How RWE can inform the COVID-19 pandemic response:

Expanding our International Distributed Research Network (DRN) to combat COVID-19

OHDSI
OBSERVATIONAL HEALTH DATA SCIENCES AND INFORMATICS

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IQVIA

Mobilizing a global research network starts with the people

Study-a-thon

/ˈstədē-a-thän / – (n.)
a detailed investigation and analysis conducted in a matter of days using the OHDSI standardized analytics and tools

In only **88** hours:

- Convened **351** participants from **30** countries
- Held **12** Global Huddles, **>100** collaborator calls, **>13,000** chat messages
- Reviewed **>10,000** publications
- Published **9** protocols
- Released **13** study packages
- Designed **355** cohort definitions
- Assembled a distributed data network with **37** partners, including **8** sites with COVID-19 cases (US, South Korea, Spain, Netherlands), to execute study packages

Snapshot of the OHDSI COVID-19 Data Network

USA (9)	EUROPE (8)	ASIA-PACIFIC (3)
Premier (National – Hospital Billing)	CPRD (UK – EHR)	HIRA (South Korea – Administrative Claims)
HealthVerity (Claims linked to diagnostic testing)	SIDIAP (Spain – EHR)	DCMC (South Korea – EHR)
Optum EHR (National – EHR)	SIDIAP-H (Spain – EHR hospital linkage)	Nanfang Hospital (China – EMR)
IQVIA Open Claims (National – Administrative Claims)	HM Hospitales (Spain – Hospital Billing)	
Department of Veterans Affairs (National – EHR)	ICPI (Netherlands – EHR)	
Stanford University (CA – EHR)	LPD France (France – EHR)	
Tufts University (MA – EHR)	Germany DA (Germany – EHR)	
Columbia University (NY – EHR)	LPD Italy (Italy – EHR)	
University of Colorado Anschuz Medical Campus Health Data Compass (CO – EHR)		

Together, OHDSI has studied:

- **>4.5m** patients tested for SAR-COV-2
- **>1.2m** patients diagnosed or tested positive for COVID-19
- **>249k** patients hospitalized with COVID-19

#OHDSICOVID19

EHR = Electronic Health Records, EMR = Electronic Medical Records

As of 11Sep2020

Motivations for expanding our global network

- Rapid, collection of clinical, laboratory, and diagnostic data from hospitals and healthcare plans, at the peak of the pandemic, and as the pandemic evolves to understand the continued impact of COVID-19

- **Critical design elements:**
  - **Speed is critical.** Need to collect data now, before the next wave
  - **Make access to information fast and easy**, and enable rapid sharing of results
  - As **data models are extended** to meet new data elements, test/validate with ongoing data collection
  - **Evolve** to **support clinical trials**

US National Institutes of Health Adopts OMOP CDM for National COVID-19 Surveillance

NIH National Center for Advancing Translational Sciences

NATIONAL CENTER FOR DATA TO HEALTH

National COVID Cohort Collaborative

Five community workstreams:

- Data Partnership & Governance
- Phenotype & Data Acquisition
- Data Ingestion & Harmonization
- Collaborative Analytics
- Synthetic Data

- A **centralized**, secure portal for hosting patient-level COVID-19 clinical data and deploying and evaluating methods and tools for clinicians, researchers, and healthcare

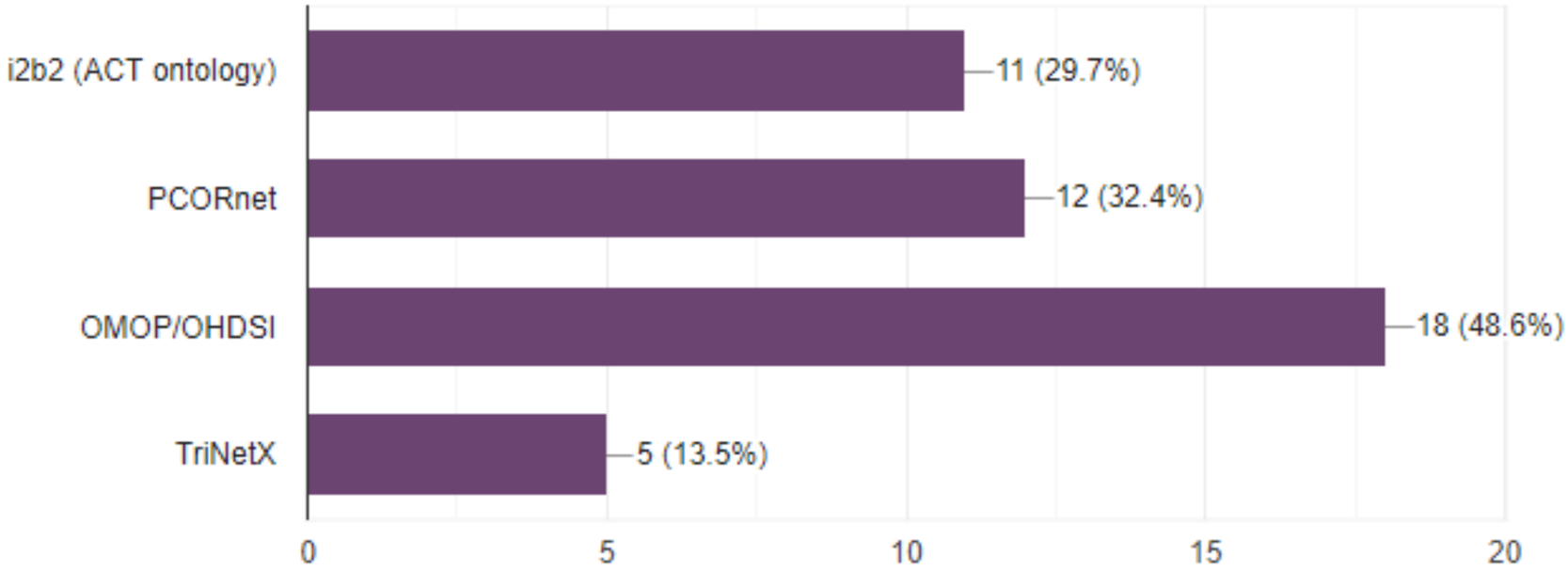
- A **partnership** among NIH NCATS CTSA program institutions, distributed clinical data networks (e.g. PCORnet, OHDSI, ACT/i2b2, and TriNetX), and many other clinical partners and collaborators

- A **shared goal** to improve the efficiency and accessibility of analyses with COVID-19 clinical data, expand ability to analyze and understand COVID, and demonstrate a novel approach for collaborative pandemic data sharing

Why choose OMOP for N3C?

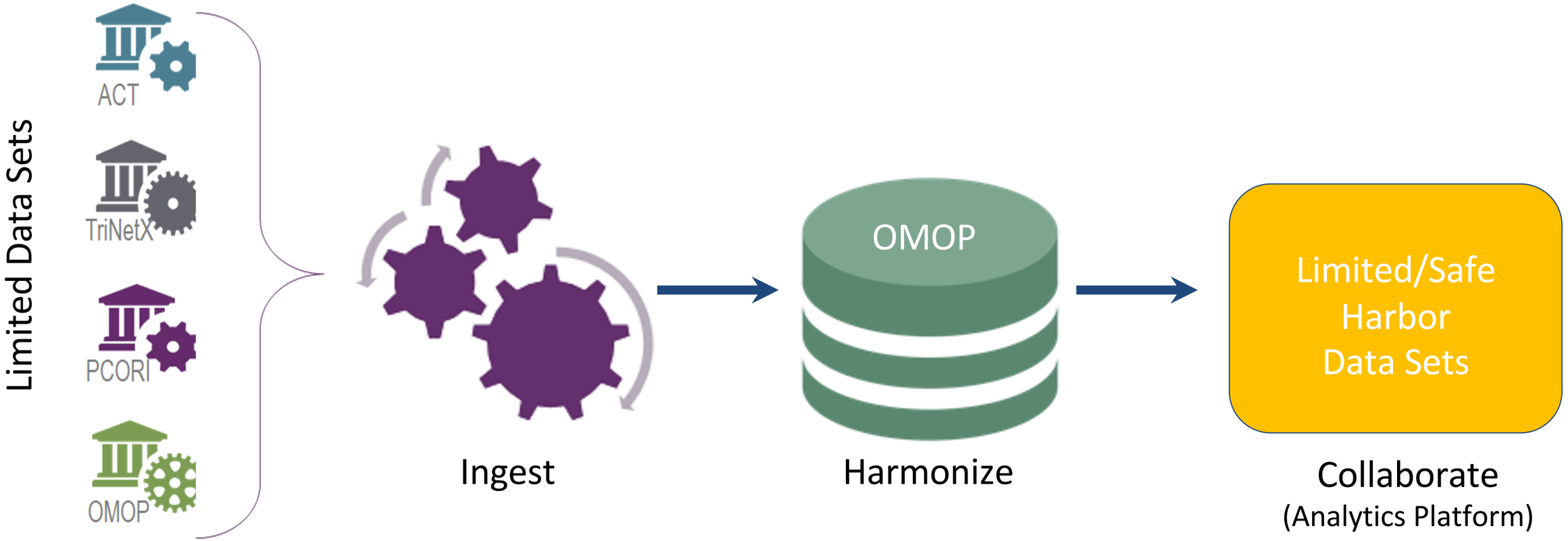
If your institution was to submit a set of covid-specific patient data to a central repository using one of these data models, which data model would be optimal? (Check multiple only if there is a "tie" for first place.)

37 responses



Note: Respondents may support more than one common data model in their environment.

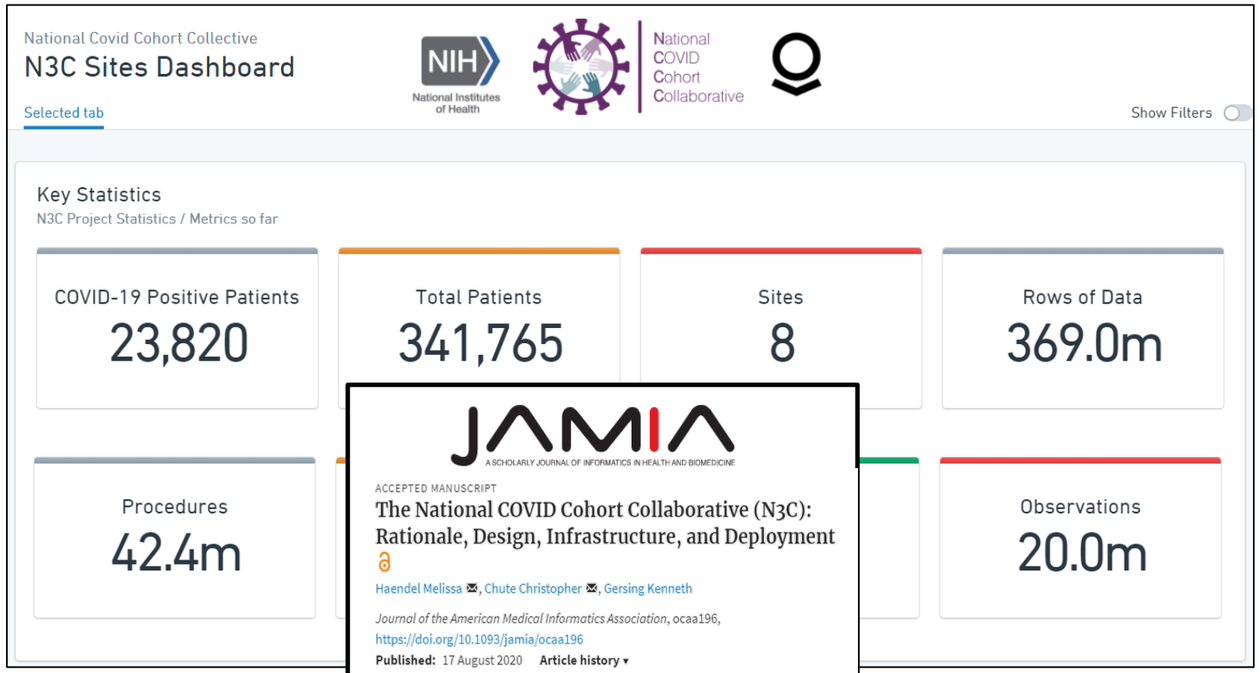
Implementing a National COVID-19 Surveillance Program

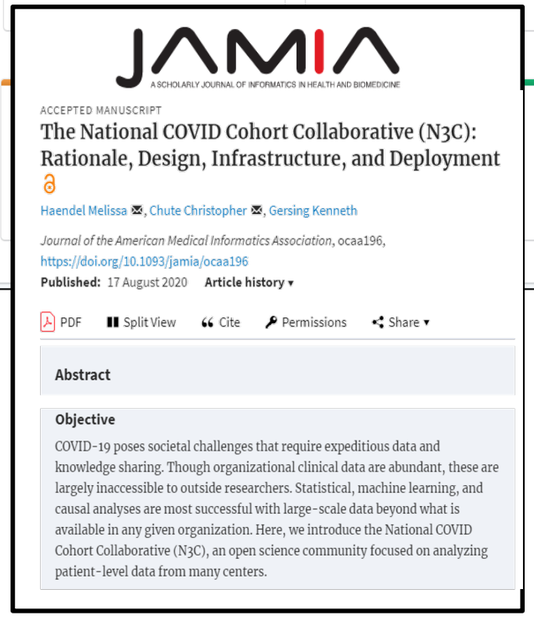


1	2	3	4
Data partnership & governance	Phenotype & Data acquisition	Data ingest & harmonization	Collaborative analytics & FAIR Sharing/Credit

As of 11Sep2020

Implementing a National COVID-19 Surveillance Program




JAMIA
A SCHOLARLY JOURNAL OF INFORMATICS IN HEALTH AND BIOMEDICINE

ACCEPTED MANUSCRIPT

The National COVID Cohort Collaborative (N3C): Rationale, Design, Infrastructure, and Deployment

Haendel Melissa, Chute Christopher, Gersing Kenneth

Journal of the American Medical Informatics Association, ocaa196, https://doi.org/10.1093/jamia/ocaa196

Published: 17 August 2020 **Article history**

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Abstract

Objective

COVID-19 poses societal challenges that require expeditious data and knowledge sharing. Though organizational clinical data are abundant, these are largely inaccessible to outside researchers. Statistical, machine learning, and causal analyses are most successful with large-scale data beyond what is available in any given organization. Here, we introduce the National COVID Cohort Collaborative (N3C), an open science community focused on analyzing patient-level data from many centers.

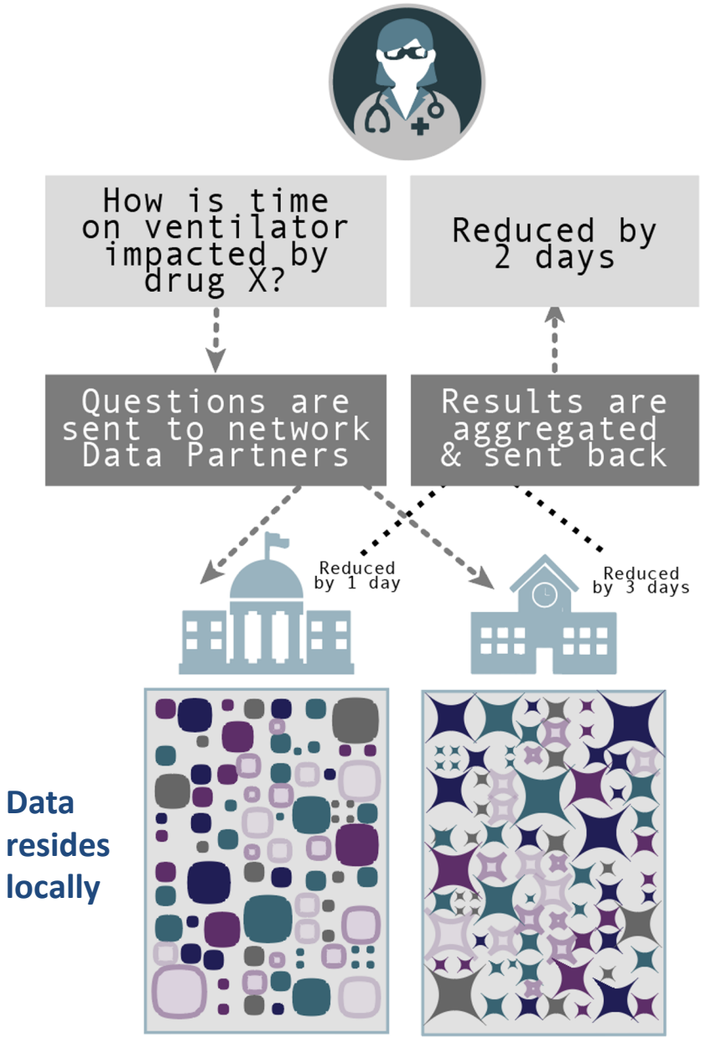
- 58 data transfer agreements (DTAs) executed
- 43 sites obtained IRB approval (local and sIRB)
- 41 sites have both DTA executed & IRB approval (can begin data ingestion)
- 35 sites have an executed DUA
- 26 sites have deposited data in the N3C pipeline

Adopting a collaborative analytics approach

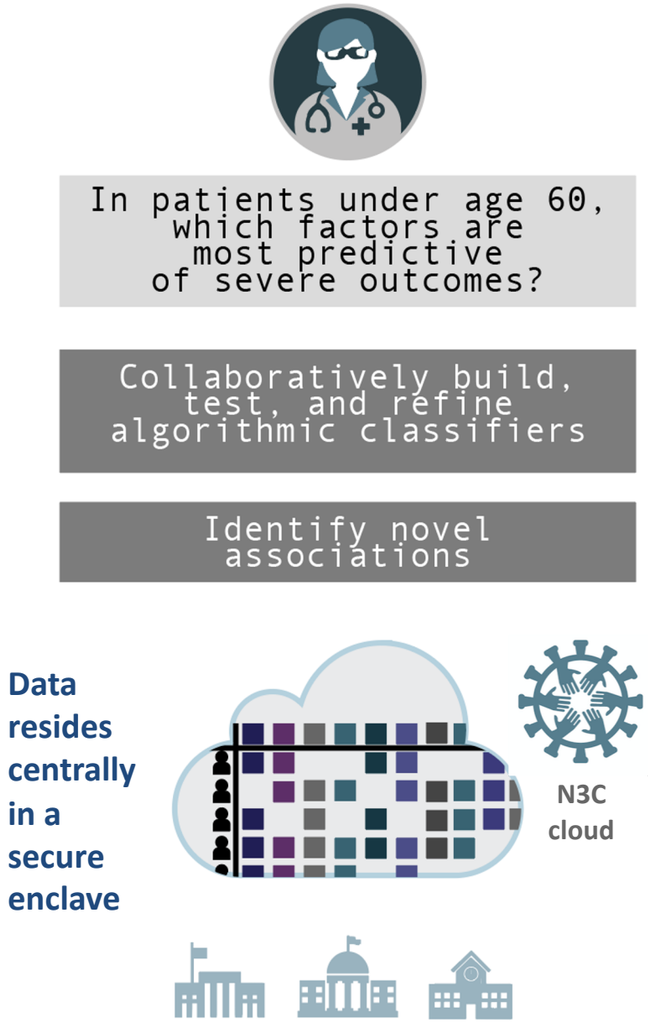
Global network opportunity:

N3C intends to run OHDSI global COVID-19 network studies and contribute back results

External collaborators: Federated querying



Verified researchers: Centralized analytics



In addition, researchers are encouraged to submit Data Use Requests to get access to the NIH N3C Secure Enclave where data will be available for analysis.

More information:

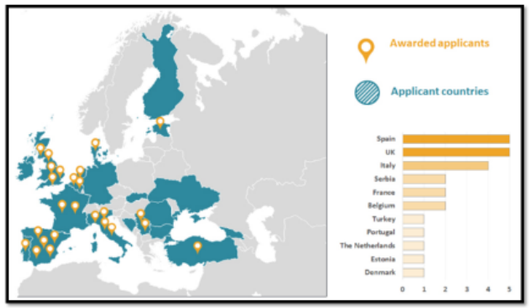
https://covid.cd2h.org/

The global community is rapidly mobilizing additional COVID-19 data for OHDSI network research

EHDEN
EUROPEAN HEALTH DATA & EVIDENCE NETWORK

COVID-19 Data Call From EHDEN

- In April EHDEN launched a call to any institution in Europe holding relevant COVID-19 data to apply in order to contribute to research collaboration
- 75 applicants, 25 grants awarded



- Highlights:
  - **Health Data Hub** – medical records for the *entire French population*, millions of active patients, 70K COVID diagnoses made
  - **UK Biobank** – *large longitudinal research study* of 500K participants from England, Scotland, and Wales, has 330 positive COVID19 cases
  - **Istanbul University Faculty of Medicine** – 2.5M patients, 1.5M active patients, more than 7K COVID19 patients seen, *work done at this data partner would be applicable for the whole country*

IQVIA

IQVIA OMOP Data Refreshes to support COVID-19 research

Data Asset	Country	Coverage	COVID-19 Case Count	Refresh Date
IQVIA Ambulatory EMR		Up to May 2020	Not Reported	Aug 2020
IQVIA Open Source Claims		Up to May 2020	>460,000	Live (Jul 2020)
IQVIA LPD France		Up to May 2020	~24,000	Live (Jul 2020)
IQVIA DA Germany		Up to Mar 2020	>12,000	Live (Aug 2020)
IQVA IMRD		Up to Jan 2020	Not Reported	Live (Jul 2020)
IQVA LPD Italy		Up to April 2020	>3,400	Live (Aug 2020)
IQVIA DA Belgium		Up to May 2020	Not Reported	Aug/Sep 2020

Promoting a global conversation

dani prieto-alhambra @prieto_alhambra · Aug 24

Grant towards OHDSI Global Research on COVID-19 treatments
medsci.ox.ac.uk/news/grant-tow... @OHDSI @IMI_EHDEN @ColumbiaDBMI @suchard_group

Grant towards OHDSI Global Research on COVID-19 treatments
An international cohort of OHDSI collaborators obtain a grant from the COVID-19 Therapeutics Accelerator to lead an effort to compare the ...
medsci.ox.ac.uk

1 7

Jenny Lane @jennifercelane · 6h

My first ever podcast, explaining the impact of our #hcq research on patients with #RA like my mom
(best news is she's listened and likes it, so the biggest critic is happy!)
@VersusArthritis

> **OHDSI** @OHDSI · 19h
> 🚨 PODCAST ALERT 🚨
>
> The OHDSI Podcast debuts w/ @jennifercelane, who co-led @TheLancetRheum study on #Hydroxycholoroquine. She discusses findings, preprint impact, HcQ in 2020 & more! Listen below, or on @ApplePodcasts / other pod apps! #JoinTheJourney
>
> ohdsi.org/podcast-lane-h...

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Becoming an OHDSI network site is a journey

Becoming an OHDSI site involves a variety of decisions:

- Who writes ETL scripts and executes the conversion?
- Who builds and maintains the infrastructure?
- Who leads OHDSI / OMOP training and support?
- Who installs the OHDSI Tools (e.g. ATLAS)?
- Who certifies the CDM data quality?
- How do receive, review and conduct network studies?

GOOD NEWS

You have the support of the OHDSI community behind you!

Join the Journey

http://ohdsi.org