolated data sets

- Automate and streamline processes that are traditionally manual and cumbersome

- Prioritize data sources and functionality based on needs of user community

Additional Information

www.btris.nih.gov

Questions about BTRIS
or to join the PI User Group:

ciminoj@mail.nih.gov