Learning Objectives

- Define TriNetX and list 3 ways Carilion's participation in the global system advances our academic efforts.
- Identify 5 types of datasets that are available in TriNetX.
- Review the approval process to utilize TriNetX.
- Describe 3 projects that have utilized the TriNetX approach.

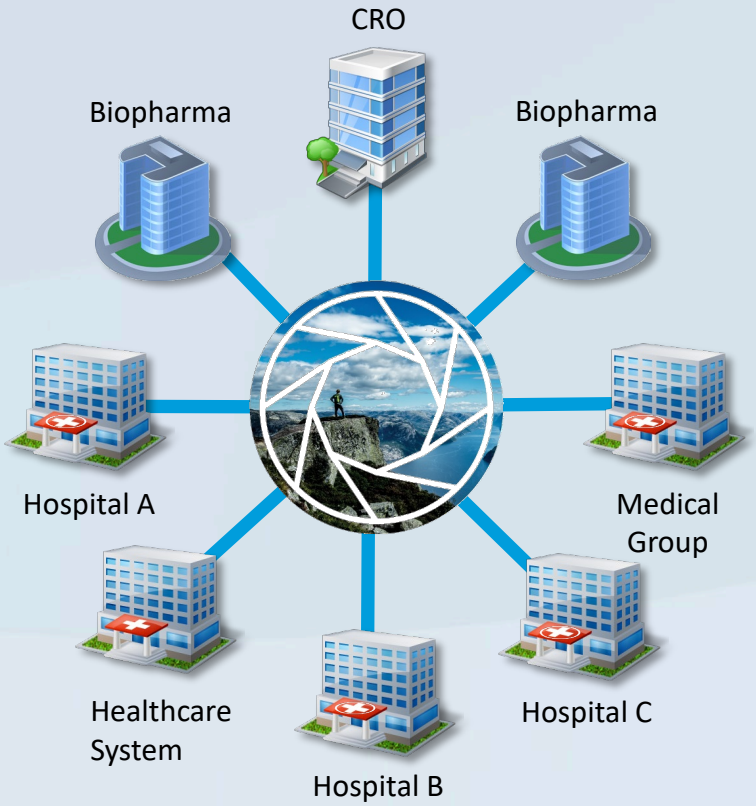
HART Services

…. provide proper access, acquisition, storage and utilization of research and QA/QI data, including PHI

- Consultation: study design, data management, and stats
- **Data Exploration: TriNetX**
- Data Extracts (EPIC)
- Data Collection and Storage (REDCap)
- Epic Research Access
- Secure Shared Drive or SPARC
- Data Analysis: Sparc tools and Biostatistical Services

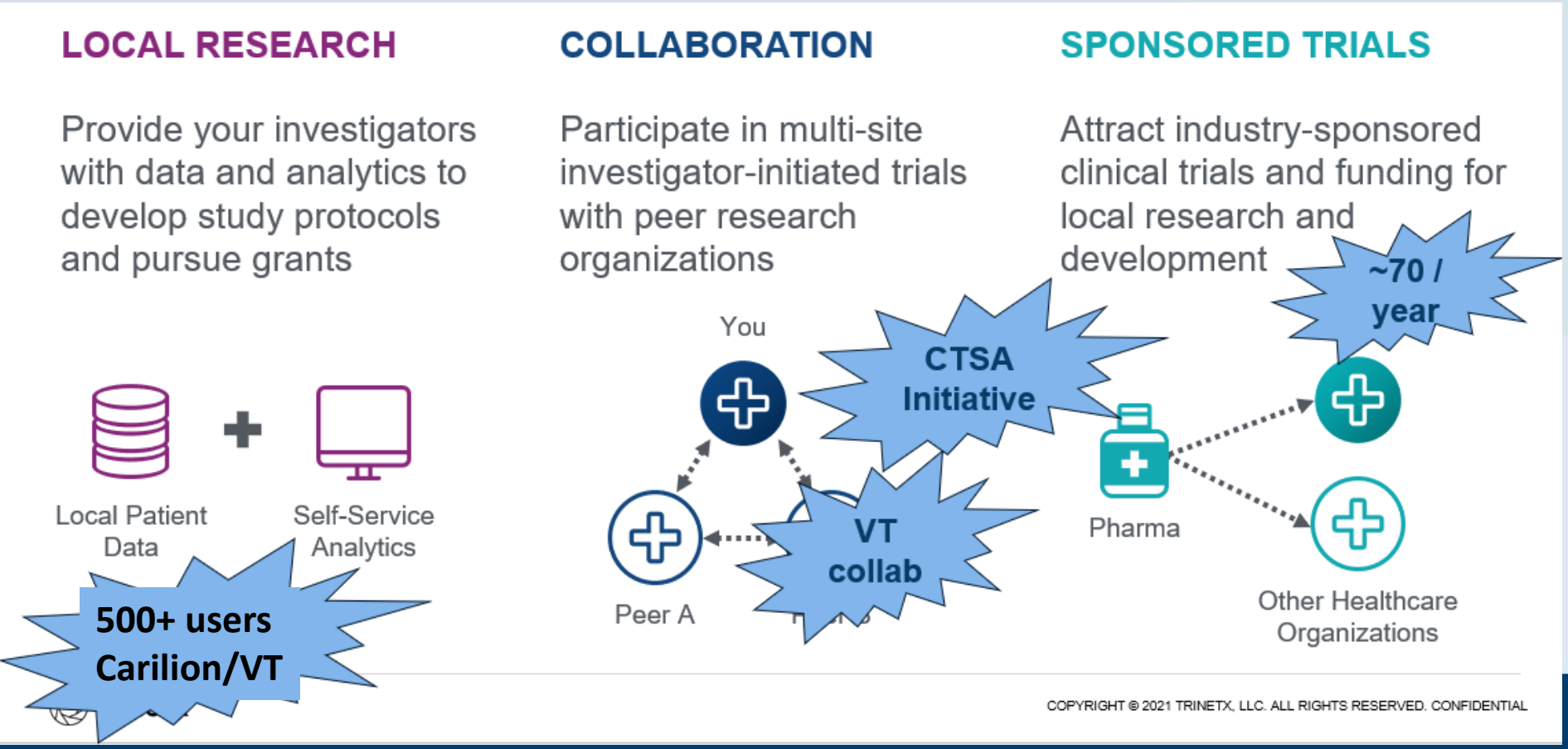
TriNetX: The Global Health Research Network

- A global network that fosters improved Industry/HCO/Research collaboration and provide rich, easy to access assets to researchers
- **Expands our research profile/portfolio with real-world data**
- **Makes EHR data more easily accessible for research and clinical trials**
- Aligns/maps data for **collaboration**
- Federated architecture – no open inbound ports
- Ability to ingest data from any data source
- Network constantly refreshed and growing
- Conservative security and governance model
- No HCO hardware overhead



TriNetX Business Model

- FREE to Healthcare Organizations (HCO)



Data in TriNetX

- Inpatient, emergency and outpatient
- Demographics & Encounters
- Diagnoses & Procedures
- Labs (numeric and positive/negative)
- Medications (prescribed and given) & Vitals
- Oncology data from Cancer Registry
- Integrated Claims and Mortality data
- Integrated data from NLP (natural language processing)

TriNetX Research Networks

- 120+ Healthcare Organizations (HCO)
- 70+ billion facts, 275M+ patients
- Publications possible directly from the tool leveraging this real-world data
- Carilion's data loaded since 2008
- Carilion's data re-identifiable by HART with appropriate permissions

Publishing with TriNetX

- Data downloads are limited, and generally considered de-identified
  - Volume of records
  - HCOs are anonymized
  - Dates are only fields provided
  - Rare and sensitive conditions are suppressed without additional permissions

Publishing with TriNetX

- Carilion IRB Exemption Determination or Approval Required
  - Data available via Carilion's Membership
  - Agreement signed for each specific project with TriNetX, referencing a specific IRB protocol
  - Chair approval through IRB to indicate Carilion's support of project and use of TriNetX Membership for this purpose

How to get the IRB done fast and smart

- Apply for the R&D approval first
- Ensure CITI training is completed by your team members
- Have your study abstract ready (and remember to modify the past tense to future tense)
- Follow the slides as below
- Send your PI a short note regarding the IRB submission

P R I S 3 M
Carilion Clinic

Account: Ching-fang Sun, MD
Department: CC - Department of Psychiatry and Behavioral Medicine
Path: **Home > study mgmt.**

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IRB Number: IRB-22-1699
Study Alias: BZD increase Depr and SUD
PI: Trestman, Robert L

Study Assistant

Carilion IRB Application (Version 1.0)

Back

Print Friendly | Save Section | Save and Continue to Next Section

Section view of Application | **Entire view of the Application**

1.0 General Information
2.0 Setup Department(s) Access
3.0 Grant Key Personnel access to the study
4.0 Key Study Personnel (KSP) Info
5.0 Application Type

1.0 General Information

*** Please enter the full title of your study::**

Patients with Anxiety Disorders Prescribed with Benzodiazepine Are at Higher Risk of Depression and Substance Use Disorders

*** Please enter an abbreviated study title or key words you would like to use to reference the study:**

BZD increase Depr and SUD

* This field allows you to enter an abbreviated version of the Study Title to quickly identify this study.

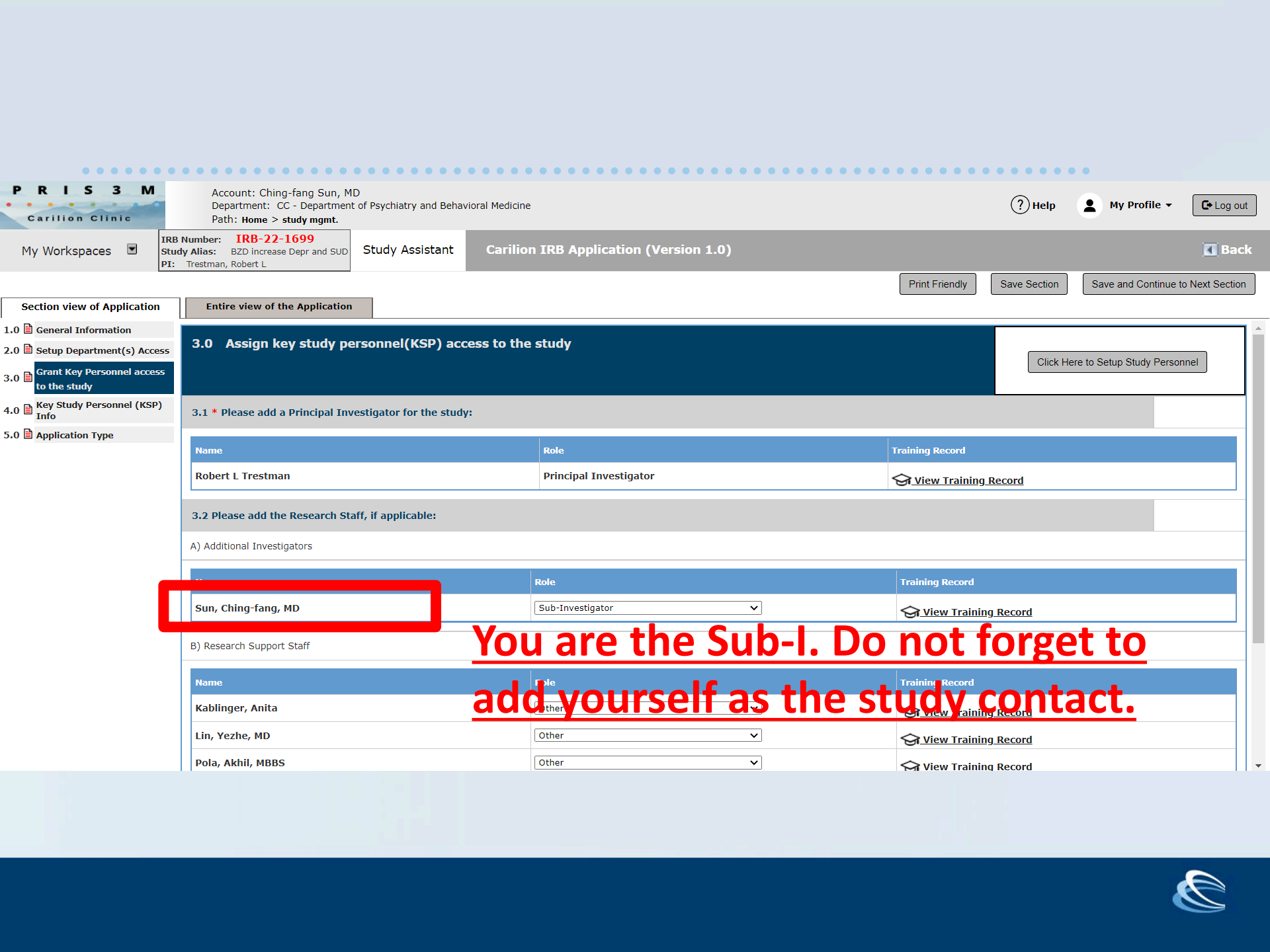
Section view of Application | Entire view of the Application

2.0 Add departments

2.1 Add the departments of all Key Study Personnel that will be involved with the design, conduct, or reporting on this project:

Add Department | Remove Department

	Is Primary?	Department Name
☐	◉	**CC** - Department of Psychiatry and Behavioral Medicine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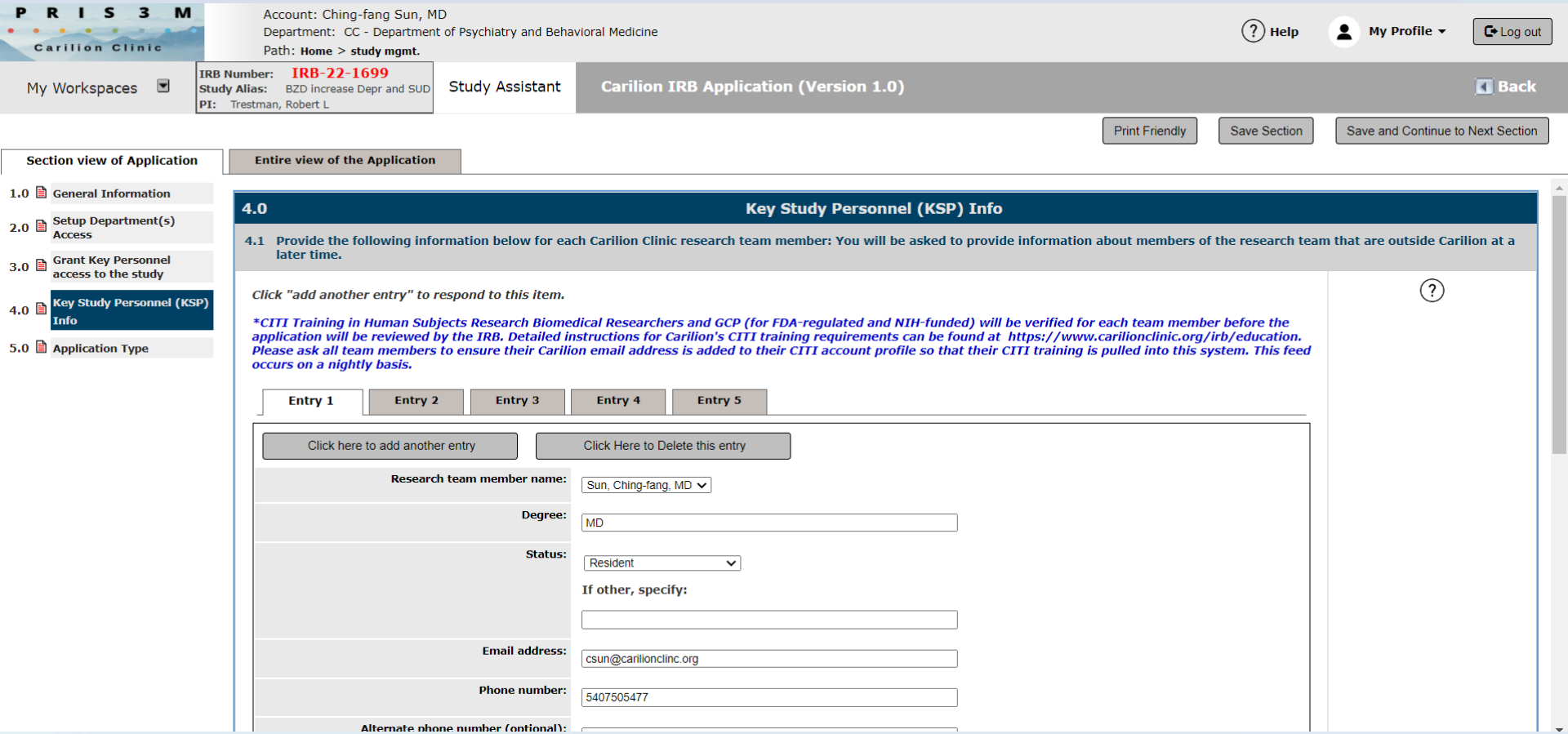
Save and Continue to Next Section
Section view of Application
Entire view of the Application
1.0 General Information
2.0 Setup Department(s) Access
3.0 Grant Key Personnel access to the study
4.0 Key Study Personnel (KSP) Info
5.0 Application Type
3.0 Assign key study personnel(KSP) access to the study
Click Here to Setup Study Personnel
3.1 * Please add a Principal Investigator for the study:
Name
Role
Training Record
Robert L Trestman
Principal Investigator
View Training Record
3.2 Please add the Research Staff, if applicable:
A) Additional Investigators
Role
Training Record
Sun, Ching-fang, MD
Sub-Investigator
View Training Record
B) Research Support Staff
Name
Role
Training Record
Kablinger, Anita
Other
Lin, Yezhe, MD
Other
View Training Record
Pola, Akhil, MBBS
Other
View Training Record
You are the Sub-I. Do not forget to add yourself as the study contact.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Section view of Application
Entire view of the Application
1.0 General Information
2.0 Setup Department(s) Access
3.0 Grant Key Personnel access to the study
4.0 Key Study Personnel (KSP) Info
5.0 Application Type
4.0 Key Study Personnel (KSP) Info
4.1 Provide the following information below for each Carilion Clinic research team member: You will be asked to provide information about members of the research team that are outside Carilion at a later time.
Click "add another entry" to respond to this item.
*CITI Training in Human Subjects Research Biomedical Researchers and GCP (for FDA-regulated and NIH-funded) will be verified for each team member before the application will be reviewed by the IRB. Detailed instructions for Carilion's CITI training requirements can be found at https://www.carilionclinic.org/irb/education. Please ask all team members to ensure their Carilion email address is added to their CITI account profile so that their CITI training is pulled into this system. This feed occurs on a nightly basis.
Entry 1
Entry 2
Entry 3
Entry 4
Entry 5
Click here to add another entry
Click Here to Delete this entry
Research team member name:
Sun, Ching-fang, MD
Degree:
MD
Status:
Resident
If other, specify:
Email address:
csun@carilionclinc.org
Phone number:
5407505477
Alternate phone number (optional):

5.0 Application Type

5.1 Select the application type:

- ○ Human Subject Research Study
- ◉ Determination of Human Subjects Research (including QA/QI Determination)
- ○ Establishing a prospective Data or Specimens Research Repository
- ○ Humanitarian Use Device (non-research use)
- ○ Expanded Access or Compassionate Use
- ○ Single Patient Emergency Use
- ○ Preparatory to Research Application
- ○ IRB Grant Review ONLY for preliminary approval if required by funder
- ○ Requesting Carilion Clinic RELY on another IRB of Record (WIRB, CIRB, VT, UVA, Advarra etc.)
- ○ Conversion of a paper application due for Continuing Review or Annual Check-In

PRISM Carilion Clinic

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Path: Home > study mgmt.

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IRB Number: IRB-22-1699
Study Alias: BZD increase Depr and SUD
PI: Trestman, Robert L

Study Assistant | Carilion IRB Application (Version 1.0) | Back

Print Friendly | Save Section | Save and Continue to Next Section

Section view of Application | Entire view of the Application

1.0 General Information
2.0 Setup Department(s) Access
3.0 Grant Key Personnel access to the study
4.0 Key Study Personnel (KSP) Info
5.0 Application Type
6.0 Funding Information and Outside Services

6.0 Funding Information and Outside Services

6.1 Select the applicable funding source(s).

- [x] None (no money, equipment, supplies, and/or services will be provided by external source)
- [ ] No monetary funding BUT equipment, supplies, and/or services will be provided
- [ ] Federal Government
- [ ] Foundation or Non-profit
- [ ] Industry/Commercial Sponsor
- [ ] State or Local Government
- [ ] Investigator or Departmental/Unit Funds
- [ ] Carilion RAP Grant
- [ ] Other

General speaking, we won't have funding. We also don't need outside support.

6.2 Select services from all areas outside of the Research Team members' affiliations that are necessary to conduct the work.

Research and Development (R&D) will contact you to arrange a Feasibility Meeting based on your responses below. This will ensure roles, responsibilities, and costs associated with this project are understood by all parties. Final sign-off from leadership in the additional service areas, as well as contracts, may be required.

- [ ] Animals
- [ ] Basic Science Laboratory Services
- [ ] Center for Simulation, Research & Patient Safety (CSRPS)
- [ ] Department of Medicine
- [ ] Department of Pediatrics
- [ ] Department of Psychiatry

7.0 Determination of Human Subjects Research Drugs under FDA Jurisdiction

7.1 Will activities involve the use of a drug in one or more persons?

○ Yes ◉ No

8.0 Determination of Human Subjects Research Devices under FDA Jurisdiction

8.1 Will the activities evaluate the safety and effectiveness of a device in a person?

○ Yes ◉ No

8.2 Will any of the data regarding the use of a device on human specimens (identified or de-identified) be submitted or held for inspection by the FDA as part of an application for a research or marketing permit?

○ Yes ◉ No

9.0 Determination of Human Subjects Research Description and NHSR Categories

9.1 Describe the role(s) of any Carilion staff or students in the design and/or conduct of the proposed activity and if this work is within the scope of their normal job activities.

Verdana 11

See the note for example

9.2 Briefly describe your project, including the purpose and aims of the work. Please include the current state of knowledge about your project topic by summarizing and synthesizing the available research (including published data) to provide justification for the proposed project. Include a reference list of literature cited to support your response. Include a description of the population targeted by the project and the benefit that this project may provide.

Verdana 11

Benzodiazepines (BZDs) have been well established and widely prescribed for anxiety and related disorders. Meanwhile, safety concerns of BZD dependence, withdrawal and tolerance are well-known to clinicians. However, potential long-term effects of BZDs on mental health are unclear. Considering BZD's central nervous system properties, the risk of developing a subsequent depression is in question.

Reference:
Shinfuku, M., Kishimoto, T., Uchida, H., Suzuki, T., Mimura, M., & Kikuchi, T. (2019). Effectiveness and safety of long-term benzodiazepine use in anxiety disorders: a systematic review and meta-analysis. International clinical psychopharmacology, 34(5), 211-221.

2

P R I S 3 M
Carilion Clinic

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IRB Number: IRB-22-1699
Study Alias: BZD increase Depr and SUD
PI: Trestman, Robert L

Study Assistant | **Carilion IRB Application (Version 1.0)** | Back

Print Friendly | Save Section | Save and Continue to Next Section

Section view of Application | **Entire view of the Application**

1.0 General Information
2.0 Setup Department(s) Access
3.0 Grant Key Personnel access to the study
4.0 Key Study Personnel (KSP) Info
5.0 Application Type
6.0 Funding Information and Outside Services
7.0 Determination of Human Subjects Research: FDA Drugs
8.0 Determination of Human Subjects Research Devices under FDA ...
9.0 Determination of HSR Description and NSHR Categories

9.3 Describe how you will utilize the data (ex: internal to Carilion use only, or dissemination beyond Carilion including presenting and/or publishing) and who will have access to the results.

Calibri 16

The study result would be submitted as an abstract, presented as a poster and then published as a manuscript on an academic journal.

2

9.4 Describe the proposed methods and procedures that will take place over the course of this project. Reference assessment measures as appropriate and upload copies of them with the submission packet at the end of this application.

Verdana 11

We will use TriNetX Analytics to conduct a retrospective cohort study investigating the incidence and risk ratio of depressive disorders and substance use disorders in patients with anxiety disorders. We will collect data from August, 2017 to August, 2022. The study cohort will be defined as patients age 18-65 with anxiety disorders (ICD-10-CM: F40-F48) prescribed with at least one BZD; the control cohort will be defined as patients age 18-65 with anxiety disorders (ICD-10-CM: F40-F48) with no BZD prescription during the five-year timeframe examined. We will exclude patients with pre-existing mood disorders (ICD-10-CM: F30-F34), substance use disorder (ICD-10-CM: F10-F19), psychotic disorders (ICD-10-CM: F20-F29) and behavioral syndromes associated with physiological disturbances and physical factors (ICD-10-CM: F50-F59). Patients in the two cohorts will be matched by gender, age, race, ethnicity and common medical conditions at a 1:1 ratio by propensity scoring and then undergo Kaplan–Meier analysis and risk analysis.

9.5 Describe how data collection will occur and the type of information to be collected. If you will be working with existing data or specimens, explain where they will come from and the reason for which they were originally collected.

Attach a copy of your data collection tool or spreadsheet listing exactly what data is to be gathered during this project.

Verdana 11

We identify patients of interest with ICD codes and generate a limited data set without any identifiable patient information on TriNetX Research Network Database, a web-based tool for research population cohort and feasibility queries that provides access to clinical data of dozens of academic medical centers and health care organizations.

TriNetX is compliant with the Health Insurance Portability and Accountability Act (HIPAA), the US federal law which protects the privacy and security of healthcare data. TriNetX is certified to the ISO 27001:2013 standard and maintains an Information Security Management System (ISMS) to ensure the protection of the healthcare data it has access to and to meet the requirements of the HIPAA Security Rule.

9.11 There are certain types of work that are common and do not meet the definition of Human Subjects Research (NHSR) requiring IRB review. If the below categories describe your ENTIRE project, please check next to the category(ies) and ensure all requirements under that category are met for your project. Depending on the category selected, you may be required to provide some additional information. If your ENTIRE project is not captured in the categories below, select the applicable category as well as the last category.

- [ ] NHSR 1. Health Care Delivery Improvement, including Quality Improvement, Process Improvement, or Performance Improvement
- [ ] NHSR 2. Establishment of a database for clinical care or quality assurance/quality improvement ONLY. A subsequent decision to extract data for research will require submission of a regular IRB application.
- [ ] NHSR 3. Evidence-based Medical Practice
- [ ] NHSR 4. Use of Public Data Sets
- [ ] NHSR 5. Research using Coded Data/Specimens
- [x] NHSR 6. Research using De-identified Data/Specimens

In order for NHSR 6 to apply, all the following must be applicable:

- The data/specimens were collected for purposes other than this project.
- The data/specimens will be provided to the researcher without any HIPAA identifiers or other personally identifiable information.
- **No codes or links of any sort exist with either the researcher or by the person releasing the data/specimens.**
- Specimens do not include newborn dried blood spots or fetal tissue.
- A Material Transfer Agreement will be obtained through the Office of Research and Development prior to receipt of data or specimens.

- [ ] NHSR 7. A case series involving no more than three Carilion patients
- [ ] NHSR 8. Decedent research (all potential subjects are deceased)
- [ ] NHSR 9. Contributing data/specimens for research outside of Carilion

- [x] NHSR 10: Public Health Practice

Section view of Application | **Entire view of the Application**

10.0 Application Questions Complete

10.1 You have now completed the IRB Application. Please click Save & Continue to proceed to the Initial Submission Packet.

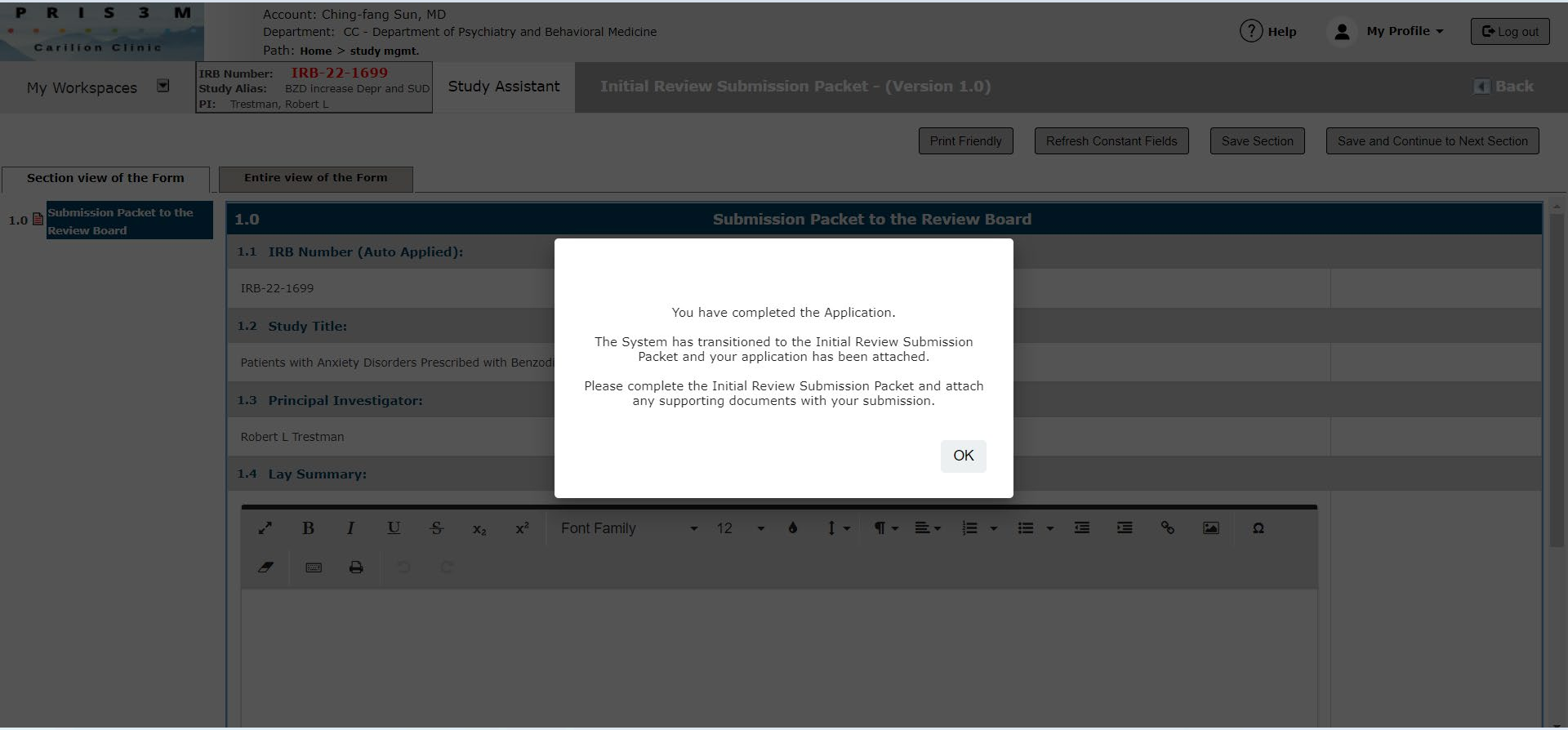
Date Completing Form:

08/18/2022

The Initial Submission Packet is a short form filled out after the IRB application has been completed and is where you will attach protocol-related documents, such as consent forms and recruitment materials. You will also be able to conduct a final review of the IRB application.

The PI will be required to sign off on the final Initial Submission Packet. The study may then proceed to the Department Signoff, if necessary based on the application type selected, and may require COI review before proceeding to the IRB.

You can view the Submission History of the study at any time to determine the status.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Path: Home > study mgmt.
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IRB Number: IRB-22-1699
Study Alias: BZD increase Depr and SUD
PI: Trestman, Robert L
Study Assistant
Initial Review Submission Packet - (Version 1.0)
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Entire view of the Form
1.0 Submission Packet to the Review Board
1.0 Submission Packet to the Review Board
1.1 IRB Number (Auto Applied):
IRB-22-1699
1.2 Study Title:
Patients with Anxiety Disorders Prescribed with Benzodi
1.3 Principal Investigator:
Robert L Trestman
1.4 Lay Summary:
Font Family
12
You have completed the Application.
The System has transitioned to the Initial Review Submission Packet and your application has been attached.
Please complete the Initial Review Submission Packet and attach any supporting documents with your submission.
OK

1.0 Submission Packet to the Review Board

1.1 IRB Number (Auto Applied):

IRB-22-1699

1.2 Study Title:

Patients with Anxiety Disorders Prescribed with Benzodiazepine Are at Higher Risk of Depression and Substance Use Disorders

1.3 Principal Investigator:

Robert L Trestman

1.4 Lay Summary:

This study aims to see if benzodiazepines prescription increases the risk of developing subsequent depression in patients with anxiety disorders.

PRIS 3 M
Carilion Clinic

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Path: **Home** > **study mgmt.**

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IRB Number: IRB-22-1699
Study Alias: BZD increase Depr and SUD
PI: Trestman, Robert L

Study Assistant

Initial Review Submission Packet - (Version 1.0)

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Section view of the Form | **Entire view of the Form**

1.0 Submission Packet to the Review Board
2.0 **Application**

2.0 Application

2.1 * Attach / Review your completed application for this study:

Deattach	Revise/ Attach	Edit/ View	Title
⊗		✎	Carilion IRB Application (Version 1.0)

PRISM Carilion Clinic

Account: Ching-fang Sun, MD
Department: CC - Department of Psychiatry and Behavioral Medicine
Path: **Home > study mgmt.**

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IRB Number: IRB-22-1699
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Study Assistant

Initial Review Submission Packet - (Version 1.0)

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1.0 Submission Packet to the Review Board
2.0 Application
3.0 Informed Consent, Assent, and Parental Permission
4.0 Supplemental Study Documents

4.0 Supplemental Study Documents

4.1 Click the Help bubble to the right for a list of documents that must be uploaded for IRB Review.

Select or Revise Existing | Add a New Document | Add Multiple Documents

Detach	Version	Title	Category	Expiration Date	Document Outcome	Checked Out	View Document
⊗	1.0	Trestman-1028_8.9.22	Department Level Sign-off (RedCap form or R&D letter)				93.64 KB
⊗	1.0	Trestman-1028	Department Level Sign-off (RedCap form or R&D letter)				79.09 KB
⊗	1.0	Study Protocol 080822	Protocol				21.11 KB
⊗	1.0	basiccitiCompletionReport470743-3	CITI Completion Certificate				422.93 KB
⊗	1.0	ASK CITI GCP completion certificate	CITI Completion Certificate				422.68 KB
⊗	1.0	citiCompletionReport10601238	CITI Completion Certificate				157.42 KB
⊗	1.0	Ching-Fang Sun CITI	CITI Completion Certificate				418.87 KB

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Section view of the Form | Entire view of the Form

5.1 Please add the Department Chair, Division Chief, or Vice President of the Principal Investigator below. DO NOT ADD THE NAME OF THE PI.

- **To determine the appropriate signoff, please click the help bubble to the right for EVERY SUBMISSION to view the designated signoff for your department/unit. It is important to check as the signoff may change. Failure to do so could delay your submission if the submission is routed to the incorrect person.**
- **The application will be routed to this individual(s) for signoff after the application is submitted by the PI and before it is routed to the IRB. If there are two individuals listed for signoff, it will be routed to each at the same time. Once both have signed off, the submission will proceed to the next step in the process.**
- **If the PI is also the department chair, please select the supervisor of the Chair for signoff. If the department the PI is in does not have a department chair, select the supervisor of the PI.**
- **You can view the study Submission History to determine where in the process the application is sitting.**

If you unable to find your Department Signatory within PRIS3M, they do not currently have an account in PRIS3M, so please ask them to log into the system one time.

Add Selected User | Delete Selected User(s)

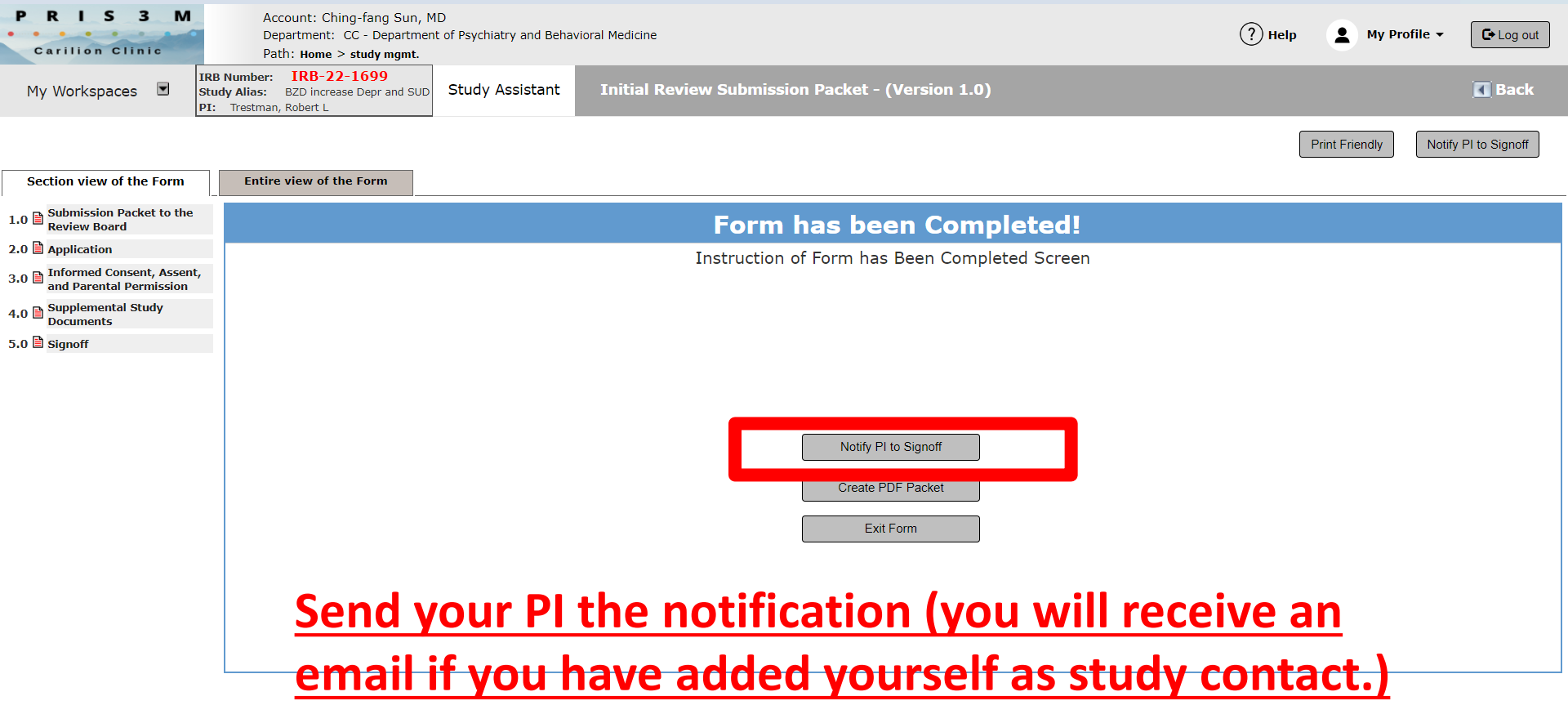
	Selected Users
☑	Robert L Trestman

5.2 Once the Initial Submission Packet has been submitted, please do not make revisions to ANY documents unless requested!

Once the Initial Review Submission Packet is submitted by the PI, the study status will change to "Pending - Submitted for Initial Review". **Please do not make revisions or create any new versions of any documents within the packet, including the IRB Application Form, until you are requested to do so**. If you need to make immediate changes, please request that the Initial Review Submission Packet be returned to you for revisions.

- If new versions are created while the application is in the "Pending - Submitted for Initial Review" study status, they will not be attached to the Initial Review Submission Packet that was submitted and therefore will not be reviewed by OIC or the IRB.
- At best, the Initial Review Submission Packet will need to be returned to you to incorporate the new changes, or it could cause major issues with version control.
- This will significantly delay the review of your application.

◉ Acknowledged



Send your PI the notification (you will receive an email if you have added yourself as study contact.)

PRISM Carilion Clinic

Hello Ching-fang Sun, MD
your last login was
08-21-2022 11:06

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Studies Submission Status - In Progress

Search for RB Number, Title, Alias, Project Number | Search

It won't be completed if PI doesn't sign off.

2 result(s) found... 1 - 2

Click to open Study Dashboard	Reference Number	Review Board	Project Number / RB Number	Form Name	Study Title / Study Alias	Form Author	Date Submitted	Actions
					Patients with Anxiety Disorders Prescribed with Benzodiazepine Are a Higher Risk of Depr...			
	005266	Carilion Clinic IRB	IRB-22-1699	**Initial Review Submission Packet**	BZD increase Depr and SUD	Sun, Ching-fang, MD	08/21/2022 11:06:50 AM EDT	Steps — Incomplete Tasks Open Steps to Complete
					The Mental Health of Chinese Sexual and Gender Minority Population in the United States			
	005239	Carilion Clinic IRB	IRB-22-1558	**Carilion Clinic - Research Change / Update Form**	US-CHN-SGM-MH	Lin, Yezhe, MD	08/15/2022 09:05:55 AM EDT	Steps

2 result(s) found... 1 - 2

Carilion Clinic IRB Studies

Recently Used | Study Status

Search for RB Number, Title, Alias, Project Number | Search

All | Draft | Carilion Clinic IRB

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08-21-2022 11:06

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			IRB-22-1558		US-CHN-SGM-MH	Lin, Yezhe, MD	AM EDT	Steps

2 result(s) found... 1 - 2

Carilion Clinic IRB Studies

Recently Used | Study Status

Search for RB Number, Title, Alias, Project Number | Search

All | Draft | Carilion Clinic IRB

6 result(s) found... 1 - 6

Draft is over here, pending.

Click to Dashboard			Project Number / Number	RB Expiration	Study Title / Study Alias	Principal Investigator	Actions
	Draft	Carilion Clinic IRB	I -22-1699		*Patients with Anxiety Disorders Prescribed with Benzodiazepine Are at Higher Risk of Depr...* BZD increase Depr and SUD	Trestman, Robert L	Applications Documents Forms Hide Exempt Copy Delete Correspond
	Not Human Subjects Research Determination		IRB-22-1518		*Availability of Psychiatry Outpatient Care in the US* APOCU	Kablinger, Anita	Applications Documents Forms Hide Exempt Copy Delete Correspond
	Not Human Subjects Research Determination	Carilion Clinic IRB	IRB-22-1687		*Adolescents with ADHD Prescribed with Mixed Amphetamine and Alprazolam Are at A High...* Amphetamine, Alprazolam, Substance use disorders	Kablinger, Anita	Applications Documents Forms Hide Exempt Copy Delete Correspond
	Not Human Subjects Research Determination	Carilion Clinic IRB	IRB-22-1613		*Increased Gender Dysphoria in Youths: It's Time to Have an Open Discussion* Increased Gender Dysphoria in Youths	Kablinger, Anita	Applications Documents Forms Hide Exempt Copy Delete Correspond
					Factitious Dermatitis in Children and Adolescents Highly Comorbid with Neuropsychiatric d... Factitious dermatitis		

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Would you like to see language to use in your IRB protocol for TriNetX use? (•) Yes ( ) No reset

Copy and paste the relevant language here into your IRB protocol.

If using a volume of patients generated by TriNetX:
A feasibility query run through TriNetX with available inclusion and exclusion criteria generated an approximate volume of __ patients of ____ time period.

If you plan to re-identify these patients in order to do chart review or patient outreach:

The TriNetX cohort will be re-identified by the Health Analytics Research Team, and a list of MPIs (with or without other relevant data points) will be generated. The list may be used to generate Epic extracts and/or imported to REDCap for further chart review.

Refine as appropriate for your protocol.

Citing TriNetX
TriNetX should be mentioned in the methods section.

A suggested adequate general description would read like:

If a TriNetX platform with browser-based real-time analytical features was used:
"....We used TriNetX, a global federated health research network providing access to electronic medical records (diagnoses, procedures, medications, laboratory values, genomic information) from approximately xy Million patients in yz large Healthcare Organizations. The TriNetX platform only uses aggregated counts and statistical summaries of de-identified information. No Protected Health Information (PHI) or Personal Data is made available to the users of the platform..."

If a dataset, downloaded from TriNetX, was used:
"....TriNetX, a global health research network provided a de-identified dataset of electronic medical records (diagnoses, procedures, medications, laboratory values, genomic information) from xy patients with [cohort definition]. The data is de-identified based on standard defined in Section §164.514(a) of the HIPAA Privacy Rule. The process by which Data Sets are de-identified is attested to through a formal determination by a qualified expert as defined in Section §164.514(b)(1) of the HIPAA Privacy Rule. Protected Health Information (PHI) or Personal Data is made available to the users of the platform..."

This general description should be followed by a description of the actual methods used including the date of the data download or when the analytics were performed.

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Save & Return Later

Antidepressant Cause Lung Cancer?

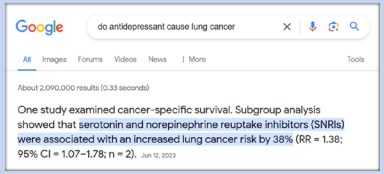
Re-visiting the Association of Antidepressant Use and the Risk of Lung Cancer

Ching-Fang Sun, MD[1], Kuan-Pin Su[2-4], Anita S. Kablinger[1]. 1 Department of Psychiatry and Behavioral Medicine, Virginia Tech Carilion School of Medicine, Roanoke, Virginia, United States. 2 Department of Psychiatry and Behavioral Sciences, University of Washington School of Medicine, Seattle, Washington, USA 3 Department of Psychiatry, Children's Hospital and Regional Medical Center, Seattle, Washington, USA 4 Mind-Body Interface Research Center (MBI-Lab), China Medical University Hospital, Taichung, Taiwan. 5 College of Medicine, China Medical University, Taichung, Taiwan. 6 An-Nan Hospital, China Medical University, Tainan, Taiwan.

Free abstract!

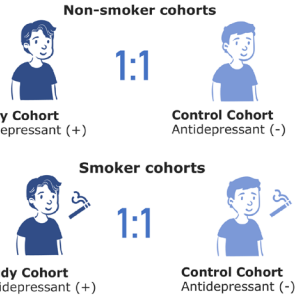
Background

- Patient searched the internet and said they don't want to take antidepressants because of the risk of lung cancer.
- Existing studies are limited to small sample sizes, unadjusted covariates especially smoking status, and unclear exposure duration.



Methods

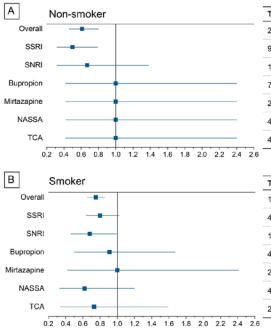
- **Study Design and Sampling:** Retrospect cohort study by using TriNetX Analytics, a tool built with a real-time electronic medical record network. Data was collected from 2013 to 2023. About 97% of patients were in the US. We included patients aged 18-65 with mood/anxiety disorders, excluded those who had a previous lung cancer diagnosis.
- **Index event:** mood/anxiety disorders diagnosis
- **Statistics:** Patients were 1:1 propensity matched by age, sex, race, ethnicity, medical conditions and undergone logistic regression.
- **Cohorts:**



*Antidepressant exposure is defined as at least 12 antidepressant prescriptions

Results

	Non-smoker		Smoker	
	Study cohort, No (%)	Control cohort, No (%)	Study cohort, No (%)	Control cohort, No (%)
Cohort size	201,644 (100)	201,644 (100)	144,419 (100)	144,419 (100)
Age	42.2 ± 14.9	41.4 ± 15.0	47.0 ± 13.6	46.7.4 ± 13.5
Sex				
Male	62,734 (31.1)	64,996 (32.2)	57,880 (40.1)	58,626 (40.6)
Female	135,122 (67.0)	134,692 (66.8)	81,795 (56.6)	81,415 (56.4)
Ethnicity				
Not Hispanic or Latino	141,496 (70.2)	141,845 (70.3)	109,157 (75.6)	109,923 (76.1)
Hispanic or Latino	16,396 (8.1)	17,054 (8.5)	9,207 (6.4)	9,516 (6.6)
Race				
White	143,211 (71.0)	143,938 (71.4)	100,965 (69.9)	100,704 (69.7)
Black African American	18,180 (9.0)	20,271 (10.1)	21,015 (14.6)	21,271 (14.7)
Asian	4,512 (2.2)	4,786 (2.4)	1,827 (1.3)	1,847 (1.3)
Comorbidity				
Acute upper respiratory infections	58,918 (29.2)	58,226 (28.9)	40,178 (27.8)	38,225 (26.5)
Chronic lower respiratory diseases	36,589 (18.1)	38,302 (19.0)	45,990 (31.8)	43,966 (30.4)
Influenza and pneumonia	15,621 (7.7)	14,825 (7.4)	18,199 (12.6)	16,409 (11.4)
Mood disorders	109,577 (54.3)	107,476 (53.3)	101,314 (70.2)	103,427 (71.6)
Anxiety, dissociative, stress-related, somatoform and other nonpsychotic mental disorders	118,980 (54.3)	107,476 (53.3)	93,818 (65.0)	98,460 (68.2)
Mental and behavioral disorders due to psychoactive substance use	21,279 (10.6)	23,425 (11.6)	86,009 (59.6)	79,736 (55.2)



	Total	No: case, control	OR (95% CI)
Overall	201,644	81, 133	0.61 (0.46, 0.80)
SSRI	99,629	27, 54	0.50 (0.32, 0.79)
SNRI	17,526	12, 18	0.67 (0.32, 1.38)
Bupropion	7,879	<10, <10	1 (0.42, 2.40)
Mirtazapine	2,353	<10, <10	1 (0.42, 2.40)
NASSA	4,472	<10, <10	1 (0.42, 2.40)
TCA	4,228	<10, <10	1 (0.42, 2.40)

	Total	No: case, control	OR (95% CI)
Overall	144,419	348, 463	0.75 (0.65, 0.86)
SSRI	40,259	127, 158	0.80 (0.64, 1.02)
SNRI	11,165	44, 65	0.68 (0.46, 0.99)
Bupropion	4,282	20, 22	0.91 (0.50, 1.67)
Mirtazapine	2,216	<10, <10	1 (0.42, 2.40)
NASSA	4,404	15, 24	0.62 (0.33, 1.20)
TCA	2,737	11, 15	0.73 (0.34, 1.59)

Conclusion

Long-term antidepressant use was associated with a **LOWER** or **NO DIFFERENT** risk of lung cancer in both smokers and non-smokers.

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Background

- Delirium is a serious complication in children with critical illness.
- Delirium is known to be related to psychiatric comorbidities as long-term consequences in adult patients with medical illness.
- The correlation between delirium and long-term psychiatric outcome is not as well-defined in the pediatric population.

Methods

- **Study Design and Sampling:** We conducted a retrospect cohort study by using TriNetX Analytics, a tool built with a real-time electronic medical record network. Data was collected from May 13, 2013 to May 13, 2023 from 75 healthcare organizations. About 80% of patients were located in the US. We included patients age under 12. Index event was defined by the time of a selected medical condition diagnosis with or without a delirium diagnosis (ICD-10-CM: F05). We defined the selected medical conditions as an infection or a disease in nervous, circulatory, respiratory, or genitourinary system (ICD-10-CM: A00-B99, G00-G99, I00-I99, J00-J99, N00-N99).
- **Exclusion Criteria:** Patients in all cohorts were excluded if they had a pre-existing psychiatric diagnosis (ICD-10-CM: F01-F99).
- **Statistics:** Patients were 1:1 propensity matched by age, sex, race, ethnicity, medical conditions and undergone logistic regression and Kaplan-Meier analysis.
- **Cohorts:**

Results:

- Within 5 years following the diagnosis of delirium, children were at an increased risk of any psychiatric disorder (ICD: F00-F99) (Figure 2). Figure 1 shows the risk ratio of specific psychiatric disorders as outcomes.

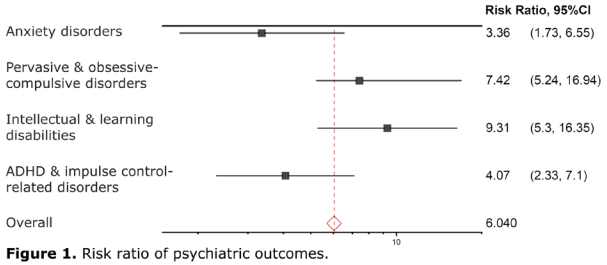

Figure 1. Risk ratio of psychiatric outcomes.

Pediatric Delirium and Psychiatric Outcome in Children Under 12

Free abstract!

Ching-Fang Sun, MD[1*], Chih-Sung Liang[2*], MD, Kiran Khalid, MD[1], Anita S. Kablinger, MD, CPI, FAAP, FAPA, FACRP, FASCP[1] 1 Department of Psychiatry and Behavioral Medicine, Virginia Tech Carilion School of Medicine, Roanoke, Virginia, United Sates. 2 Department of Psychiatry, Beitou Branch, Tri-Service General Hospital, National Defense Medical Center, Taipei, Taiwan

	Study cohort, n (%)	Control cohort, n (%)	P value
Total population	798 (100)	798 (100)	
Age at Index	4.7+/- 4.0	4.9 +/- 4.1	0.44
Gender			
Male	425 (53.3)	427 (53.5)	0.92
Female	373 (46.7)	371 (46.5)	0.92
Ethnicity			
Not Hispanic/Latino	542 (67.9)	544 (68.2)	0.91
Unknown Ethnicity	150 (18.8)	152 (19.0)	0.89
Hispanic/Latino	106 (13.3)	102 (12.8)	0.77
Race			
White	412 (51.6)	408 (54.1)	0.84
Unknown	207 (25.9)	207 (25.9)	1
African American	144 (18.0)	139 (17.4)	0.74
Asian	29 (3.6)	35 (4.4)	0.44
Diagnosis			
Acute upper respiratory infections	181 (22.7)	187 (23.4)	0.72
Injuries to the head	62 (7.8)	63 (7.9)	0.93
Episodic and paroxysmal disorders	99 (12.4)	91 (11.4)	0.53
Congenital malformations, deformations and chromosomal abnormalities	234 (29.3)	236 (29.6)	0.91
Diseases of the genitourinary system	116 (14.5)	125 (15.7)	0.53
Neoplasms	68 (8.5)	62 (7.8)	0.58

Table 1. Demographic data for the study cohort and control cohort.

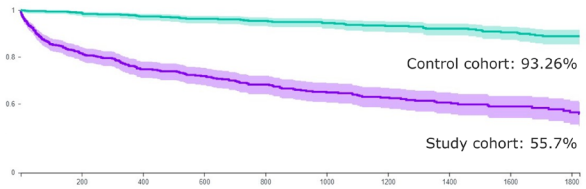

Figure 2. Kaplan-Meier survival curve. End point survival rate P<.001.

Conclusion

- Pediatric patients with delirium are likely to be newly diagnosed with a psychiatric disorder within 5 years following a delirium diagnosis.
- Despite the uncertain causality, the possible comorbid neuropsychiatric conditions should not be overlooked.

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Mean Age of Gender Dysphoria Is Decreasing

Ching-Fang Sun, MD[1], Hui Xie, MPH[2], Vemmy Metsutnan[3], John H. Draeger[1,3], Yezhe Lin[1,4,5], Anita S. Kablinger, MD, CPI[1,3] 1 Department of Psychiatry and Behavioral Medicine, Virginia Tech Carilion School of Medicine, Roanoke, Virginia, USA. 2 Zilber School of Public Health, University of Wisconsin-Milwaukee, WI. 3 Virginia Tech Carilion School of Medicine, Roanoke, VA. 4 Clinical Research Center for Mental Disorders, Shanghai Pudong New Area Mental Health Center, Tongji University, Shanghai, China. 5 Department of Psychiatry, Shanghai East Hospital, School of Medicine, Tongji University, Shanghai, China.

Background

- Gender dysphoria (GD) is defined as significant distress related to a marked incongruence between one's perceived gender and assigned sex at birth.
- The epidemiology of GD has dramatically shifted in recent years, while debates remain ongoing due to the concern of methodology and sample size.

Methods

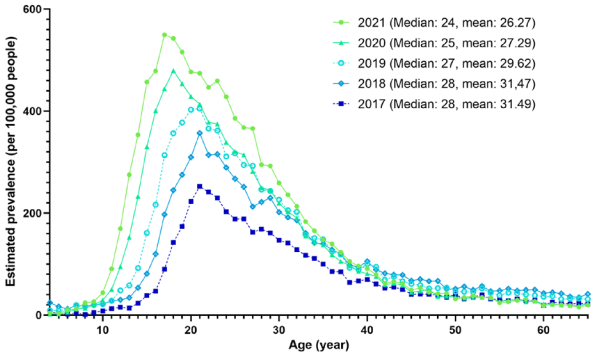
- Study Design: We conducted a retrospective epidemiologic study by using TriNetX Analytics, a tool built with a real-time electronic medical record network. Data was collected from April 30, 2017 to April 30, 2022 from 49 healthcare organizations. About 80% of patients were located in the US.
- Sampling: The studied subjects were defined as patients aged 4-65 with a diagnosis of gender identity disorder (ICD-10: F64); the studied population was defined by all patients aged 4-65 in the database by applying ICD-10 codes, services codes and medication codes.
- Statistic: Age trends in GD prevalence by survey year (2017-2021) and assigned sex at birth were calculated independently. Differential time trends in GD diagnosis between sex and age of GD diagnosis were tested by two-way interactions of sex and age of diagnosis in binary logistic regression for the whole population.

Results:

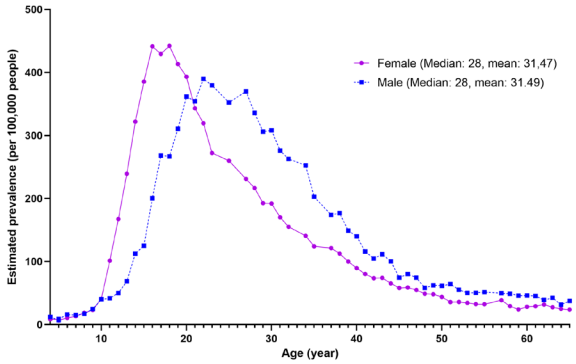
- Among 42 million patients available on the TriNetX Research Network, 66078 GD patients were identified with a female predominant pattern.

	GD patient n (%)	Study population n (%)	p value
Total population	66,078 (100)	42,720,215 (100)	
Age, mean (year) (SD)	26 (12)	34 (17)	< 0.001
Sex			
Male	27,304 (41)	19,190,043 (45)	< 0.001
Female	38,093 (58)	23,345,560 (55)	< 0.001
Unknown	681 (1)	184,612 (0)	< 0.001
Ethnicity			
Hispanic/Latino	5,589 (9)	4,593,152 (11)	< 0.001
Not Hispanic/Latino	47,033 (71)	23,140,641 (54)	< 0.001
Unknown Ethnicity	13,456 (20)	14,986,422 (35)	< 0.001
Race			
White	48,137 (73)	24,607,814 (58)	< 0.001
Unknown	10,078 (15)	9,907,100 (23)	< 0.001
Black African American	5,869 (9)	6,511,445 (15)	< 0.001
Asian	1,326 (2)	1,412,057 (3)	< 0.001
American Indian or Alaska Native	592 (1)	213,571 (1)	< 0.001
Native Hawaiian or Other Pacific Islander	76 (0)	68,228 (2)	0.004

- The mean age of GD diagnosis decreased from 31.49 (Standard error [SE]: 0.105) in 2017 to 26.27 (SE: 0.063) in 2021 ($p < 0.01$).



- Stratifying the population by sex, the highest prevalence of GD diagnosis among females peaks at age 19, and peaks at age 23 for males.
- More females than males were diagnosed with GD before age 22 (female: 45%, male: 24%). More males than females were diagnosed after age 22 (OR: -0.406; 95%CI: [-0.420, -0.391]; $p < 0.01$).



Conclusion

- GD diagnosis has significantly increased in the past 5 years, suggesting an era of open discussion on gender diversity.

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Factitious Dermatitis

in Children and Adolescents Highly Comorbid with Psychiatric Disorders

Ching-Fang Sun, MD[1], Neha Singh, BS[2], Martha M. Tenzer, BA[3], Anita S. Kablinger, MD, CPI[1,2] 1 Department of Psychiatry and Behavioral Medicine, Virginia Tech Carilion School of Medicine, Roanoke, Virginia, USA. 2 Virginia Tech Carilion School of Medicine, Roanoke, VA, USA. 3 Health Analytics Research Team (HART), Carilion Clinic, Roanoke, Virginia, USA

Background

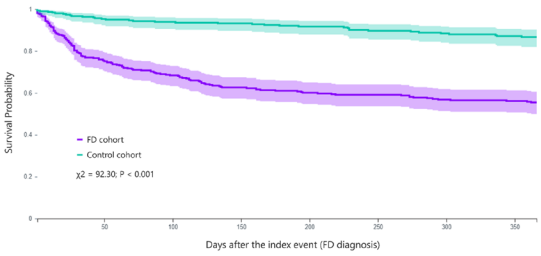
- Factitious dermatitis (FD) is a psychocutaneous disorder characterized by self-induced skin lesions.
- FD is related to mental illness, but the correlation is poorly defined in the pediatric population.
- Current FD treatment recommendations under look the potential risk of underlying psychiatric disorders, which cause great concern about delaying referral.

Methods

- Study Design and Sampling: We conducted a retrospective cohort study by using TriNetX Analytics, a tool built with a real-time electronic medical record network. Data was collected from from June 1, 2016 to June 1, 2022 from 46 healthcare organizations. About 80% of patients were located in the US.
- Exclusion Criteria: Patients in all cohorts were excluded if they had a pre-existing psychiatric comorbidities.
- Cohorts: The study cohort was defined as patients with FD (ICD-10-CM: L98.1); the control cohort was defined as patients with a regular dermatology visit by applying a diagnostic code of disease of the skin and subcutaneous tissue (ICD-10-CM: L00-99).
- Statistic: Patients in study cohorts were matched by gender, age, race, ethnicity at a 1:1 ratio by propensity scoring with the control cohort, and then underwent Kaplan–Meier analysis and risk analysis.

Results:

- A total of 453 patients were identified and matched for analysis. Patients in the study cohort were more likely to be female, non-Hispanic or Latino.
- Kaplan-Meier analyses indicated that FD patients were more vulnerable to psychiatric disorders, with a survival probability at the one-year end time window of 56%, compared to 88% in the control group (log-rank test, $\chi2 = 92.30$; $P < 0.001$). Proportional hazard analysis showed the same result as above (hazard ratio, 4.65, 95% CI, 3.29-6.58; $P = 0.04$).



Scan me to bring this study home! =)

- Patients with FD are at higher risk of: anxiety disorder, obsessive-compulsive disorder, attention-deficit hyperactivity disorder, depression, sleep disorder, impulse disorder, and conduct disorder.

	FD Cohort n (risk%)	Control Cohort n (risk%)	Relative Risk (95% CI)	P value
Total population	453	453		
Mental, Behavioral & Neurodevelopmental disorder	165 (36.4)	40 (8.8)	4.13 (2.30-5.68)	<0.0001
Anxiety	122 (26.9)	16 (3.5)	7.63 (4.60-12.63)	<0.0001
Obsessive-compulsive disorder	62 (13.7)	≤10 (2.2)	6.20 (3.22-11.94)	<0.0001
Attention-deficit hyperactivity disorder	49 (10.8)	≤10 (2.2)	4.90 (2.51-9.55)	<0.0001
Depression	25 (5.5)	11 (2.4)	2.27 (1.13-4.56)	0.0210
Sleep disorders	29 (6.4)	13 (2.9)	2.23 (1.18-4.24)	0.0142
Impulse disorder	22 (4.9)	≤10 (2.2)	2.20 (1.05-4.59)	0.0358
Conduct disorders	21 (4.6)	≤10 (2.0)	2.14 (1.02-4.50)	0.0440
Autistic disorder	17 (3.8)	≤10 (2.2)	1.70 (0.79-3.67)	0.1769
Post-traumatic stress disorder	13 (2.9)	≤10 (2.2)	1.30 (0.57-2.93)	0.5276
Suicidality and homicidality	12 (2.6)	≤10 (2.2)	1.20 (0.52-2.74)	0.6664
Gender identity disorders	≤10 (2.2)	0 (N/A)	N/A	N/A
Tic and Tourette disorder	≤10 (2.2)	≤10 (2.2)	1 (0.42-2.38)	1
Adjustment disorder	≤10 (2.2)	≤10 (2.2)	1 (0.42-2.38)	1
Intellectual disabilities	≤10 (2.2)	≤10 (2.2)	1 (0.42-2.38)	1
Eating disorder	≤10 (2.2)	≤10 (2.2)	1 (0.42-2.38)	1

- Regarding the estimated prevalence of psychiatric disorders in the FD population, we identified 1376 FD patients including those who had a previous psychiatric diagnosis.
- Over the 6-year period, 87% FD patients endorsed at least one psychiatric disorder. The most common psychiatric disorders observed in the FD population are: anxiety disorders (73%), ADHD (49%), OCD (48%), sleep disorder (32%), depression (30%), conduct disorder (24%) and impulse disorder (22%).
- About 13% FD patients had a diagnosis of suicidality and/or homicidality.

Conclusion

- FD is highly comorbid with psychiatric disorders.
- Though some practitioners believe FD could result from experimental or recreational behavior in children and adolescents, a possible underlying psychiatric disorder should never be overlooked.
- Timely mental health referral and suicide screening tests are crucial parts of a dermatologic treatment plan.

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Sleep Disorders in the Transitional Age Population During the COVID Pandemic

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Background

- COVID-19 pandemic caused many changes in learning/working while in-person activities became virtual.
- In particular, the transitional age group (15–26-year-olds) were experiencing multiple changes:
  - The transition from adolescent to adulthood
  - Social role change (e.g. from school to workplace)
- Environmental changes in learning/working style due to the pandemic may cause additional stress.
- Sleep disorders are related mental health comorbidities often associated with stress.
- We aim to investigate the estimated prevalence trend of sleep disorders in transitional age-group individuals during the pandemic.

Methods

- Retrospective observational/epidemiology study
- Data base: TriNetX Research Network (a deidentified electronic medical record system includes information from 83 healthcare organizations, about 122 million people (80% in the US).
- **Investigated duration**: 2017-2022
- The **studied population**:
  - Individuals aged 15-26 with sleep disorders (ICD10-G47) and sleep disorders not due to a substance or known physiological condition (ICD10-F51).
- **Age group definitions:**
  - High school group: 15-17 years
  - College group: 18-21 years
  - Graduate group: 22-26 years
- **Cohorts:**
  - COVID cohort (study cohort) 2019-2022
  - Pre-COVID cohort (control cohort) 2017-2018

TABLE	COVID n (%)	Pre-COVID n (%)	p
Total	230,630 (100)	120,029 (100)	
Age, Mean Year (SD)	20.4 (3.5)	20.3 (3.41)	**<0.01**
Sex			
Male	100,968 (44)	58,140 (48)	**<0.01**
Female	129,522 (56)	61,845 (52)	**<0.01**
Unknown	140 (0)	44 (0)	**<0.01**
Ethnicity			
Non-Hispanic	153,478 (67)	81,319 (68)	**<0.01**
Hispanic	29,554 (13)	18,833 (16)	**<0.01**
Unknown	47,598 (21)	19,877 (17)	**<0.01**
Race			
White	138,623 (60)	71,856 (60)	0.17
Black of African American	36,413 (16)	20,997 (17)	**<0.01**
Asian	6,396 (3)	2,605 (2)	**<0.01**
American Indian or Alaska Native	1,424 (1)	746 (1)	0.88
Native Hawaiian or another Pacific Islander	717 (0)	313 (0)	**<0.01**
Diagnosis			
Anxiety, dissociative or stress related, somatoform and other non-psychotic mental disorder	130,180 (56)	60,521 (50)	**<0.01**
Mood disorder (affective disorder)	102,671 (45)	47,618 (40)	**<0.01**
Insomnia	88,702 (38)	42,097 (35)	**<0.01**
Sleep apnea	77,128 (33)	50,810 (42)	**<0.01**
Attention-deficit hyperactivity disorders	53,151 (23)	32,215 (27)	**<0.01**
Sleep disorders not due to a substance or known physiological condition	41,463 (18)	20,501 (17)	**<0.01**
Mental and behavioral disorders due to psychoactive substance use	32,669 (14)	14,663 (12)	**<0.01**
Hypersomnia	23,501 (10)	11,783 (10)	**<0.01**

Results

- We identified 230,630 patients in the study cohort, 120,029 in the control cohort.
- Sleep disorders were more prevalent during the COVID pandemic (38% vs 35%, p<0.01)
- Sleep apnea was more prevalent prior to the pandemic.
- Anxiety disorders, mood disorders, and substance use disorders were more prevalent during the pandemic (table).
- The graduate age group was affected the most highlighting the impact of the pandemic on their sleep (figure).

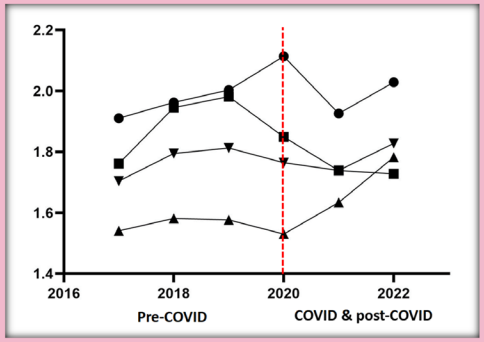

Figure. Percentage of estimated prevalence of sleep disorders and it's trends in different age groups.

Conclusions

- There was an increase in the estimated prevalence of sleep disorders in the transitional age group during the COVID 19 pandemic.
- Further study is warrant to clarify the correlation between the increased estimated prevalence in psychiatric disorders and sleep disorders during the pandemic.

Reference

Jones EAK, Mitra AK, Bhuiyan AR. Impact of COVID-19 on Mental Health in Adolescents: A Systematic Review. Int J Environ Res Public Health. 2021 Mar 3;18(5):2470.

We did not receive any funding. We do not have any conflict of interest.

VTC Virginia Tech Carilion School of Medicine

Carilion Clinic

Patients with Anxiety Disorders Prescribed with Benzodiazepine Are at Higher Risk of Mood Disorders and Substance Use Disorders

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Background:

- Benzodiazepines (BZDs) have been well established and widely prescribed for anxiety and related disorders.
- Safety concerns of BZD dependence, withdrawal and tolerance are well-known to clinicians.
- Potential long-term effects of BZDs on mental health are unclear.
- Considering BZD's central nervous system properties, the risk of developing a subsequent depression is in question.

Method:

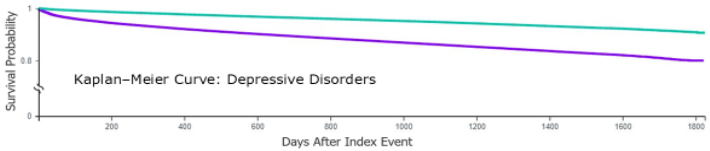
- **Study Design and Sampling:** We conducted a retrospective cohort study using TriNetX Analytics, a tool built with a real-time electronic medical record network. Data was collected from September 09, 2017 to September 09, 2022 from 60 healthcare organizations. About 80% of patients were located in the US. We included patients age 18-65 with anxiety disorder who were prescribed at least one BZD. Index event was defined by the time of anxiety diagnosis along with a prescription.
- **Exclusion Criteria:** Patients in all cohorts were excluded if they had a diagnosis of prior mood disorders (ICD-10: F30-F34), substance use disorder (ICD-10: F10-F19), psychotic disorders (ICD-10: F20-F29) and behavioral syndromes associated with physiological disturbances and physical factors (ICD-10: F50-F59).
- **Cohorts:** The study cohort was defined as patients age 18-65 with anxiety disorders (ICD-10-CM: F40-F48) prescribed with at least one BZD; the control cohort was defined as patients age 18-65 with anxiety disorders (ICD-10-CM: F40-F48) with no BZD prescription during the five-year timeframe examined.

	BZD Cohort n (%)	Control cohort n (%)	p value
Total population	705,850 (100)	1,131,153 (100)	
Gender			
Male	228,596 (32.4)	375,721 (33.2)	< 0.0001
Female	477,142 (67.6)	754,926 (66.7)	< 0.0001
Unknown	112 (0)	506 (0)	N/A
Ethnicity			
Not Hispanic or Latino	464,651 (65.8)	706,678 (62.5)	< 0.0001
Unknown Ethnicity	203,583 (28.8)	342,437 (30.3)	< 0.0001
Hispanic or Latino	37,616 (5.3)	82,038 (7.3)	< 0.0001
Race			
White	513,947 (72.8)	781,391 (69.1)	< 0.0001
Unknown	95,326 (13.5)	174,419 (15.4)	< 0.0001
Black African American	82,378 (11.7)	140,910 (12.5)	< 0.0001
Asian	11,017 (1.6)	28,867 (2.6)	< 0.0001
American Indian/Alaska Native	2,393 (0.3)	3,949 (0.3)	< 0.0001
Native Hawaiian/Other Pacific Islander	789 (0.1)	1,617 (0.1)	0.257

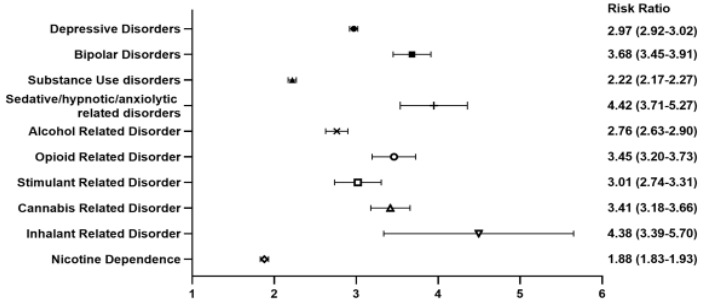
- **Statistic:** Patients in the two cohorts were matched by gender, age, race, ethnicity and common medical conditions at a 1:1 ratio by propensity scoring and then underwent Kaplan–Meier analysis and association analysis.

Results:

- A total of 652,314 patients were identified and matched for analysis. Patients in the study cohort were more likely to be female, non-Hispanic and white.
- Kaplan–Meier analysis showed the survival probability at the end of the time window was 90.4% for the control cohort and 79.9% for the study cohort (Hazard Ratio [HR] 2.97; 95% CI, 2.92-3.01; P < 0.001) in depressive disorders; 99.4% for the control cohort and 98.4% for the study cohort (HR, 3.55; 95% CI, 3.33-3.78; P < 0.001) in bipolar disorders; 94.0% for the control cohort and 88.9% for the study cohort (HR, 2.18; 95% CI, 2.13-2.22; P < 0.001) in substance use disorders.



- Patients with anxiety disorders prescribed with BZDs were at a higher risk of depressive disorders (Risk Ratio [RR], 2.97; 95% CI, 2.92-3.02), bipolar disorders (RR, 3.68; 95% CI, 3.45-3.91), substance use disorders (RR, 2.22; 95% CI, 2.17-2.27) during the five-year period following the diagnosis and prescription.



Conclusion:

- Patients with anxiety disorder prescribed with BZDs are at higher risk of mood disorders and substance use disorders than a matched cohort not prescribed BZDs.
- Clinicians should carefully consider BZD prescribing and inform the patient about an increased risk of mood disorders and substance use disorders.
- Further studies are indicated to clarify the potential causal relationship between BZDs and depressive disorders.

Reference:
Abdous, B., Berbiche, D., Preville, M., & Voyer, P. (2013). Benzodiazepine dependence and the risk of depression and anxiety disorders: seniors' health study. L'encephale, 40(3), 216-222.
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Children and adolescents with **Gender Dysphoria** are at risk of psychiatric disorders

Mood disorder and anxiety disorder are the most common outcomes

The Risk of Psychiatric Disorders in Children and Adolescents with Gender Dysphoria: A Real-World Retrospective Cohort Study

Binx Yezhe Lin, Ching-Fang Sun, Anilla Del Fabbro, Anita Kablinger
Department of Psychiatry and Behavioral Science, Carilion Clinic - Virginia Tech Carilion School of Medicine

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Results

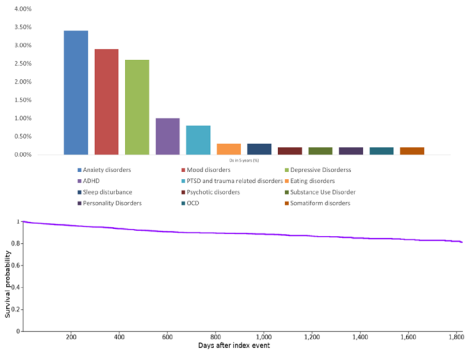
In total 5719 patients with GD

- **The mean age at diagnosis of GD**: 13.1 ± 3.24 years (mean ± standard deviation).
- **Sex**: 65% females assigned at birth, 34% males assigned at birth, and 1 % unknown sex
- **Race**: 67% White, 2% Black, 1% Asian, Native American, or Pacific Islander, and 26% unknown race.

By the 5-year endpoint:

- **Psychiatric risk**: 330 (5.77%) patients were newly diagnosed with at least one psychiatric disorder (SP: 81.06%).
- The **most common** conditions among all the psychiatric disorders
  - mood disorders (164, 2.87%)
  - anxiety disorders (196, 3.43%)

Figs. 5-year Mental Health Risks for Gender Dysphoria



References

Paz-Otero, et al. J Psychiatry Treat Res, 2021
Zucker, et al. Annual Review of Clinical Psychology, 2016

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Introduction

Individuals with gender dysphoria (GD) experience tremendous **minority stress**, resulting in higher risk of psychiatric disorders.
Current studies **primarily focus on cross-sectional** risk of psychiatric disorders in **adults** with GD.
There is a **lack of longitudinal research** regarding the psychiatric outcomes of children and adolescents with GD.

Aim: explore the risks of psychiatric disorders in children and adolescents following their GD diagnosis.

Methods

TriNetX Research Network queried on May 22, 2023 (TriNetX provided real-time de-identified EMR from approximately 120 million patients from 80 healthcare organizations with around 80% in the United States)
Subjects: 0 to 18 years old with a GD diagnosis in the whole dataset (ICD-10CM: F64).
Exclusion criteria: patients with previous diagnoses of psychiatric disorders other than gender dysphoria (ICD-10CM: F01-99).
Outcome: novel diagnoses of any psychiatric disorder 5 years following the GD diagnosis.
Stats: Kaplan-Meier survival analysis to estimate the survival probability (SP) in the 5-year follow-up period.

Conclusion

Children and adolescents with GD are at risk of developing psychiatric disorders within the 5 years following the initial diagnosis of GD. This study provides insights into the longitudinal risks of mental health disorders among individuals diagnosed with GD. More studies are warranted to explore the specific **risk and protective factors associated with GD** in children and adolescents to promote their overall well-being and mental health.

CARILION CLINIC

How to get started in TriNetX

1. TriNetX User Agreement and Registration: https://redcap.link/v5pw9j7j
2. Please contact HART@carilionclinic.org with the subject of 'TriNetX Training' for training outside of the scheduled sessions. If you haven't taken a class or need a refresher, this is your opportunity to do so! Let Dee Myers know (dlmyers2@carilionclinic.org) which date you prefer, and she will send a meeting invitation.

- Virtual training workshops for hands-on practice:
- 1/15/2025 – 1030-1200
- 1/30/2025 – 1330-1500
- 2/13/2025 – 1030-1200
- 2/27/2025 – 1330-1500
- 3/11/2025 – 1030-1200
- 3/26/2025 – 1330-1500

Questions (T/F)

- 1. TriNetX is a tool that can be used for both clinical and research purposes
- 2. TriNetX projects require IRB approval

Learning Objectives - Review

- Define TriNetX and list 3 ways Carilion's participation in the global system advances our academic efforts.
- Identify 5 types of datasets that are available in TriNetX.
- Review the approval process to utilize TriNetX.
- Describe 3 projects that have utilized the TriNetX approach.

Contact Information

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https://redcap.link/MyProjectPath

QUESTIONS?

MyProjectPath https://redcap.link/MyProjectPath