COVID-19 Evidence Accelerator Collaborative

Lab Meeting 53

June 16th, 2022, 3 - 4:00 pm ET

Call Summary

Overview of Lab Meeting 53

Lab Meeting 53 featured two presentations on use of real-world data (RWD) from various sources for providing data-driven insights throughout the pandemic and received an update on progress made in the Medication Use Definitions Workgroup. First, we heard from Drs. Henriette Coetzer and Francois Fressin about how CVS captures data from their services and uses them to inform planning such as optimizing distribution of vaccines and providing policy insights to government stakeholders. Next, we heard from Jennifer Stacy of TriNetX who presented an overview of findings from an analysis of data on breakthrough infections. Finally, Dr. Alecia Clary of the FDA Foundation provided an overview of the framework developed by the Medications Definitions Working Group and discussed how this work will be disseminated.

CVS Analytics & the COVID Pandemic
Dr. Henriette Coetzer & Dr. Francois Fressin, CVS Health

What is the Role of Retail Health in a Pandemic?
- Large network of locations provides accessible option for testing and vaccination – ~10k locations across the US, 85% of the country lives within 10 miles of a CVS
- CVS network equipped with infrastructure and experience supporting vaccination efforts – 10M+ flu vaccinations/year → capacity to support rollout and administration of COVID-19 vaccinations

CVS COVID-19 Initiatives Fueled by Data & Analytics
- In-Store Vaccinations – operational design, appointment engine, forecasting, monitoring
- Offsite Vaccinations – Store-Depot mapping, scheduling, clinic selection, reporting
- COVID Testing – capacity recommendations, monitor key patient trends, demand forecasting to inform supply
- Antiviral Distribution – optimized store selection, monitoring
- US & Foreign Trends to Inform Enterprise Initiatives – cases, testing, hospitalization, vaccination over the counter (OTC) tests, & policy insights

Leveraging Data & Analytics to Answer Research Questions
- CVS COVID-19 Dashboards for to Biomedical Advanced Research and Development Authority (BARDA) and Vaccine Manufacturers
- Near real-time data on COVID-19 testing and vaccination rates
- Providing insights BARDA to predict the possible emergence of new variants (~3-4 weeks ahead of other sources)
- Estimates of vaccine effectiveness using self-reported post-vaccination data and testing data

Impact of Key CVS Health COVID-19 Initiatives
- \>59M vaccinations in 2021
- ~40% of vaccines to underrepresented communities in 2021
- \>32M tests in 2021

Working With Speed: Vaccinating the Most Vulnerable
- Using data to optimize scheduling and distribution of vaccines to long-term care (LTC) facilities
    - ~40k LTC facility vaccines handled by CVS
    - Used data to map and schedule vaccinations at LTC facilities around 1.2k CVS Depots (supplier locations)
    - [Published] methodologies to provide access to learnings

Analytics Engine
- **Inputs:** Store information, vaccinations, digital scheduling data, inventory, and other relevant public data ingested from source systems up to 6x per day
- **Integrated Platform:** Utilized an integrated platform to centralize data so developers can utilize preferred tools
- **Outputs:** operational reporting, strategic insights, benchmark comparisons, modeling recommendation engine (digital appointments, store selection, inventory allocation, model selection)
- Reporting Suite – >200 independent dashboards, >750 regular users, >70 executives

Initiatives to Ensure Equitable Vaccine Distribution
- **Community Vulnerability –** Using county-level social vulnerability index (SVI) to identify areas where there is greater need/unmet need
    - Set local benchmarks for vaccine distribution based on population demographic breakdowns within the same zip code, county or state the store is in
- **Store Selection:** stores in high minority and high SVI locations, community clinics at YMCAs, churches, health centers, etc.
- **Call Center Outreach:** reserved appointments for outreach campaign, outbound calls in minority dense neighborhoods, community partners have inbound # for scheduling
- **Text Outreach:** test messages with prompts to schedule vaccination appointments, timing of campaigns adjusted to be more optimal for equity patients
- **Ongoing Education:** New Market Activation emails to drive awareness, paid search enables in markets experiencing appointment softness, radio, social & other education campaigns
- **Community-Based Vaccination Efforts**
    - Partnered with Lyft to provide rides to vaccination appointments
    - Partnered with local YMCAs in launching community-based clinics that provided access to accurate information on the vaccine and access to vaccines

COVID-19 Vaccine Data & Analysis

Jennifer Stacey, TriNetX

TriNetX Data Source
- 4.5M+ possible patients with COVID-19 (ICD-10 diagnostic terms and laboratory confirmed cases), January 2020 – April 2022

- 3.6M+ patients with at least one dose of the COVID-19 vaccine based on CVX vaccination term, CPT, ICD-10-PCS, and SNOMED procedural terms as of April 19, 2022
- Added COVID-19 terms to TriNetX terminology throughout the pandemic – 373 new COVID-related codes and growing

Early Analysis of COVID-19 Vaccine Data – Healthcare Workers & Elderly Populations
- Analysis run February 2021 – captured data from the initial rollout of COVID vaccines when healthcare workers and elderly patients were eligible to receive their first dose (n=129,450)
- 65-70% of vaccinated healthcare workers were females, mean age 54

Current COVID-19 Data – Vaccination in Patients of All Ages
- 4.2M+ patients across 64 health care organization (HCOs)
- Majority of patients are white, non-Hispanic/Latino
- More females than males vaccinated in 18+ age group
- Mean Age 50 (range 5 – 90 y/o)
- Almost 400k patients are pediatric patients (5 – 18 y/o)
- 600k+ breakthrough infections, 73k+ in pediatric patients
    - Higher risk of hospitalization and death from breakthrough infection in adults compared to pediatric patients
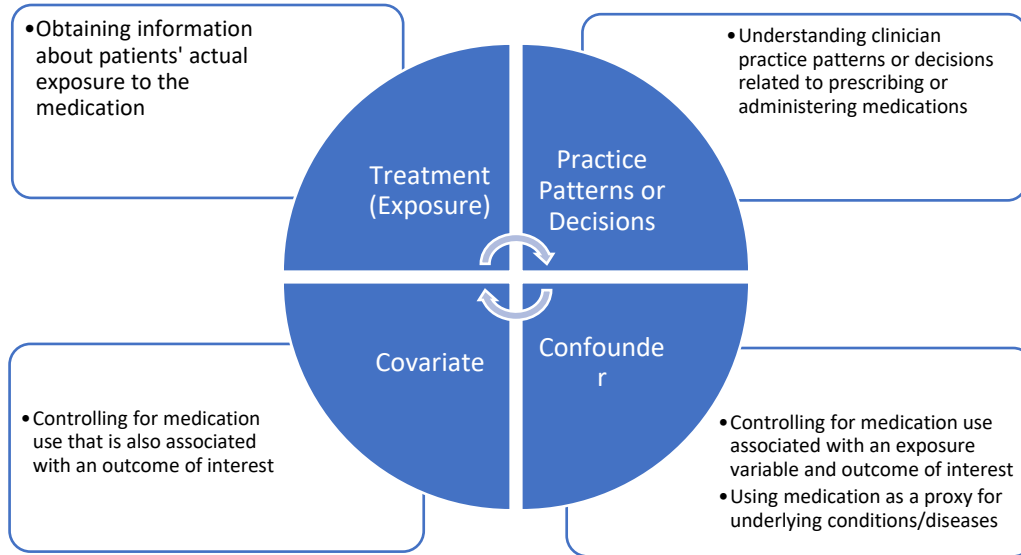
TriNetX Powered Publications
- 69 abstracts, 123 articles using TNX data for COVID-19 as of April 28, 2022
- 524 abstracts and articles to-data powered by TNX data
- 40% of all publications 2020-present were COVID-19 related
- Publication rate increased from 8/month in 2020 to 22/month in 2021, 2022 rate is 24/month

<u>**Medication Use Definitions Workgroup Update**</u>

Dr. Alecia Clary, FDA Foundation

Real-world data, including medication data, is being increasing leveraged to generate real-world evidence to help drive research, clinical, and policy decisions. Incorporating medications into studies can be particularly challenging for many reasons including that medication exposure can be incorporated into studies in many different capacities (as depicted here) and that there are many types of data sets that may include medication data.

Use Cases for Medication Data

- Obtaining information about patients' actual exposure to the medication

- Understanding clinician practice patterns or decisions related to prescribing or administering medications

Treatment (Exposure)

Practice Patterns or Decisions

Covariate

Confounder

- Controlling for medication use that is also associated with an outcome of interest

- Controlling for medication use associated with an exposure variable and outcome of interest
- Using medication as a proxy for underlying conditions/diseases

The medications use definitions workgroup developed a list of things a researcher might want to consider when developing conceptual and operational definitions for medication use where conceptual definition of medication use (the what) proceeds the operational definition (the how). The conceptual definition will depend upon the context under which the medication is being included in the analysis. This context will inform decisions about how medication exposure will be identified and defined. Operational considerations include features of the data source that were used, the approach the researchers used to identify the medication of interest, how timing elements were defined, the features of the medication use that were addressed/included, and finally if the algorithm for the medication measure that was used has been validated, if applicable. The next steps include submitting a manuscript for publication.