



From Blood and Guts To Bits and Bytes: Clinical Research Informatics Using TriNetX

Thursday, June 15th, 2023

June 2023 Study of the Month:

Binge Eating Disorder Study

Are you struggling with overeating?

What

A twelve week study assessing an investigational medication for binge eating disorder.

Who

Adults aged 18-65 years of age with binge eating disorder.

Pay

All study visits, tests, procedures, and medication will be provided at no cost to participants. Eligible participants will be compensated \$50 per visit for their time and travel.

Details

For more information, contact us at 513-536-0710 or visit www.LCOH.info to complete a pre-screen questionnaire.

Located at the Lindner Center of HOPE, Mason, Ohio.



12-20 IRB # PENDING



SOCRA CRP CERTIFICATION EXAMINATION

Hosted by CCHMC

Tuesday, October 10th, 2023

Please visit the [SOCRA website](#) for more details.

The Registration Deadline is Monday, August 28th, 2023

[Register Here](#)

CCHMC CRP will be hosting open review sessions prior to the exam date for anyone interested on in August (Dates and times TBD) hosted on Microsoft Teams (link to be provided).

For any questions or further information, please contact the CCHMC CRP Group at CRP@cchmc.org or Nate Harris at harrisnl@ucmail.uc.edu



Friday, July 7th, 2023

Electronic Pathways - HIPAA, Texting, and Emails

Janelle Allen

Professor, Lecturer

University of Cincinnati, College of Medicine



Today's Presentation:

From Blood and Guts To Bits and Bytes: Clinical Research Informatics Using TriNetX

Jason Keller, MS
Associate Director, Data Services
UC Center for Health Informatics
Department of Biomedical Informatics

UC College of Medicine | Biomedical Informatics

*From Blood and Guts
To Bits and Bytes*

Clinical Research Informatics Using TriNetX

Jason Keller, MS
Associate Director, Data Services
UC Center for Health Informatics
Department of Biomedical Informatics
Jason.Keller@uc.edu

June 15, 2023

Disclosure

I have no financial disclosure
or conflicts of interest with the presented
material in this presentation.

What is TriNetX?

TriNetX is a web-based platform that puts you at the center of their real-world data and evidence ecosystem. It has a powerful, easy-to-use interface to assist you in building and analyzing cohorts drawn from around the globe in just minutes.



Core Network Features

- Query Builder
 - Define your cohort as precise and unique as your hypothesis, and lets you specify the inclusion/exclusion criteria.
- Explore Cohort
 - Instantly uncover a wealth of details about your cohort of interest, from the prevalence of medications to mean lab values.
- Advance Analytics
 - Analyze and compare outcomes, reveal treatment pathways, and more with statistically robust tools.
- TriNetX Connect
 - Invite the HCO who provides the data to participate in your study. The HCO can re-identify their patients.

Local vs. Research Network

- UCMC Network
 - 1.3M+ patients
 - 1 HCO
 - 1 country
- Research Network
 - 120M+ patients
 - 83 HCOs
 - 4 countries

Most Basic Level

TriNetX My Studies Connect **NEW** Trial Connect Dashboard LEGACY Browse Network

My Studies > demo > Query Builder

Query Builder

Healthcare Organizations (HCOs)

Explore Cohort

Analyze Criteria

Rate of Arrival

Summary Statistics

Analytics

Pending Datasets

Available Datasets

Trial Connect LEGACY

Connect **NEW**

Study Management

Design Assistance

☆ Unnamed Patients: 12,430 HCOs: 1 [Count Patients](#)

Feb 15, 2022 at 3:02 pm by Brett Harnett

University of Cincinnati Medical Center Any country the network Average / Any org 1,245,680 patients on network

1 of 1 HCOs online

MUST HAVE **CANNOT HAVE**

Search Term... Search Term...

Ungrouped Terms

MUST HAVE **CANNOT HAVE**

G80-G83 Cerebral palsy and other paralytic syndromes	12,600	L40 Psoriasis	9,380
--	--------	---------------	-------

+ Create a New Group

Solid: Must Have (Inclusion)
Dash: Cannot Have (Exclusion)

TriNetX | My Studies | Connect **NEW** | Trial Connect Dashboard **LEGACY** | Browse Network

My Studies > COVID only (1) > Query Builder

Query Builder

Healthcare Organizations (HCOs)

Explore Cohort

Analyze Criteria

Rate of Arrival

Summary Statistics

Analytics

Pending Datasets

Available Datasets

Trial Connect **LEGACY**

Connect **NEW**

Study Management

Design Assistance

★ Unnamed *Feb 14, 2022 at 2:39 pm by Brett Harnett*

University of Cincinnati Medical Center
1 of 1 HCOs online

Any country
1 country in the network

Patients: 340 | HCOs: 1

Count Patients

Any age / Any sex
1,245,680 patients on network

MUST HAVE | CANNOT HAVE

Search Term... | Search Term...

Collapse All Groups

Group 1

Number of Instances | Terms | Time Constraint

1A Unnamed Group

MUST HAVE

U07.1 COVID-19	16,650
9088 SARS coronavirus 2 and related RNA [Presence]	158,580

AND

Positive

CANNOT HAVE

Relationship: Any instance of Group 1B occurred at least 3 months after any instance of Group 1A

1B Unnamed Group

MUST HAVE

N18 Chronic kidney disease (CKD)	41,300
----------------------------------	--------

CANNOT HAVE

Purple (dash):
Choose the
network

Red (dots):
Displays cohort
count and HCO
count

Green (solid):
Choose
demographics
(gender, age
range)

TriNetX | My Studies | Connect **NEW** | Trial Connect Dashboard **LEGACY** | Browse Network

My Studies > COVID only (1) > Query Builder

Query Builder

Healthcare Organizations (HCOs)

Explore Cohort

Analyze Criteria

Rate of Arrival

Summary Statistics

Analytics

Pending Datasets

Available Datasets

Trial Connect **LEGACY**

Connect **NEW**

Study Management

Design Assistance

★ Unnamed *Feb 14, 2022 at 2:41 pm by Brett Harnett*

Patients: 18,853 | HCOs: 40

Count Patients

Research: 58 of 58 HCOs online

Any country: 6 countries in the network

Any age / Any sex: 86,261,034 patients on network

MUST HAVE

CANNOT HAVE

Search Term...

Collapse All Groups

Group 1

+ Number of Instances

1A Unnamed Group

+ Terms | + Time Constraint

MUST HAVE

U07.1 COVID-19 1,419,542

AND

9088 SARS coronavirus 2 and related RNA [Presence] 8,892,934

> Positive

CANNOT HAVE

Relationship: Any instance of Group 1B occurred at least 3 months after any instance of Group 1A

1B Unnamed Group

+ Terms

MUST HAVE

N18 Chronic kidney disease (CKD) 2,447,369

CANNOT HAVE

Using the exact same logic, select the Research network to run the query against 86M+ instead of 1.2M+.

Patients
18,853

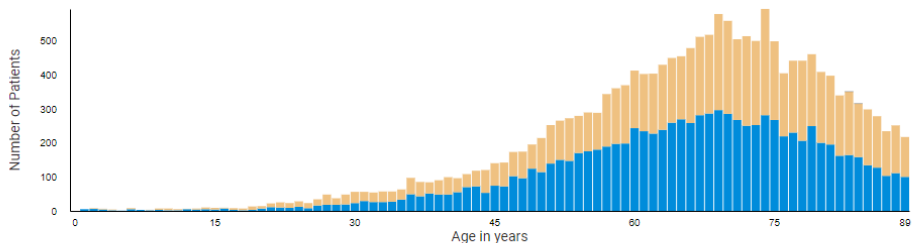
HCOs
40

Run

View History

Demographics

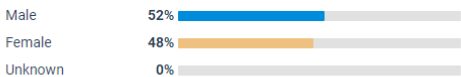
Grouped Stacked F M U



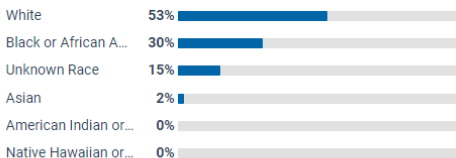
Patients 90 and Older: 797

Total Patients	Minimum Age	Maximum Age	Mean Age	Standard Deviation
18,853	1	90	66	15

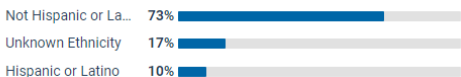
Sex



Race



Ethnicity



Tools for exploring the cohort are part of the interface with drill-down capabilities.

Medications

Medications within 3M 6M 12M 24M Anytime

Search...

Medication		Patients	% of Cohort
> CV000	Cardiovascular medications	420	100%
> CN000	Central nervous system medi...	410	98%
> GA000	Gastrointestinal medications	410	98%
> GA100	Antacids	360	86%
> GA200	Laxatives	350	83%
> GA900	Gastric medications, other	300	71%
> GA605	Antiemetics	220	52%
> GA300	Antiulcer agents	130	31%
> GA200	Antidiarrheal agents	110	26%



My Analyses

Analyses that are currently available to me.

Analyze Outcomes

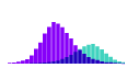
How do patients in a cohort experience outcomes?



● Single Cohort

Compare Outcomes

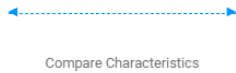
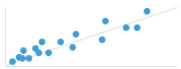
How do outcomes compare between cohorts?



● Two Cohorts

Compare Cohorts

How do patient characteristics compare between cohorts?



● Two Cohorts

Treatment Pathways

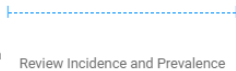
In what order do patients receive treatments following a diagnosis?



● Single Cohort

Incidence and Prevalence

What are the incidence and prevalence of events of interest in a cohort?



● Single Cohort

Built-in Analytics allow for numerous types of analyses directly in the web browser.

Built-in Outcomes Analysis

Characteristics
Diagnoses
Compare diagnoses between your cohorts. Results include diagnoses up to 365 days before index event.
Run

Cohort 1 UC Apixaban 170
Cohort 2 UC Warfarin 360

Diagnoses
Show What's this?
 All
 Acute
 Chronic

Diagnoses	Patient Count	% of Cohort	Signal
I30-I52 Other forms of heart disease	150 320	88% 89%	
I10-I15 Hypertensive diseases	140 290	82% 81%	
Z77-Z99 Persons with potential health hazards related to family and personal history and certain conditions influencing health status	130 300	76% 83%	
E70-E88 Metabolic disorders	110 250	65% 69%	
R00-R09 Symptoms and signs involving the circulatory and respiratory systems	90 180	53% 50%	
Z00-Z13 Persons encountering health services for examinations	80 140	47% 39%	
R50-R69 General symptoms and signs	70 160	41% 44%	
I20-I25 Ischemic heart diseases	60 150	35% 42%	
I49-I51 Periodic and arrhythmial disorders	50	29%	

Unnamed Outcome

Must Have

Nontraumatic subarachnoid hemorrhage

OR

Other and unspecified nontraumatic intracranial

OR

Cerebrovascular diseases

OR

Nontraumatic intracerebral hemorrhage

1a : Measures of Association

Cohort	Patients in Cohort	Cohort Statistics		
		Patients with Outcome	Risk	
1 UC Apixaban	170	20	11.765%	
2 UC Warfarin	360	40	11.111%	

Risk Difference	Risk Difference		z	p	Risk Ratio		Odds Ratio	
	95 % CI				Risk Ratio	95 % CI	Odds Ratio	95 % CI
0.654%	(-5.177%, 6.484%)		0.222	0.8246	1.059	(0.639, 1.754)	1.067	(0.603, 1.888)



Must Have

INR in Plasma or Blood

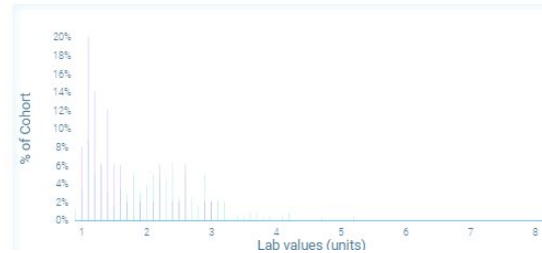
2a : Lab Distribution

Cohort	Patients in Cohort	Cohort Statistics		Test Statistics			
		Patients with Outcome	Mean	Standard Deviation	t	df	p
1 UC Apixaban	170	50	1.549	0.559			
2 UC Warfarin	360	240	2.078	0.794	-4.436	278	<0.0001

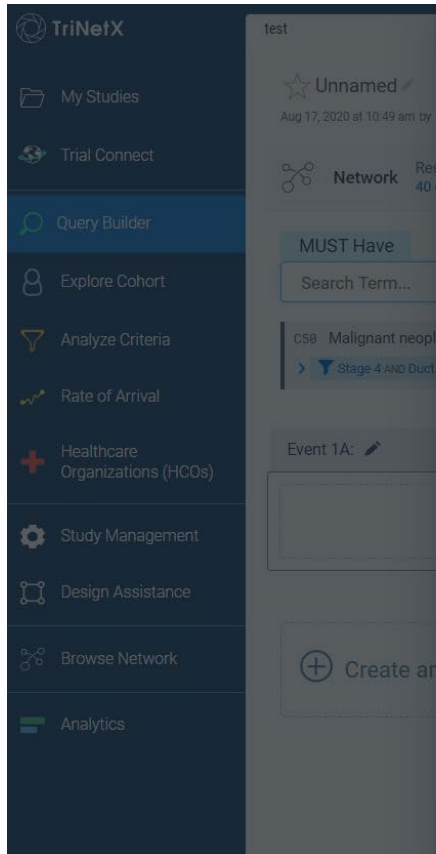
* For Cohort 1, 10 data points for 10 patients were excluded because they fell outside the sanitization limit; of the 10 patients, 0 patients had no other lab in the time window.

* For Cohort 2, 50 data points for 20 patients were excluded because they fell outside the sanitization limit; of the 20 patients, 0 patients had no other lab in the time window.

[Learn more](#)



Cancer Staging Data in TriNetX (new)



TriNetX sidebar navigation menu:

- My Studies
- Trial Connect
- Query Builder
- Explore Cohort
- Analyze Criteria
- Rate of Arrival
- Healthcare Organizations (HCOs)
- Study Management
- Design Assistance
- Browse Network
- Analytics

Network Res 40

MUST Have

Search Term...

c5b Malignant neoplasm of breast

> Stage 4 AND Duct

Event 1A:

Create an

test > Query Builder > Filters for C50 Malignant neoplasm of breast

Save Cancel

Age at Event Clear Filter

In order to protect patient privacy, if you use this filter only patients currently aged 90 or younger will be returned

Specify an age or an age range

Between (including) [] and [] years

Oncology Details Clear Filter

Show Terms with Zero Patients

Stage at Diagnosis

Filter...	
<input type="checkbox"/> Summary stage	34,680
<input type="checkbox"/> Stage 0	150
<input type="checkbox"/> Stage 1	17,251
<input type="checkbox"/> Stage 2	11,430
<input type="checkbox"/> Stage 3	4,213
<input checked="" type="checkbox"/> Stage 4	2,295
<input type="checkbox"/> Tnm stage	50,668

Histology/Behavior

Filter...	
<input type="checkbox"/> Clear cell sarc/nephroblastoma	10
<input type="checkbox"/> Comb hepatocel ca. & cholang	0
<input type="checkbox"/> Craniopharyngioma	0
<input type="checkbox"/> Cystadenocarcinoma, nos	10
<input checked="" type="checkbox"/> Duct carcinoma	52,556
<input type="checkbox"/> Embryonal carcinoma, nos	0
<input type="checkbox"/> Embryonal rhabdomyosarcoma	0
<input type="checkbox"/> Endocrinomas	0

Cancer Properties

Filter...	
<input type="checkbox"/> Breast	50,748
<input type="checkbox"/> Estrogen receptor	50,322
<input type="checkbox"/> Estrogen receptor nega...	13,961
<input checked="" type="checkbox"/> Estrogen receptor posi...	41,659
<input type="checkbox"/> Her2	27,522
<input type="checkbox"/> Her2 negative	22,750
<input checked="" type="checkbox"/> Her2 positive	4,867
<input type="checkbox"/> Progesterone receptor	38,871

> Stage 4 AND Duct carcinoma AND Progesterone receptor positive AND Estrogen receptor positive AND Her2 positive

Clear All Filters

6-month neurological and psychiatric outcomes in 236 379 survivors of COVID-19: a retrospective cohort study using electronic health records

Maxime Taquet¹, John R Geddes¹, Masud Husain², Sierra Luciano³, Paul J Harrison⁴

Affiliations + expand

PMID: 33836148 PMCID: PMC8023694 DOI: 10.1016/S2215-0366(21)00084-5

Free PMC article

Abstract

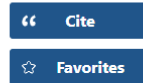
Background: Neurological and psychiatric sequelae of COVID-19 have been reported, but more data are needed to adequately assess the effects of COVID-19 on brain health. We aimed to provide robust estimates of incidence rates and relative risks of neurological and psychiatric diagnoses in patients in the 6 months following a COVID-19 diagnosis.

Methods: For this retrospective cohort study and time-to-event analysis, we used data obtained from the [TriNetX electronic health records network \(with over 81 million patients\)](#). Our primary cohort comprised patients who had a COVID-19 diagnosis; one matched control cohort included patients diagnosed with influenza, and the other matched control cohort included patients diagnosed with any respiratory tract infection including influenza in the same period. Patients with a diagnosis of COVID-19 or a positive test for SARS-CoV-2 were excluded from the control cohorts. All cohorts included patients older than 10 years who had an index event on or after Jan 20, 2020, and who were still alive on Dec 13, 2020. We estimated the incidence of 14 neurological and psychiatric outcomes in the 6 months after a confirmed diagnosis of COVID-19: intracranial haemorrhage; ischaemic stroke; parkinsonism; Guillain-Barré syndrome; nerve, nerve root, and plexus disorders; myoneural junction and muscle disease; encephalitis; dementia; psychotic, mood, and anxiety disorders (grouped and separately); substance use disorder; and insomnia. Using a Cox model, we compared incidences with those in propensity score-matched cohorts of patients with influenza or other respiratory tract infections. We investigated how these estimates were affected by COVID-19 severity, as proxied by hospitalisation, intensive therapy unit (ITU) admission, and encephalopathy (delirium and related disorders). We assessed the robustness of the differences in outcomes between cohorts by repeating

FULL TEXT LINKS



ACTIONS



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< Title & authors

Abstract

Conflict of interest statement

Figures

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Publication types

Because UC contributes to the TriNetX platform, researchers can access not only for our local UC Health population, but also over 120M+ patients across the global Research Network. This is at no cost.*

This is Real-World Evidence

* Except for CHI processing fees if data is needed

ABOUT OUR SERVICES

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Data Science/Visualization

Data Collection using REDCap

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Study Feasibility & Publishing using TriNetX

UC and UC Health partners with [TriNetX](#) (Cambridge, MA) as part of its large and growing distributed EHR data network. Through CHI, UC Health shares its de-identified data to TriNetX along with 100+ other institutions. This self-service or CHI-assisted tool is the standard method to find cohorts for research. The CHI can reverse-engineer queries on the UC Health network for identifiable data contingent on individual IRB approvals. The primary use for this is subject recruitment.*

UC is also part of the TriNetX Research Network (TRN). The traditional access to data for sites is to see only their own data – this is an ideal for researchers to view the UC Health patient population. The TRN extends the view to other healthcare organizations data who are part of this large, global network. The scale is immense – UC Health has about 1.2 million patients, the TRN has over 80 million. The TRN is primarily for disease prevalence or outcomes analysis using Real World Evidence (RWE).

TriNetX is a self-service tool for researchers. The fees associated with this service is for the CHI to help you access data should you need that. Anything beyond this is priced depending on complexity.

You can learn more about TriNetX and request user credentials on the [CCTST website](#). You will first need to create a free CCTST membership if not already a member.


[Join the CCTST](#)
[Request TriNetX User Credentials](#)

Pricing

Non-CCTST Member \$356.00

CCTST Members \$178.00

See the [CHI Terms of Service](#) for more details. You will receive a Work Order with the final price before work is started. 50% CCTST subsidy applied until funds depleted. *We provide discounts on many services to CCTST members. [Create your free CCTST account today!](#)*

 Add to cart

Accessing data from TriNetX and publishing guidelines

For security reasons, to access this document, users must be logged into the CHI Portal.

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Introduction

TriNetX is the global health research network enabling healthcare organizations, biopharma, and contract research organizations (CROs) to collaborate, enhance trial design, accelerate recruitment, and bring new therapies to market faster. |



TriNetX +
University of Cincinnati / UC Health

**Trial
Connect**

Dear TriNetX Member,

Hello: Synteract is conducting a feasibility assessment pre-award to assess the site interest to participate in an upcoming Phase II clinical trial for DLB patients. Approximately 100 patients will be enrolled over 13 months with 4 patients enrolled per site. Please let me know if you are interested. Thank you, Sarah

Response Desired in **4 Days**, on March 08, 2019

Respond to
Study



Study Name

Dementia with Lewy Bodies Trial Connect

Request

Synteract

PreAward

Your Eligible Patients

90

Sponsor Enrollment
Goal Per Site

4

Therapeutic Areas
Neurology

Indication
Dementia with Lewy Bodies

Investigator
Specialty
**Not
Specified**

Use Case 1: UC has been offered almost 150 trials since 2015, taken about a third.

Use Case 2: Local Identification of cohorts – self-service (i2b2 sidelined)

Use Case 3: Publishing based on Research Network data (online or downloadable) RWD

Use Case 4: Metrics for our CTSA

Use Case 5: Onramp for populating N3C



National COVID Cohort Collaborative

COVID-19 poses societal challenges that require **expeditious data and knowledge sharing**. Though **medical records are abundant, they are largely inaccessible to outside researchers**. **Statistical, machine learning, and causal research** are most successful with large datasets beyond what is available in any given organization.

National COVID Cohort Collaborative (N3C)

The N3C is a partnership among the NCATS-supported [Clinical and Translational Science Awards \(CTSA\) Program](#) hubs, the [National Center for Data to Health \(CD2H\)](#)®, and NIGMS-supported [Institutional Development Award Networks for Clinical and Translational Research \(IDeA-CTR\)](#), with overall stewardship by NCATS. Collaborators will contribute and use COVID-19 clinical data to answer critical research questions to address the pandemic.



[N3C Data Reveal COVID-19 Mortality Risk for People with COPD](#)

Using the N3C Data Enclave, Northwestern University researchers discover a dangerous link between COVID-19 and chronic obstructive pulmonary disease, or COPD. [▶](#)

About the Program

N3C Forms and Resources

Funding

[About the Program](#)

Learn about the N3C.

- [▶ Program FAQ](#)
- [▶ Program Resources](#)
- [▶ Applying for Access](#)
- [▶ Data Overview](#)
- [▶ N3C Tribal Consultation](#)

National COVID Cohort Collaborative (N3C) Data Enclave

KEY METRICS DASHBOARD

Electronic Health Record Repository



Partners:

NCATS & CD2H



ACT

The ACT Network

Powered by NCATS CTSA Program



TriNetX






Currently 285 institutions subscribed

DUA Signatories

If your institution is not on the list, consult your institutional official to determine if a DUA is in place. Institutions can submit a DUA to NCATS by downloading and filling out [this form](#) and emailing it to NCATSPartnerships@mail.nih.gov.

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How Do I Acquire Access?

Submit a User Request via the CCTST portal,
<https://chi.uc.edu/cctst/trinetx>

Questions?