Workgroup Updates + Phenotype Phebruary Report

OHDSI Community Call
Feb. 8, 2022 • 11 am ET
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# Future OHDSI Community Calls

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February 15 OHDSI Community Call

Common Data Model Workgroup Update
Clair Blacketer

Data Quality Dashboard Workgroup Update
Clair Blacketer

Phenotype Phebruary Update #2
Patrick Ryan
Three Stages of The Journey

Where Have We Been?

Where Are We Now?

Where Are We Going?
Phenotype Phebruary Daily Updates

"Phenotype Phebruary" is a community-wide initiative to both develop and evaluate phenotypes for health outcomes that could be investigated by the community. Patrick Ryan introduced this initiative in both a video presentation and a forum post, and each of the conversations around the ‘28 phenotypes for 28 days’ are being held within the OHD3 forums.

This page will provide direct links to each forum post, which is where conversations around each specific phenotype should be held.

Please be active in these discussions. What ways can you contribute?

1. Join the conversation
   - Discussions will be here on forums.ohdsi.org
   - Each day will be a new thread
     - Ex: Look for: "Phenotype Phebruary Day 1 – Type 2 diabetes mellitus"
   - Explore the definitions and review the results provided
   - Reply with your thoughts, reflections, insights and question

2. Evaluate the cohort definitions in your data
   - Execute cohort definitions and CohortDiagnostics in your CDM
   - Share insights you learn from your data on the forums
   - Share results to compile across the network on data.ohdsi.org

3. Lead a discussion
   - Patrick will be leading the discussion for the first 7 days, but if others would like to similarly lead a phenotype development and evaluation activity, contact ryann@ohdsi.org or chat with him in OHD3 MS teams, tell me your desired phenotype target and calendar date you want to commit to.

https://www.ohdsi.org/phenotype-phebruary

Daily Phenotype February Links

Feb. 1 • Type 2 Diabetes Mellitus
Feb. 2 • Type 1 Diabetes Mellitus
Feb. 3 • Atrial Fibrillation
Feb. 4 • Multiple Myeloma
Feb. 5 • Alzheimer’s Disease
Feb. 6 • Hemorrhagic Events
Feb. 7 • Neuromania
Feb. 8 •
Feb. 9 •
Feb. 10 •
Feb. 11 •
Feb. 12 •
Feb. 13 •
Feb. 14 •
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Feb. 16 •
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Navigating OHDSI.org

Welcome to OHDSI!

The Observational Health Data Sciences and Informatics (OHDSI, pronounced "Odyssey") program is a multi-stakeholder, interdisciplinary collaborative to bring out the value of health data through large-scale analytics. All our solutions

2021 OHDSI:

The 2021 OHDSI Global Plenary presentations on COVID-19 Pandemic, as well as on the Journey to Reliable Evidence. The main days included the State of the Community Presentation, the

@OHDSI
www.ohdsi.org

#JoinTheJourney
COVER Prediction Model Generated During COVID Study-A-Thon Published; Lead Authors Share Thoughts On Model, Impact

1) How were you able to develop a prediction model so early in the pandemic with such little data?

The amount of data needed to evaluate model performance reliably is much less than the amount needed to train a model. Early on in the pandemic, we quickly reached the level needed for model evaluation, but model development would have been more problematic. Therefore, we decided to use a proxy disease (influenza) to preserve the COVID-19 data that we had available. Our assumption was that the people vulnerable to influenza would have similar characteristics as those vulnerable to COVID-19. The large amount of historic influenza cases allowed us to overcome the issues of model development with small data samples. After model training, we evaluated the model on data from COVID-19 patients to evaluate model performance reliably.

2) When the model was shared via preprint, are you aware of how it was used and what impact it had?

The COVER scores were used for strategic planning purposes by hospitals and regional governments as well as for risk assessment purposes by institutions planning their office work strategies.

https://www.ohdsi.org/cover-prediction-model
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2021 OHDSI Symposium
The 2021 OHDSI Global Symposium featured plenary presentations on OHDSI’s impact on the COVID-19 Pandemic, as well as on the Journey to Reliable Evidence. The main days included the State of the Community Presentation, the Collaborator Showcase, and a memorable Closing Ceremony that focused on OHDSI’s work through the perspective of a patient.

There were also a pair of full-day activities, including the first OHDSI Re immediacy

OHDSI News and Updates
COVER Prediction Model Generated During COVID Study-A-Thon Published; Lead Authors Share Thoughts On Model, Impact

The first COVID-19 prediction model developed and validated by the OHDSI community following the March 2020 global study-a-thon was recently published by BIAAC Medical Research Methodology.

The study, “Seek COVID, using a disease risk to rapidly develop and validate a personalized risk calculator for COVID-19 outcomes in an international network,” developed COVID-19 estimated risk (COVID-1ER) scores that quantify a patient’s risk of hospital admission with pneumonia (COVID-1ER-H), hospitalization with pneumonia requiring intensive services or death (COVID-1ER-D), or fatality (COVID-1ER-F) in the 30-days following COVID-19 diagnosis using historical data from patients with influenza or flu-like symptoms and treated with COVID-19 patients.

Led by co-first authors Ross Williams and Anile Kaplan, both of whom share thoughts on both the model and its impact in this writeup, the team designed a nine-predictor risk model that was validated using more than 44,900 COVID-19 patients (following initial development and validation using more than 6.4 million patients with influenza or flu-like symptoms). This model predicts hospitalization, intensive services, and death, and can help provide reassurance for low-risk patients, while shielding high-risk patients, as many start to enter the co-containment stage of the pandemic.

Phenotype Phlebography: Stay Involved With The Daily Conversations Around Phenotype Development And Evaluations

“Phenotype Phlebography” is a community-wide initiative to both develop and evaluate phenotypes for health outcomes that could be investigated by the community. Patrick Ryan introduced this initiative in both a video presentation and a forum post, and each of the conversations around the “28 phenotypes for 28 days” are being held within the OHDSI forum.
OHDSI Shoutouts!

Any shoutouts from the community? Please share and help promote and celebrate OHDSI work!

Have a study published? Please send to sachson@ohdsi.org so we can share during this call and on our social channels. Let’s work together to promote the collaborative work happening in OHDSI!
Three Stages of The Journey

Where Have We Been?
Where Are We Now?
Where Are We Going?
## Upcoming Workgroup Calls

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<th>Time (ET)</th>
<th>Meeting</th>
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<td>Tuesday</td>
<td>12 pm</td>
<td>Common Data Model Vocabulary Subgroup</td>
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<td>Tuesday</td>
<td>2 pm</td>
<td>Health Equity</td>
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<tr>
<td>Wednesday</td>
<td>12 pm</td>
<td>FHIR and OMOP Terminologies Subgroup (Zoom)</td>
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<td>Wednesday</td>
<td>2 pm</td>
<td>Natural Language Processing</td>
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<td>Wednesday</td>
<td>7 pm</td>
<td>Medical Imaging</td>
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<td>Thursday</td>
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<td>Data Quality Dashboard</td>
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<td>TBA</td>
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<td>Friday</td>
<td>10 am</td>
<td>Phenotype Development and Evaluation</td>
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<td>China Chapter</td>
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<td>Monday</td>
<td>8 am</td>
<td>Early-Stage Researchers (Europe/Western Hemisphere)</td>
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<tr>
<td>Monday</td>
<td>10 am</td>
<td>Healthcare Special Interest Group</td>
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[www.ohdsi.org/upcoming-working-group-calls](www.ohdsi.org/upcoming-working-group-calls)
Get Access To Different Teams/WGs/Chapters

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There were also a pair of full-day activities, including for the 2nd OHDSI Symposium.

5. Select the workgroups you want to join (you can refer to the WIKI for work group objectives)
   - ATLAS
   - Clinical Trials
   - Common Data Model
   - Data Quality Dashboard Development
   - Early-stage Researchers
   - Education Work Group
   - FHIR and OMOP
   - Geographic Information System (GIS)
   - HADES Health Analytics Data-to-Evidence Suite
   - Healthcare Systems Interest Group (formerly EHR)
   - Health Equity
   - Latin America
   - Medical Devices
   - Medical Imaging
   - Natural Language Processing
   - OHDSI APAC
   - OHDSI APAC Steering Committee
   - OHDSI Steering Committee
   - Oncology
   - Open-source Community
   - Phenotype Development and Evaluation
   - Population-Level Effect Estimation / Patient-Level Prediction

6. Select the chapter(s) you want to join
   - Africa
   - Australia
   - China
   - Europe
   - Japan
   - Korea
   - Singapore
   - Taiwan

7. Select the studies you want to join
   - HEDA Health Equity Research Assessment
   - PIONEER for Prostate Cancer (study-a-then-ended)
   - SCYLLA (SARS-Cov-2 Large-scale, Longitudinal Analysis)
Get Access To Different Teams/WGs/Chapters

OHDSI is using MSTeams to further encourage active collaboration within the community. Within the OHDSI organization, there are separate teams for work groups, chapters, and studies, as well as OHDSI community activities (such as the OHDSI2020 Symposium). All teams are open to all collaborators. Below please indicate which Team you would like to join and the OHDSI coordinating center team will grant access.

5. Select the workgroups you want to join (you can refer to the WIKI for work group objectives)

- ATLAS
- Clinical Trials
- Common Data Model
- Data Quality Dashboard Development
- Early-stage Researchers
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   - HEERA (Health Equity Research Assessment)
   - PIONEER (Prostate Cancer: study-a-than-ended)
   - SCYLLA (SARS-CoV-2 Large-scale Longitudinal Analytics)

* Required

1. First and Last Name *

Enter your answer
We are happy to share that throughout 2022, we will host 3 open calls:

- An open call for SMEs running from March 15 to April 13
- An open call for Data Partner running from May 16 to June 14
- A second open call for Data Partners running from October 12 to November 10

These timelines are provisional and more detailed information will become available closer to the opening of these calls. A general description of each of the calls is available via the Open calls for SMEs page and the Open calls for Data Partners page. More detailed information on each call will become available closer to the opening of the calls.
EHDEN Data Partner/SME Calls for 2022

Interoperable EHR-Based Registries through FHIR, NLP, and OMOP

Informatics Grand Rounds
Join us virtually on February 10th at 12 PM EST to hear Dr. Jon Duke discuss EHR data, longitudinal registries, interoperability standards, and how NLP can be used to bolster a FHIR-OMOP connection.

Jon Duke, MD
Director,
Center for Health Analytics and Informatics
Georgia Tech

February 10th
12 PM ET
bit.ly/FebGR
Community Updates

Where Have We Been

- Hongfeng Liu and Christopher Chute led a presentation on "Extracting OHDSI Concepts from Clinical Narratives for COVID" during the Jan. 25 OHDSI Community Call. The full session, which included Q&A from the 240+ attendees, is available below, along with the slides from the presentation.
- Patrick Ryan opened the year with a discussion about "Where Can OHDSI Go in 2022," which focused on goals at both the community and workgroup levels. One of the potential focal points he discussed was engineering open science systems that build trust into the real-world evidence generation and dissemination process. The entire video presentation is available below.

Where Are We Now

- Today starts "Phenotype Phevarious," which will be a multi-platform community initiative to highlight the importance of, and develop at least 28 new, phenotypes. A detailed preview of the discussion will take place during the Feb. 1 community call; if you miss it live, please catch the recording at our Community Calls page, and then join our community in both our MSTeams environment and the OHDSI forums in this work.
- Several workgroups will detail their 2022 objectives and key results during the Tuesday community call this month, while workgroup leads will connect in a leadership summit during the month to discuss best practices and drive greater collaboration and efficiency. You can learn more about each at our new workgroups page and request to join any of the workgroups or chapters.

Where Are We Going

- The first in-person OHDSI event since the start of the pandemic will take place June 24-26 during the OHDSI European Symposium. This will take place on the Steam Ship Rotterdam in the Netherlands, with the main symposium set for Friday, June 24, and two days of workshops and tutorials to follow. For more information or to register, please visit the symposium homepage.

The Journey Newsletter (February 2022)

The OHDSI community is off and running in 2022. We had a terrific presentation on "Extracting OHDSI Concepts from Clinical Narratives for COVID" from our colleagues within the N2C, and we discussed 2022 goal-setting, both at the global level, as well as within individual workgroups. Several studies relating to OHDSI or OMOP were published. Check it all out in the latest edition of The Journey! #JoinTheJourney

February Update Podcast

During our Jan. 18 community call, Dr. Hongfeng Liu (Mayo Clinic) and Dr. Christopher Chute (Johns Hopkins University) led a session on Extracting OHDSI Concepts from Clinical Narratives for COVID. Following the presentation (approximately 33 minutes), there is a Q&A session. You can access both the presentation and the slides below.

Video Presentation

Slides
Subscribe Or Find the OHDSI Newsletters

https://ohdsi.org/subscribe-to-our-newsletter
Diagnostic Accuracy of Code-Based Algorithms to Identify Urinary Tract Infection in U.S. Administrative Claims Databases

Authors: Stephen P Fortin, Jeroen Geurtsen, Michal Sarnecki, Joachim Doua, Jamie Colasurdo, Joel Swerdel

MONDAY
Assessing impact on change in incidence on calibration performance across external validation

**INTRODUCTION**

Increasingly, external validation is being seen as the gold standard in assessing prediction model performance. One of the ways to measure the performance of a prediction model is to assess the calibration. This measures the agreement between predicted and observed risks. Calibration is essential in aiding decision making as using a poorly calibrated model would result in missing people who need intervention if under-estimated risk or giving an intervention unnecessarily if over-estimating risk. A common issue that occurs when performing external validation is a worsening of calibration performance. A possible reason for this could be due to the change in event rate between the development and validation environment. If this is the case it could be possible to correct some miscalibration by adjusting the model bias based upon the known differential event rates without retraining the model.

**MATERIALS AND METHODS**

We developed and externally validated models across a multitude of databases and problem settings. These databases included: COAL, MDCR, MDM, Optum claims and Optum EMR. The problems we specified elsewhere in two studies, one looking at hospitalisation risk in COVID-19 patients and another looking at predicting heart failure in type 1 diabetes patients (2,3). All studies predict binary outcomes. We hypothesised that re-calibration is dependent on differential event rate. To test this, we compared the differential event rates (equation 1), to determine whether the model predicted an over or underestimate of risk. We assessed this using the calibration in the large and the intercept of the model. These are both metrics to assess calibration. Calibration in the large checks the agreement between the means predicted risk and the event rate, a value of 1 being optimal. The calibration intercept, obtained by fitting a linear model between the predicted and observed values, assesses whether the risks are over or underestimated. A value of zero being perfect and a negative value suggesting overestimation and positive value underestimation. A poorly calibrated model would thus have a calibration-in-the-large of 1 and a calibration intercept of 0.

\[ (1) \text{ - Incidence} = \text{ EVRate}_{\text{external database}} - \text{ EVRate}_{\text{development database}} \]

**Results**

Figure 1 shows a relationship between the differential event rates and the calibration statistics. Calibration in the large and intercept were both correlated using Pearson test with a coefficient of 0.33 and 0.46 respectively.

**CONCLUSION**

The results show a relationship and suggest that using the differential event rate to create a correction factor for model recalibration is possible. The aim of future work is to extend it to include a correction factor based upon this relationship to provide a method of recalibration.

**References**

A journey through VA’s uptake of the OMOP common data model

Authors: Benjamin Viernes, Elizabeth E Hanchrow, Steven M Johnson, Elise Gatsby, Michael E Matheny, Daniel J Park, Jill M Whitaker, Scott L Duvall, Kristine E Lynch

RESULTS
- Over 500 VA research projects were requested and approved for access since the first VA OMOP release in July 2017.
- Over 300 unique principal investigators requested access for VA research projects.
- Over the last 16 months, users of VA OMOP Academy increased from approximately 50 to 100 users monthly.
- Between January 2020 and April 2021, over 230 helpdesk tickets were received and answered.
- Since query logging began in June 2020, the VA-OMOP database has been queried 9,141 times by 148 unique users.

The VA OMOP CDM, requested by over 500 research projects in 4 years, has reached wide-spread usage within the VA research ecosystem.
Medication dosage and exposure duration in OMOP CDM: mapping challenges

Authors: Tatiana Banokina, Dmitry Dymshyts, Alexandra Orlova, Alexander Kraynov, Alexander Davydov

THURSDAY
#OHDSISocialShowcase This Week

**Building Bridges with Julia Using OHDSI R Packages in Julia**

**AUTHOR:** Jacob S. Zeiko

**INTRODUCTION:**

The amount of healthcare data is exponentially growing. Managing this data and making it accessible to researchers requires robust tools and frameworks. Two promising solutions are Julia and OHDSI. Julia is a high-level, high-performance dynamic programming language designed for technical computing, while OHDSI is an open-source initiative that provides tools and methodologies for research at scale. Julia offers a rich ecosystem of packages for various tasks, including data processing, machine learning, and visualization. OHDSI, on the other hand, offers a suite of packages that can be used to work with EHR data and perform research. Julia and OHDSI can be used together to create new research tools and methodologies.

**METHODS:**

This study presents an approach to using Julia and OHDSI packages for research. The Julia ecosystem is known for its speed and flexibility, while OHDSI packages are designed specifically for healthcare data. The Julia package ecosystem includes Jupyter notebooks, Julia packages, and Julia packages that can be used to work with EHR data. OHDSI packages, on the other hand, provide tools for data extraction, storage, and analysis. The Julia package ecosystem is designed to work with OHDSI packages to create new tools and methodologies for research.

**RESULTS:**

Julia in R (Fig 1D) can provide a nearly 5x speedup over the CSV reader (Fig 1B).

**Task 1: Code Reading SynOpt CSV**

- Load CSV package using Julia
- Read SynOpt data using R
- Read new SynOpt data

**Task 2: Code Query Eunomia**

- Open connection to Eunomia
- Create SQL query
- Execute SQL query
- Return people from Eunomia query

For more information, scan the QR code here!
Where Are We Going?

Any other announcements of upcoming work, events, deadlines, etc?
Welcome To OHDSI Newcomers

Are there any new people to the OHDSI community call who would like to introduce themselves?

Please raise your hand and share why you are interested in joining the OHDSI community.
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Healthcare Systems Interest Group Update
Melanie Philofsky

Open Source Community Workgroup Update
Adam Black

Phenotype Phebruary Update #1
Patrick Ryan