COVID-19 Evidence Accelerator Collaborative

Lab Meeting # 31

Thursday, April 15th, 2021 3 - 4:00 pm ET

Call Summary

Overview of Lab Meeting 31

The focus of Lab Meeting 31 was the utilization of real-world data (RWD) for immunization information systems. First, Dr. Janet Woodcock and Dr. Amy Abernethy of the Food and Drug Administration (FDA) had an engaging conversation about the future of clinical trials and how RWD from pandemic experiences can be leveraged in clinical research. Next, we heard from Dr. Karthik Natarajan of Columbia University about how New York Presbyterian Hospital (NYPH) utilizes immunization information tracking systems across New York City. We also heard from Dr. Lawrence Kushi of Kaiser Permanente Northern California about their approach to tracking and monitoring vaccinations of members. Finally, Gina Valo of FDA continued telling Heidi's COVID care story to illustrate the importance of data interoperability when looking at immunization records.

Conversation with Acting FDA Commissioner Dr. Janet Woodcock

Dr. Janet Woodcock, FDA
Dr. Amy Abernethy, FDA

Abernethy: RWD is being used for monitoring vaccines and other emergency use authorizations (EUAs). Is this indicative of the value of RWD for evaluating the performance of a product after granting EUA? How can we improve on this work?

Woodcock: Currently RWD is coming through a spontaneous passive reporting system called the vaccine adverse event reporting system (VAERS). Data are not reported in real time. There are lags and it would be better to have a system where there is no lag in monitoring adverse events. If there was a more active surveillance system, we would be able to identify adverse events faster, understand them and their denominator in a more complete manner.

Abernethy: What might a future look like where RWD is used to inform clinical trials or RWD and clinical trials coexist?

Woodcock: I think the democratization of clinical trials is important. Currently clinical trials are the province of specialized areas (specifically contract research organization (CRO) sites, larger academic hospitals) that accrue patients for clinical trials, and these are not entirely representative of America. Many patients with serious diseases across the country never have an opportunity to join a clinical trial. We need to support training at additional sites and make data capture in clinical trials more seamless. These are two key things we can do to make clinical research part of the fabric of clinical care in the US.

Abernethy: How can we improve inclusivity in clinical trials and how can RWD be used to help us understand inclusivity of information?

Woodcock: If we are going to improve inclusivity in clinical trials, we need to improve access to clinical research by integrating it as part of clinical care. Use of RWD to identify patients around the country who could be matched to a trial would be valuable. We also need better reach in our clinical trials so once we have identified patients with RWD, we can then offer the opportunity to participate in a trial from where they are.

Abernethy: What are your thoughts on using decentralized means to track data in clinical trials?

Woodcock: Just as there was hesitation about using telemedicine prior to COVID, there was similar hesitation about decentralizing clinical trials. Now, we are realizing it is more functional than we thought. As decentralized trials finish up, we will begin to gain lessons learned (e.g., how much data missingness is there?). It is important to hang on to the things from adaptation we made during the pandemic that are of benefit.

Abernethy: Who should take on understanding the impact of decentralization methods on data integrity, patient satisfaction in clinical trials, etc.?

Woodcock: Public-private partnerships will be particularly helpful here. Bringing together collaborative groups to aggregate data, anonymize data, look at it together, etc. so we can learn from this experience.

Abernethy: Do you have advice for the Evidence Accelerator community?

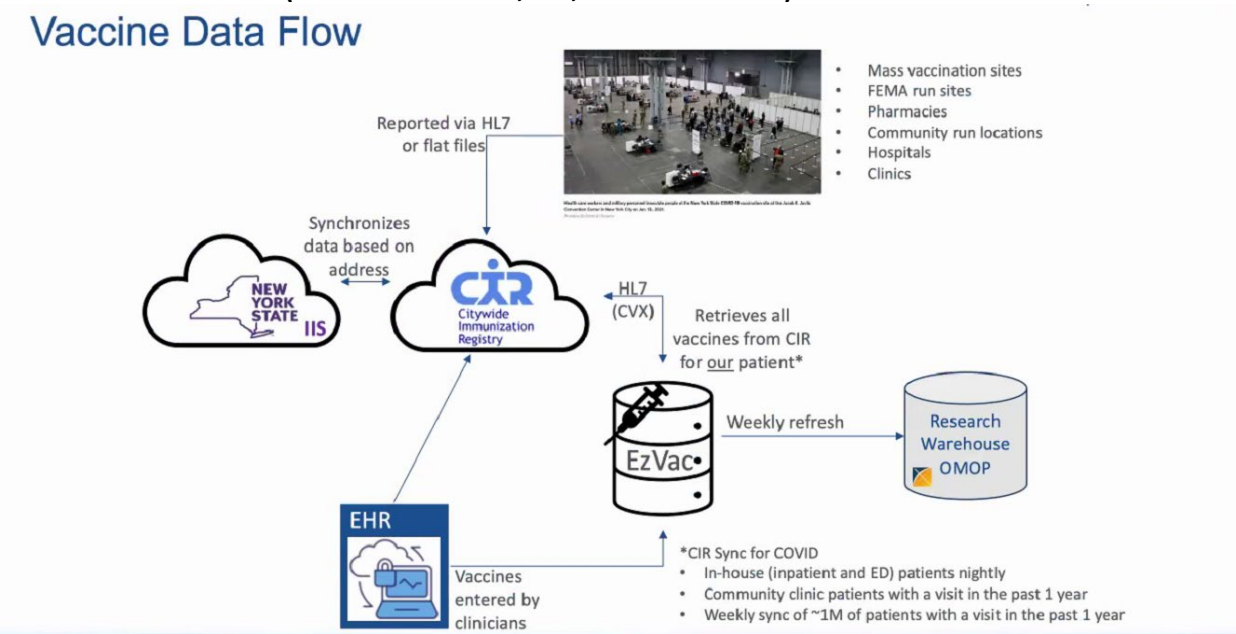
Woodcock: Thank you for coming together and doing the work you have done. I, and the FDA, plan to continue to support this work as there is a great deal of interest in this space. I encourage you to continue finishing up these projects and get them published. Continue to see where we are and what we will need next. There is no doubt we need to move forward with this, the question is how and with who do we get the work done to be in a better place?

<u>Enabling COVID Research Through Interoperability</u>
George Hripcsak & Karthik Natarajan, Columbia University

Immunization Information Systems in NYC

- New York Presbyterian Hospital (NYPH) – 6 hospitals in and around NYC, 2600 beds, 2 million annual visits (includes Columbia Hospital).
- EzVac is the NYPH immunization information system which started in 1999. It contains pediatric and adult immunization information (~5 million vaccines) for patients at NYPH and affiliated ambulatory clinics.
- Starting in 2010, EzVac has partnered with NYC Department of Health (DOH) for bi-directional synchronization of immunization data.
- A lot of the work done at NYPH Columbia has been because of partnerships with the Citywide Immunization Registry (CIR).
- CIR began in 1997 and mandatory reporting for patients <18 years old began in 2005. In January of 2021, NY mandated the reporting of all flu and COVID vaccines (no consent required for >19 years old).

Overview of Data Flow (New York State IIS, CIR, and NYPH EzVac)



- Weekly bulk queries for our patients who have received vaccines in NYC - Sync ~1 million patients every weekend.
- Using the information for clinical care and outreach to our patient population we think do not have a vaccine.
- Successful for tracking patient immunization data – particularly for COVID vaccinations.

Implications for Analysis

- Data quality challenges – patient matching, gaps in reporting, restrictions between registries, patient address matters (in the city vs. outside)

<u>Immunization Information Systems: Kaiser Permanente of Northern California</u>

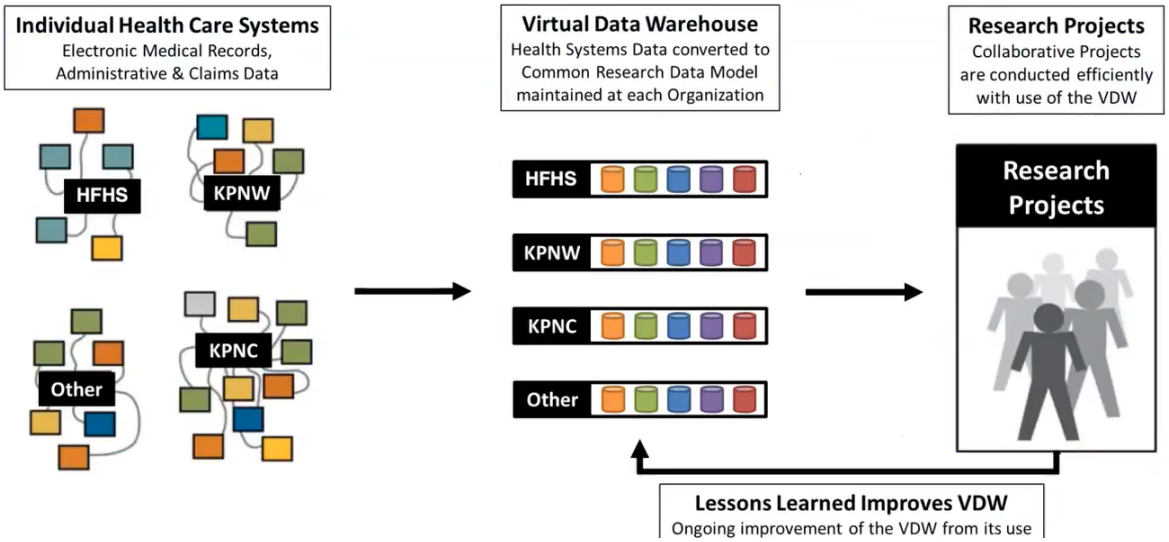
Lawrence Kushi, Jacek Skarbinski, & Emily Valice, Kaiser Permanente of Northern California

Overview of Kaiser Permanente of Northern California (KPNC)

- Integrated healthcare delivery system with 4.7 million members across Northern California. Employs over 9500 physicians at 21 hospitals and 262 outpatient clinics.
- Connected EHRs
- Division of Research with ~60 scientists, ~$100 million annual budget, ~80% externally funded.

Health Care Systems Network and the Virtual Data Warehouse (VDW)

- KPNC is part of a broader network of health care systems (The Health Care Systems Research Network) across the US which allows for data sharing in the virtual data warehouse.



Data Domains in KPNC VDW (as of March 17, 2021)

- Demographic data, enrollment and utilization data, diagnoses, death and cause of death, vital signs, COVID antibody and PCR test results, COVID vaccination data, etc. Each data point is updated on an incremental basis.
- Utilization (encounters), diagnoses, procedures, lab results, pharmacy, COVID tests and vaccinations, current death all updated daily since the pandemic.
- Data comes from various internal (KPNC administered direct documentation) and external sources (patient reported, CA immunization registry, CALVAX/My Turn, etc.)

Quality Issues in COVID Vaccine Data in the VDW

- 98% of data is "OK" – no issues
- The remaining <2% of data has issues such as vaccination counts exceeding 2, duplication (same MRN, vaccine date, vaccine type), second and first vaccines are different, vaccination <10 days apart, vaccination prior to 11/1/2020, etc.

<u>Heidi's Vaccine Data Interoperability Story</u>

Gina Valo, Food and Drug Administration (FDA)

Heidi the Hypothetical Patient

- Can be used to illustrate the challenges of using RWD for understanding the performance of EUA diagnostics, and now, COVID vaccines.
- Patient History:
  1. Heidi receives her first mRNA vaccine dose at a pharmacy 1 hour away. The pharmacy collects her insurance information.
  2. She receives her second dose from a mass vaccination site 5 minutes away from home. The mass vaccination site does not collect her insurance information.
  3. Next month she goes to her primary care provider for a headache. She tests negative for COVID and positive for the Flu.
  4. One year later (March 2022), she goes to her doctor again for symptoms and tests positive for COVID (presumably a different virus variant).

Data Interoperability Story

- Heidi's patient data are flowing from multiple sources to multiple places
    - Her primary care provider and from the pharmacy provides data to her health insurance company. The insurance company has information from her primary care visits, and only her first vaccine dose.
    - The state immunization information system (IIS) receives data on Heidi's first and second vaccine from the pharmacy and mass vaccination site.
- If only one of these data sources is looked at, only part of Heidi's story is available.
    - State IIS does not include information on her primary care and therefore there has no data on what happened after Heidi received her vaccine.
    - Insurance company does not have data on her second vaccine so there is no way to tell if or when Heidi received her second dose.
    - Primary care records would not show Heidi was ever vaccinated.
- When looked at together, they create a fuller picture of Heidi's healthcare story.