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MIMIC-III
A Freely Available
Critical Care Database

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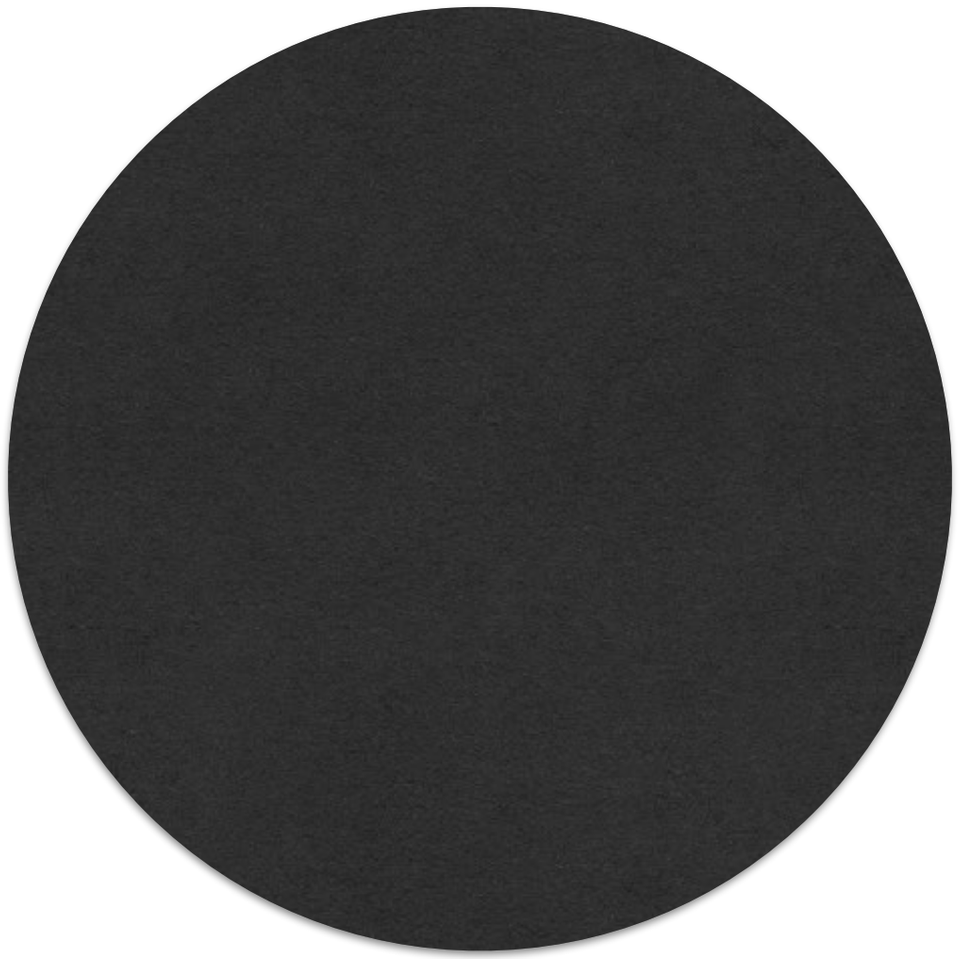
Research opportunity

- Huge volumes of data are captured daily
- *…data that could be used to discover new knowledge for the benefit of patients*

- *<u>but</u>, this data is inaccessible to researchers*



http://mimic.physionet.org

MIMIC-III

- 2001 - 2012
- Waived consent for data collection
- ~40,000 patients
- Data extracted from digital systems

Hospital

ICU

MICU SICU CCU CSRU NICU

Bedside monitoring
- Vital signs
- Waveforms
- Trends
- Alarms

Chart
- Fluids
- Medications
- Progress notes

Tests
- Laboratory
- Microbiology

Orders
- Provider order entry (POE)

Billing
- ICD9
- DRG
- Procedures (CPT)

Demographics
- Admission/discharge dates
- Date of birth/death
- Religion/ethnicity/marital status

Notes and reports
- Discharge summaries
- Radiology (X-ray, CT, MRI, Ultrasound)
- Cardiology (ECHO, ECG)

External

Social Security Death Index

Data archive

De-identification

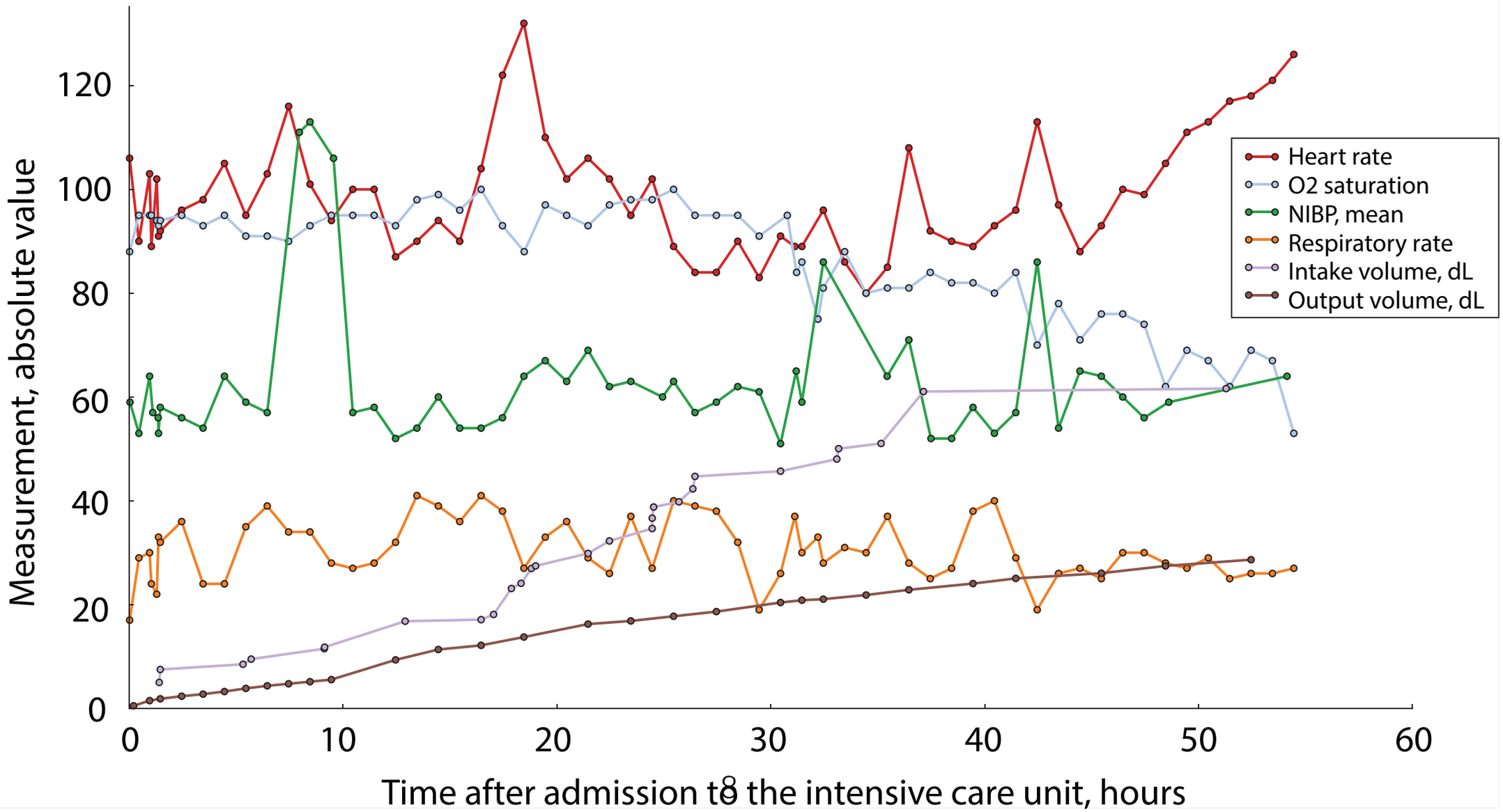
Date shifting

Format conversion

MIMIC-III Database

User feedback and corrections

Code status	Full code					Comfort measures
GCS: Verbal GCS: Moto GCS: Eye	Oriented Obeys commands Spontaneously	Oriented Obeys commands Spontaneously	Oriented Obeys commands Spontaneously	Confused Obeys commands To speech	Confused Obeys commands To speech	Incomprehensible sounds Flex-withdraws None
Platelet, K/uL Creatinine, mg/dL White blood cell, K/uL Neutrophil, %	48 53 0.7 9.1 12.4 37	46 0.7 16.8			45 0.8 23.2	
Morphine Sulfate Vancomycin (1 dose) Piperacillin (1 dose) NaCl 0.9% Amiodarone Dextrose 5%			10.0mL/hour 1mg/min 50mL/hour	10.0mL/hour 0.5mg/min 25mL/hour	0.5mg/min 25mL/hour	10.0mL/hour



Admission Date: [**2952-11-3**] Discharge Date: [**2952-11-9**]

Date of Birth: [**2887-7-23**] Sex: F

Service: MEDICINE

Allergies:
No Known Allergies / Adverse Drug Reactions

Attending:[**First Name3 (LF) 3925**]
Chief Complaint:
Sepsis, respiratory distress

Major Surgical or Invasive Procedure:
None

History of Present Illness:
F w/ h/o metastatic breast cancer to breast and lungs
currently receiving CMT, brought to the ED by
rehab for abnormal labs. She was found to be neutropenic, anemia
and thrombocytopenic. At the rehab, vitals were reportedly T
100.4, HR 107, BP 92/42. There is also a concern for possible...

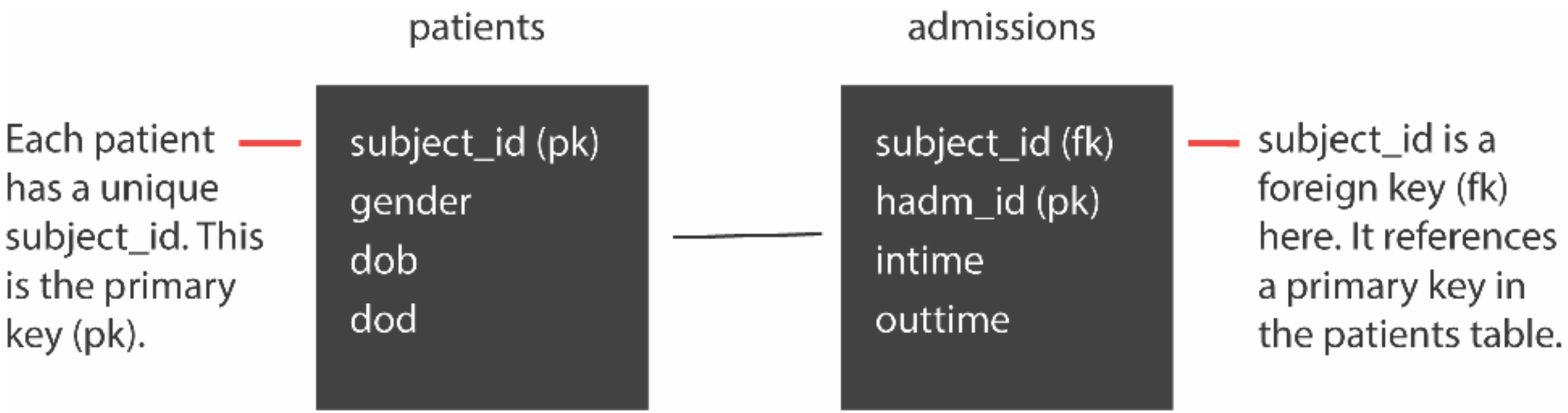
Accessing MIMIC

Two key steps to gaining access to MIMIC:

- **complete a online course in protecting human research participants** that covers Health Insurance Portability and Accountability Act (HIPAA) requirements

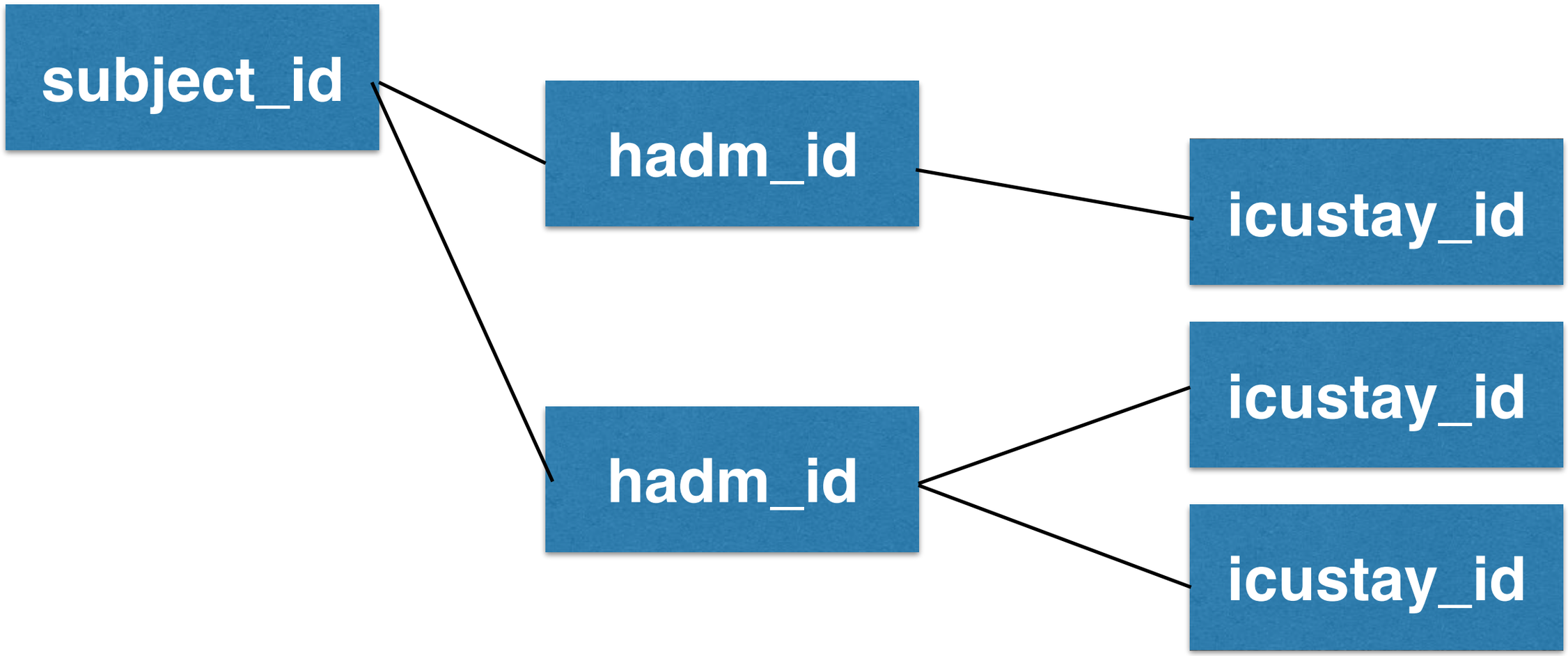
- **sign a data use agreement**, which outlines appropriate data usage and security standards, and forbids efforts to identify individual patients.

Relational database
(a collection of linked spreadsheets)



Patient tracking tables

patients → admissions → icustays



Events tables

chartevents — Charted observations for a patient

labevents — Lab measurements both within hospital and outpatient clinics

inputevents — Input fluids (e.g. intravenous medications)

microbiology events — Microbiology measurements and sensitivities

noteevents — Deidentified patient notes

Other data tables

diagnoses_icd Hospital assigned diagnosis codes

procedures_icd Hospital assigned procedure codes

caregivers Caregivers who have recorded data

prescriptions Medications ordered for a patient

Reusable code

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MIT-LCP / mimic-code

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Branch: master ▾ mimic-code / concepts / sepsis / angus.sql Find file Copy path

allstalrewj formatting, remove schema from query 4bbec21 on Jan 6

1 contributor

106 lines (101 sloc) 3.34 KB Raw Blame History

```
1  -- ICD-9 codes for Angus criteria of sepsis
2
3  -- Angus et al, 2001. Epidemiology of severe sepsis in the United States
4  -- http://www.ncbi.nlm.nih.gov/pubmed/11445675
5
6  -- Case selection and definitions
7  -- To identify cases with severe sepsis, we selected all acute care
8  -- hospitalizations with ICD-9-CM codes for both:
9  -- (a) a bacterial or fungal infectious process AND
10 -- (b) a diagnosis of acute organ dysfunction (Appendix 2).
11
12 DROP MATERIALIZED VIEW IF EXISTS angus_sepsis CASCADE;
13 CREATE MATERIALIZED VIEW angus_sepsis as
14
15 -- ICD-9 codes for infection - as sourced from Appendix 1 of above paper
16 WITH infection_group AS
17 (
18         SELECT subject_id, hadm_id,
19         CASE
```

Reproducibility

- We recommend sharing your code
- Include a readme explaining how your code can be used.
- Include a license, so people know their rights to reuse.

Widely used internationally

THE LANCET
Respiratory Medicine

Articles

Mortality prediction in intensive care units with the Super ICU Learner Algorithm (SICULA): a population-based study

Dr Romain Pirracchio, MD, Maya L Petersen, MD, Marco Carone, PhD, Matthieu Resche Rigon, MD, Prof Sylvie Chevret, MD, Prof Mark J van der Laan, PhD

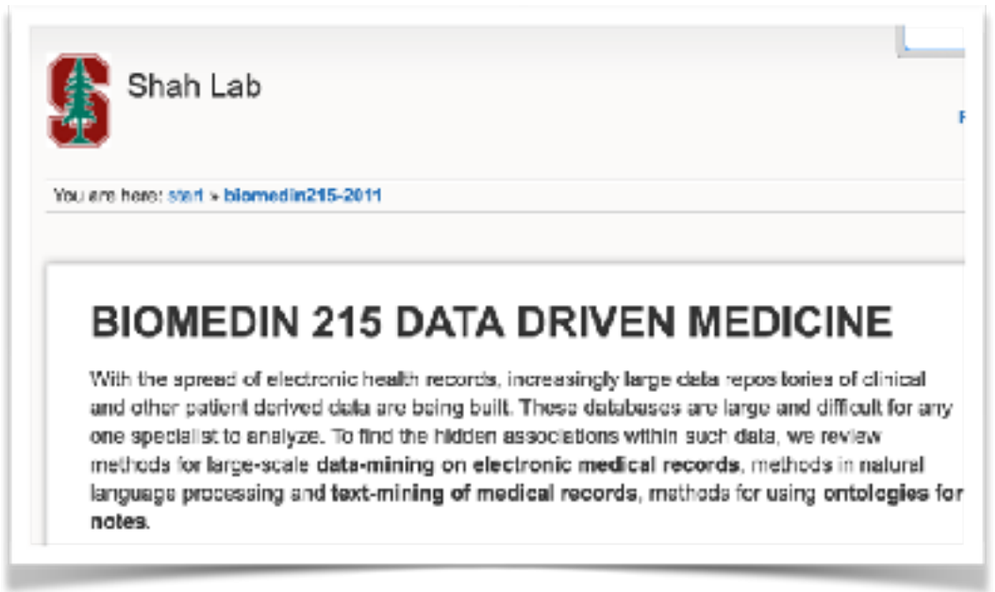
Published Online: 23 November 2014

Altmetric 18

DOI: http://dx.doi.org/10.1016/S2213-2600(14)70239-5 | CrossMark

Article Info
This article can be found in the following collections: Respiratory medicine-other

Research



Shah Lab

You are here: start » biomedin215-2011

BIOMEDIN 215 DATA DRIVEN MEDICINE

With the spread of electronic health records, increasingly large data repositories of clinical and other patient derived data are being built. These databases are large and difficult for any one specialist to analyze. To find the hidden associations within such data, we review methods for large-scale **data-mining on electronic medical records**, methods in natural language processing and **text-mining of medical records**, methods for using **ontologies** for **notes**.

Education

SHARE

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PERSPECTIVE | REPRODUCIBILITY

Science Translational Medicine

A "datathon" model to support cross-disciplinary collaboration

Jerôme Aboab[1,*], Leo Anthony Celi[1], Peter Charlton[1], Mengling Feng[1], Mohammad Ghassemi[1], Dominic C. Marshall[1,†], Louis Mayaud[1], Tristan Naumann[1], Ned McCague[1], Kenneth E. Paik[1], Tom J. Pollard[1], Matthieu Resche-Rigon[1], Justin D. Salciccioli[1] and David J. Stone[2,3]

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http://mimic.physionet.org