

RESEARCH 103

Session 3

PART 1: Using the Research Enterprise Data Warehouse database (EDW) and TriNetX for Subject Recruitment

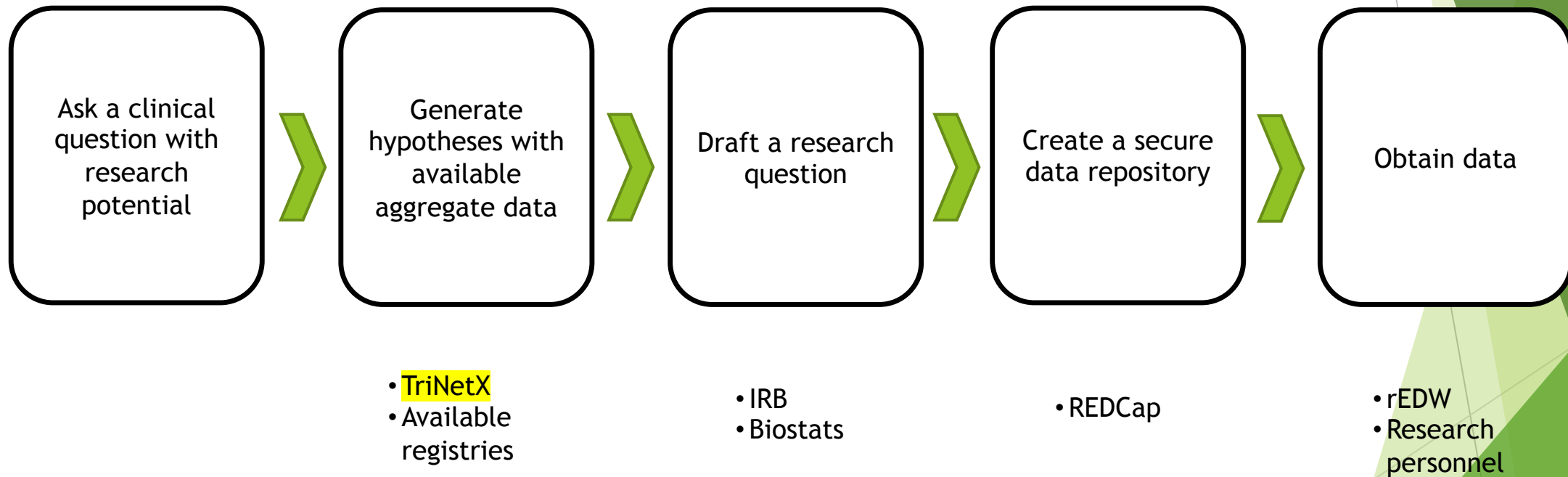
Parya Zareie, MS

Lokesh Chinthala, MS

Who is CBMI?

- ▶ Center for Biomedical Informatics
- ▶ Supported by UTHSC
- ▶ Mission
 - ▶ Develop and support a state-wide EDW (TriNetX)
 - ▶ Perform research to advance medical knowledge utilizing advanced informatics technique
- ▶ Expert Data scientist within the center
- ▶ Director: **Robert Davis, MD, MPH**

Navigating Clinical Research



rEDW

- ▶ Research Enterprise Datawarehouse
- ▶ A single, comprehensive and integrated repository of all clinical and research data from multiple clinical sources
- ▶ Provides a unified picture of the care a patient has received
- ▶ It facilitates investigators to retrieve data at patient and encounter level
- ▶ Data is available from 01/01/2014
- ▶ Contains data from
 - ▶ Methodist LeBonheur Healthcare, Memphis (EHR: Cerner, Allscripts, eCW)
 - ▶ UT Medical Center, Knoxville (EHR: Cerner)
 - ▶ University Clinical Health, Memphis (EHR: Nextgen)

Domain areas

- ▶ Demographics
- ▶ Visits
- ▶ Diagnosis
- ▶ Procedures
- ▶ Labs
- ▶ Vital Signs
- ▶ Medications
- ▶ Clinical notes

Sources

- ▶ Currently available
 - ▶ Methodist Le Bonheur Healthcare, Memphis
 - ▶ UT Medical Center, Knoxville
 - ▶ University Clinical Health, Memphis
- ▶ In the process of adding data from
 - ▶ St. Thomas, Nashville
 - ▶ Erlanger Health System, Chattanooga
 - ▶ Regional One Health, Memphis

MLH

- ▶ Total Encounters - 11,404,889
 - ▶ Pediatric (≤ 18) - 3,211,129 (28 %)
 - ▶ Adult (> 18) - 8,193,760 (72 %)
- ▶ Total Patients - 1,361,448
 - ▶ Pediatric (≤ 18) - 428,539 (31 %)
 - ▶ Adults (> 18) - 932,909 (69 %)
- ▶ Procedure - 17,389,039
- ▶ Diagnosis - 53,218,731
- ▶ Lab events - 173,279,138
- ▶ Medications - 83,999,756
- ▶ Vital Signs - 262,335,409

UTMCK

- ▶ Total Encounters - 750,609
 - ▶ Pediatric (≤ 18) - 45,692 (6 %)
 - ▶ Adult (>18) - 704,917 (94 %)
- ▶ Total Patients - 325,220
 - ▶ Pediatric (≤ 18) - 38,774 (12 %)
 - ▶ Adults (>18) - 286,446 (88 %)
- ▶ Procedure - 1,289,302
- ▶ Diagnosis - 6,908,711
- ▶ Lab events - 31,891,828
- ▶ Medications - 20,635,678
- ▶ Vital Signs - 98,168,992

TriNetX

- ▶ A cloud-based health research platform
- ▶ Provides visual and tabular data summary of the rEDW
- ▶ Contains standardized aggregated pediatric and adult healthcare data
- ▶ Can be used as 'Prep to research' tool
- ▶ Available to all UTHSC researchers through UTHSC- CBMI
- ▶ Proprietary crosswalks between coding systems (E.g., ICD10 & CPT)
- ▶ Patient level data

Demographics

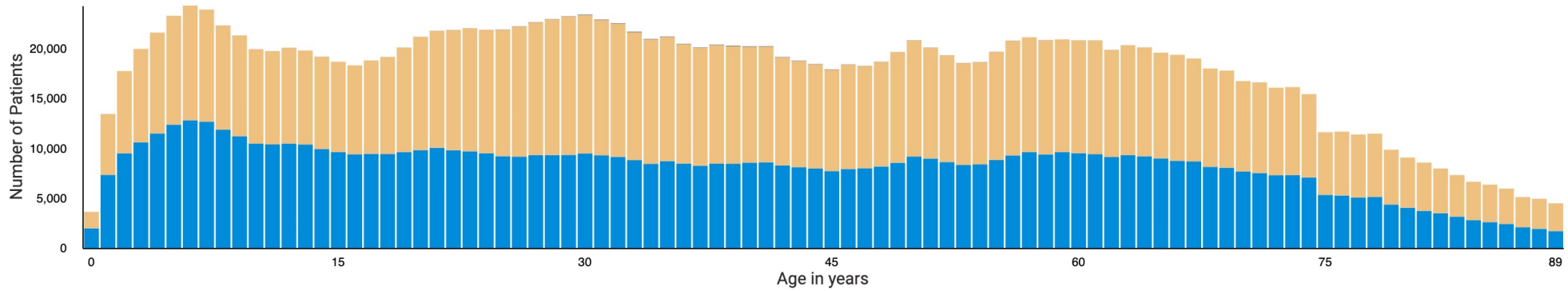
Grouped

Stacked

F

M

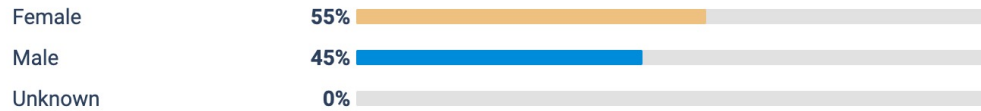
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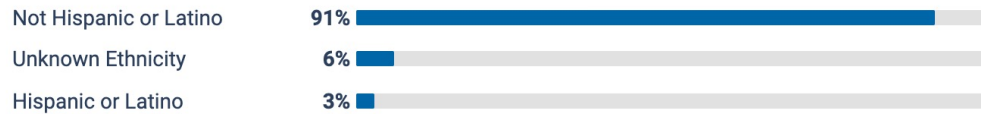
Patients 90 and Older: 26,711

Total Patients	Minimum Age	Maximum Age	Mean Age	Standard Deviation
1,636,470	0	90	41	24

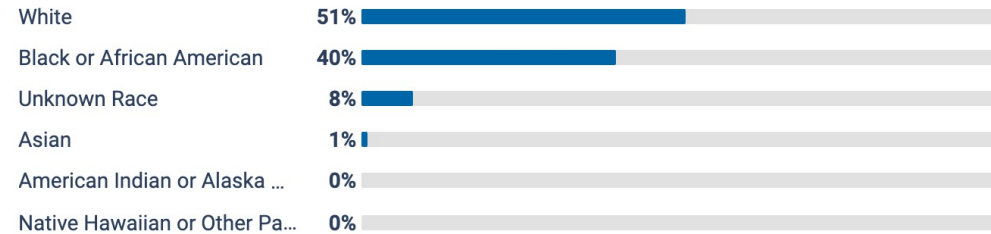
Sex



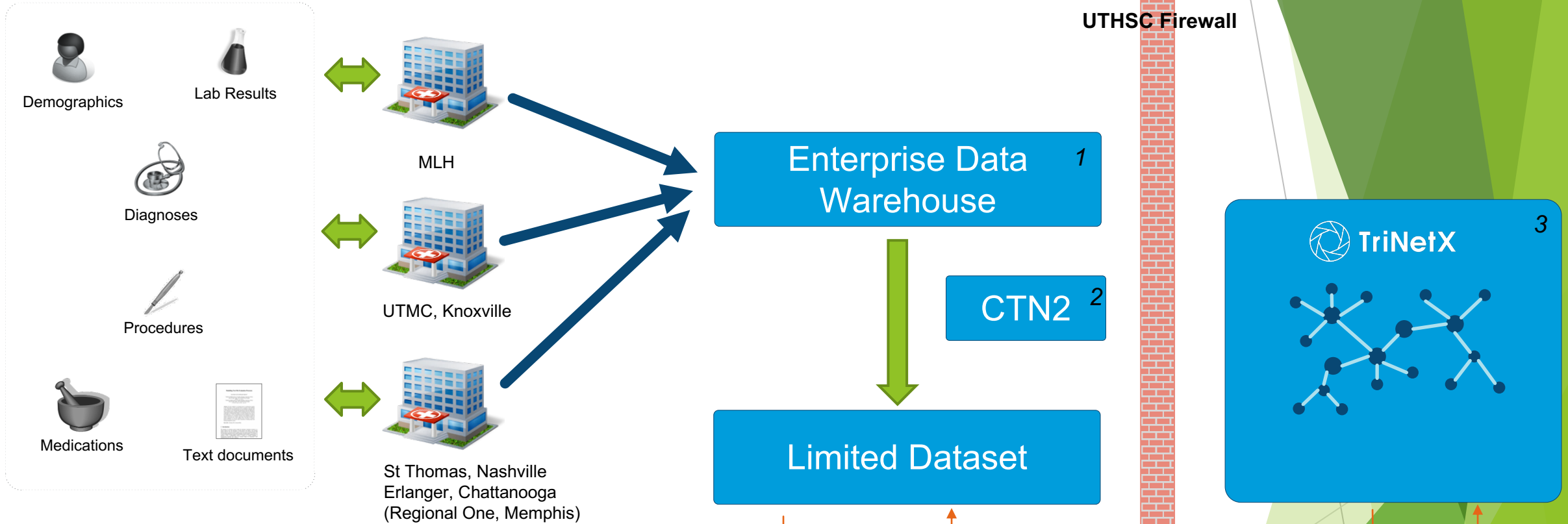
Ethnicity



Race



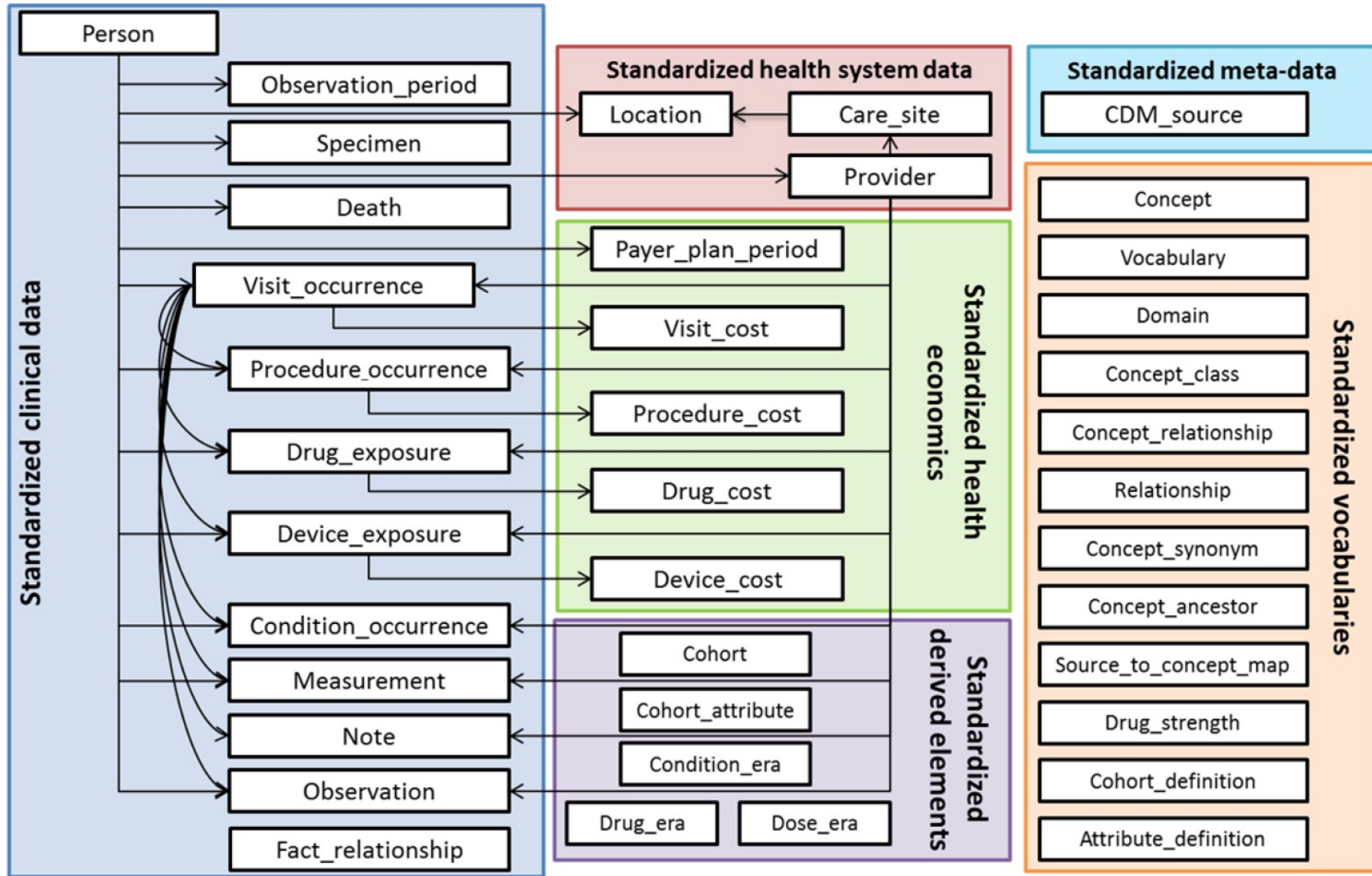
Data Flow



1. Federated Model EDW. UTMCPHI is maintained in EDW separate from each other Healthcare Organization
2. CTN2 access to UTMCPHI is behind UTHSC and MLH firewalls, and subject to Business Associate Agreement (BAA) with UTHSC
3. UTHSC has Business Associate Agreement (BAA) with TriNetX
4. Tabular data returned meets standard for de-identification under 45 CFR 164.514(b)(1)

OMOP CDM

- ▶ Allows for the systematic analysis of disparate observational databases
- ▶ Transform data into a common format and representation (terminologies, vocabularies, coding schemes)
- ▶ The disparate coding systems can be harmonized—with minimal information loss—to a standardized vocabulary
- ▶ Designed to support the conduct of research to identify and evaluate associations between interventions and outcomes caused by these interventions
- ▶ Outcomes can be efficacious (benefit) or adverse (safety risk)



Standard tables

- ▶ Person
- ▶ Visit Occurrence
- ▶ Location
- ▶ Condition Occurrence
- ▶ Procedure Occurrence
- ▶ Drug Exposure
- ▶ Measurement
- ▶ Note
- ▶ Note NLP
- ▶ Care Site

TriNetX Demo



[Need to reset your password?](#)

[Login >](#)


The TriNetX platform has regularly scheduled maintenance every Wednesday from 8pm to 10pm ET.

4 vaccines. 20 codes. 700,000 patients.

Search **COVID-19 vaccination terms** in our Help Center for a list of relevant codes.



Initiation of Support

rEDW Request Form Resize font: 

Center for Biomedical Informatics rEDW Scope of Work

Project Title <small>* must provide value</small>	<input type="text"/>
Short description of the project up to 300 words: <small>* must provide value</small>	<input type="text"/> Expand
Type of Data Extraction: <small>* must provide value</small>	<input type="radio"/> Full/Logical Extraction(Data required as is from the source of data with the parameters provided) <input type="radio"/> Physical Extraction(Data required based on the identifiers (MRN, FIN etc.) provided by the PI) reset
Contact Information	
Department	<input type="text"/>
PI Name <small>* must provide value</small>	<input type="text"/>
PI Email <small>* must provide value</small>	<input type="text"/>
PI Phone <small>* must provide value</small>	<input type="text"/>
Study Coordinator	<input type="text"/>
Coordinator Email	<input type="text"/>

Regulatory Issues

- ▶ Same as for accessing other databases or for accessing paper records
- ▶ IRB approval for anything more than counts
 - ▶ All requests to use EDW for research require IRB submission for review
- ▶ For just counts (i.e., # of patients with T2DM), submit a Prep to Research form to IRB

Contact

- ▶ <https://uthsc.edu/cbmi/services/trinetx.php>
- ▶ TriNetX and rEDW related questions - Lokesh Chinthala lchinha@uthsc.edu
- ▶ Monthly training sessions or ad-hoc peer-to-peer training sessions
- ▶ Training resources by TriNetX
 - ▶ <https://support.trinetx.com/hc/en-us/categories/115000239168>