How RWE can inform the COVID-19 pandemic response:

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

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IQVIA
Mobilizing a global research network starts with the people

Study-a-thon /ˈstɛdē-a-thən/ – (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

As of 11Sep2020

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

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

EHR = Electronic Health Records, EMR = Electronic Medical Records
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

- **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

**Five community workstreams:**
- Data Partnership & Governance
- Phenotype & Data Acquisition
- Data Ingestion & Harmonization
- Collaborative Analytics
- Synthetic Data
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

- i2b2 (ACT ontology) 11 (29.7%)
- PCORnet 12 (32.4%)
- OMOP/OHDSI 18 (48.6%)
- TriNetX 5 (13.5%)

Note: Respondents may support more than one common data model in their environment.
Implementing a National COVID-19 Surveillance Program

Limited Data Sets

Data partnership & governance

Phenotype & Data acquisition

Data ingest & harmonization

Collaborative analytics & FAIR Sharing/Credit

OMOP

Limited/Safe Harbor Data Sets

Collaborate (Analytics Platform)

Ingest

Harmonize

OMOP

As of 11Sep2020
Implementing a National COVID-19 Surveillance Program

- 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

External collaborators: Federated querying

- How is time on ventilator impacted by drug X?
- Reduced by 2 days
- Questions are sent to network Data Partners
- Results are aggregated & sent back

Verified researchers: Centralized analytics

- In patients under age 60, which factors are most predictive of severe outcomes?
- Collaboratively build, test, and refine algorithmic classifiers
- Identify novel associations

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/

Global network opportunity:
N3C intends to run OHDSI global COVID-19 network studies and contribute back results
The global community is rapidly mobilizing additional COVID-19 data for OHDSI network research

**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 COVID-19 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 OMOP Data Refreshes to support COVID-19 research**

<table>
<thead>
<tr>
<th>Data Asset</th>
<th>Country</th>
<th>Coverage</th>
<th>COVID-19 Case Count</th>
<th>Refresh Date</th>
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</thead>
<tbody>
<tr>
<td>IQVIA Ambulatory EMR</td>
<td></td>
<td>Up to May 2020</td>
<td>Not Reported</td>
<td>Aug 2020</td>
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<tr>
<td>IQVIA Open Source Claims</td>
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<td>Up to May 2020</td>
<td>&gt;460,000</td>
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<td>Up to May 2020</td>
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<td>Live (Jul 2020)</td>
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<tr>
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<td>Up to April 2020</td>
<td>&gt;3,400</td>
<td>Live (Aug 2020)</td>
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<td>IQVIA DA Belgium</td>
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<td>Up to May 2020</td>
<td>Not Reported</td>
<td>Aug/Sep 2020</td>
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</table>
Promoting a global conversation

@prieto_alhambra - Aug 24
Grant towards OHDSI Global Research on COVID-19 treatments
medsci.ox.ac.uk/news/grant-tow... @OHDSI @IMI_EHDE @ColumbiaDBMI @suchard_group

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 Hydroxychloroquine. She discusses findings, preprint impact, HcQ in 2020 & more! Listen below, or on @ApplePodcasts / other pod apps! #JoinTheJourney

ohdsi.org/podcast-lane-h...
Becoming an OHDSI network 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