Workgroup Updates

OHDSI Community Call
Oct. 5, 2021 • 11 am ET
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Oct. 12 Community Call: Meet The Titans

Maxim Moinat
Yong Chen
Adam Black
Asieh Golozar

Erica Voss
Mui Van Zandt
Faaizah Arshad
Ross Williams
Three Stages of The Journey

Where Have We Been?
Where Are We Now?
Where Are We Going?
OHDSI Shoutouts!

Congratulations to Emily Pfaff, Andrew Girvin, Davera Gabriel, Kristin Kostka, Michele Morris, Matvey Palchuk, Harold Lehmann, Benjamin Amor, Mark Bissell, Katie Bradwell, Sigfried Gold, Stephanie Hong, Johanna Loomba, Amin Manna, Julie McMurry, Emily Niehaus, Nabeel Quresh, Anita Walden, Xiaohan Tanner Zhang, Richard Zhu, Richard Moffitt, Melissa Haendel, Christopher Chute, and the N3C Consortium on the publication of “Synergies between Centralized and Federated Approaches to Data Quality: A Report from the National COVID Cohort Collaborative” in JAMIA.
OHDSI Shoutouts!

Good luck to a pair of new DPhil students at the University of Oxford, Kristin Kostka and Jamie Weaver.

Take good care of them, Dani Prieto-Alhambra!
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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<td>OMOP CDM Oncology – Outreach/Research Subgroup</td>
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<td>Wednesday</td>
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<td>Patient-Level Prediction/Population Level Estimation (Eastern Hemi)</td>
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<td>Monday</td>
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<td>GIS-Geographic Information System</td>
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<td>Tuesday</td>
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[www.ohdsi.org/upcoming-working-group-calls](http://www.ohdsi.org/upcoming-working-group-calls)
Get Access To Different Teams/WGs/Chapters

Welcome to OHDSI!

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

OHDSI has established an international network.

Our 2020 OHDSI Global Symposium brought together a global research community for 18 hours of open science, international collaboration and community fun. The day included research presentations from community members, panels that brought together leaders from major healthcare organizations, as well as network sessions, the annual collaborator

5. Select the workgroups you want to join (you can refer to the WIKI for work group objectives www.ohdsi.org/web/wiki/doku.php?id=projects:overview)

- XT-US
- Clinical Trials
- Common Data Model
- Data Quality Dashboard Development
- Early-stage Researchers
- Education Work Group
- Electronic Health Record (EHR) ETL
- Geographic Information System (GIS)
- HADES Health Analytics Data-to-Evidence Suite
- Health Equity
- Latin America
- Medical Devices
- Natural Language Processing
- OHDSI APAC
- OHDSI APAC Steering Committee
- OHDSI Steering Committee
- Oncology
- Patient-Generated Health Data
- Pharmacovigilance Evidence Investigation

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

- HEMRA (Health Equity Research Assessment)
- PPROB (for Progress Cancer (study is still ended))
- SICRITA (SARS-Cov-2 Large-scale Longitudinal Analyses)
Get Access To Different Teams/WGs/Chapters

5. Select the workgroups you want to join (you can refer to the WIKI for work group objectives www.ohdsi.org/web/wiki/doku.php?id=projects:overview)

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- Clinical Trials
- Common Data Model
- Data Quality Dashboard Development
- Early-stage Researchers
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- Electronic Health Record (EHR) ETL
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7. Select the studies you want to join

- HEA-Health Equity Research Assessment
- PIONEER for Prostate Cancer (study withdrawn)
- SYCLIA (SARS-CoV-2 Large-scale Longitudinal Analysis)
# 2021 APAC Symposium – Nov. 18

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www.ohdsi.org/apac
Vote For Collaborator Showcase Honors

2021 OHDSI Symposium Best Community Contribution Awards

OHDSI’s mission is to improve health, by empowering a community to collaboratively generate the evidence that promotes better health decisions and better care. In recognition of our collaborators’ dedicated efforts towards achieving this mission, the annual collaborator showcase was created as an opportunity to highlight collaborators’ hard work.

To help us recognize our collaborators’ achievements, please select your favorite contribution (poster, lightning talk or software demonstration) to the collaborator showcase under each of the following four topics:
1) Observational Data Standards & Management
2) Methodological Research
3) Clinical Applications
4) Open-source Analytics Development

1. CATEGORY 1: OBSERVATIONAL DATA STANDARDS & MANAGEMENT (please choose the best contribution- posters listed by their location followed by the lightning talks)
   - DS01 Conversion of UK Biobank into the OMOP CDM: New Data for Inferences Between Epidemic Care (Amelia J. Avendt, Alexandra Orlova, Alexander Davydov, Olek Zhuk, Michael Ni Cortos, Gregory Klesanov)
   - DS02 Medication dosage and exposure duration in OMOP CDM: mapping challenges (Tatiana Basikina, Dmitry Yanishyshyn, Alexandra Orlova, Alexander Klysov, Alexander Davydov)
   - DS03 Mapping UK Biobank to the OMOP CDM: challenges and solutions using the delphiyne ETL (Sofia Basilekou, Maxim Morad, Alessia Persiani, Anne van Winckel, Stefan Ponsnytel, Vlado Pazar, Spurs DataLoops)
   - DS04 The VISIT_DETAIL: A Vehicle for Standard Visits (Clair Blacketer)
   - DS05 Establishing a large COVID-19 cohort through mapping the Information System for Research in Primary Care (SIDIAP) in Catalonia to the OMOP Common Data Model (Sergio Ferreira-Bertoia, Eric A. Voss, Clair Blacketer, Maria Aragón, Martina Recalde, Elena Red, Carlen Reyes, Sebastián van Sandijk, Lars Halvorsen, Peter R. Rijnbeek, Talita Duarte-Salles)

2. CATEGORY 2: LIGHTNING TALKS (please choose the best contribution- posters selected by the topics below)
   - Lightning Talk: LR LT1 Evaluating the performance of Austin’s standardized difference heuristic in observational cohort studies with varying sample size (Mitchell Conover, Azza Shebeâl, Joshua Ida, Martin Schumacher)
   - Lightning Talk: LR LT2 Leveraging APROSIT to identify bias in statistical phenotyping algorithms (Juan M. Banda, Nigan H. Shah, Vyjayanthi S. Periyakara)
   - Lightning Talk: LR LT3 Assessing the impact of race on glomerular filtration rate prediction (Linying Zhang, Lauren R. Richter, George Hricik)
   - Lightning Talk: LR LT4 A Prediction Model Library (Rois D. Williams, Jenna M. Raps, Peter R. Rijnbeek)

3. CATEGORY 3: CLINICAL APPLICATIONS (please choose the best contribution- posters listed by location followed by the lightning talks)
   - CA01 Impact of the COVID-19 pandemic on pediatric utilization patterns in claims data (Alan Andryc, Rachel Weinstein, Steven Sacawga, Marsha Tharakan, Rupa Makadia)
   - CA02 Short-term mortality in patients undergoing colorectal cancer surgery: A prediction study (Karoline Bendix Bruun, Mikkel Gøgenur, Viviane Annabelle Lin, Andreas Weinberger Rosen, Johan Clausen, Eider Allakverdii, Rasmus Poulieke Vogelsang, Ismail Gøgenur)
   - CA03 Predicting early readmission after colorectal cancer surgery using only preoperative variables (Johan Clausen, Andreas Weinberger Rosen, Karoline Bendix Bruun, Mikkel Gøgenur, Viviane Annabelle Lin, Eider Allakverdii, Julie Sparrow Vaebach, Ismail Gøgenur)
   - CA04 Diagnostic Accuracy of Code-Based Algorithms to Identify Urinary Tract Infection in U.S. Administrative Claims Databases (Stephen F. Fortin, Jensen Geurtsen, Michel Sarmieto, Joachim Doua, Jamie Caborne, Joel Swedlow)
   - CA05 Predicting risk of recurrence after surgery for colorectal cancer (Mikkel Gøgenur, Viviane Lin, Adanamata Tsachkova, Eider Allakverdii, Andreas Weinberger Rosen, Karoline Bendix Bruun, Julie Sparrow Vaebach, Ismail Gøgenur)
Next CBER Best Seminar Series

Topic: CBER BEST Initiative Seminar Series - Exploring Vaccine Safety Datalink COVID vaccine rapid cycle analysis (RCA) methods

Description: Background: The CBER BEST Initiative Seminar Series is designed to share and discuss recent research of relevance to ongoing and future surveillance activities of CBER-regulated products, namely biologics. The series focuses on safety and effectiveness of biologics including vaccines, blood components, blood-derived products, tissues and advanced therapies. The seminars will provide information on characteristics of biologics, required infrastructure, study designs, and analytic methods utilized for pharmacovigilance and pharmacoepidemiologic studies of biologics. They will also cover information regarding potential data sources, informatics challenges and requirements, utilization of real-world data and evidence, and risk-benefit analysis for biologic products. The length of each session may vary, and the presenters will be invited from outside FDA. Please see the details below for our upcoming seminar. Anyone can register and join for free. Stay tuned for more details and additional webinars during the year.

Topic: Exploring Vaccine Safety Datalink COVID vaccine rapid cycle analysis (RCA) methods

Description: We will review statistical methods used in observational studies of the safety and effectiveness of COVID-19 vaccines. Topics will include:
- How to compare recent vaccinees with concurrent comparators (unvaccinated or less recently vaccinated) and
- with comparators who are not concurrent (historical rates or self-controls) to make inferences about outcome rates.
- Methods for estimating risk ratios.
- How to examine change in vaccine effectiveness (waning) or vaccine safety over time-since-vaccination
- Sequential tests

Presenter: Nicola P. Klein, MD, PhD

Time: Oct 20, 2021 11:00 AM in Eastern Time (US and Canada)
Next APAC Community Call: Thursday

**PHOEBE**
Anna Ostropolets
PhD Student, Columbia University Dept. of Biomedical Informatics

**Cohort Diagnostics**
Gowtham Rao
Senior Director, Johnson & Johnson

**ATC Hierarchy**
Christian Reich
VP Real World Analytics Solutions, IQVIA

www.ohdsi.org/apac
October Newsletter Is Out

Community Updates

Where Have We Been
• Thank you to everybody within our community who made the 2021 Global Symposium such a memorable event. We had four full days of activities, including our first tutorial on building consortia, a reproducibility workshop, and then two main symposium days. The first day focused on OHDSI’s Impact on the COVID-19 Pandemic, while the second day focused on The Journey to Reliable Evidence. All material from those two days is available within this newsletter.
• Clair Blacketer announced the release of OMOP CDM v5.4 in this recent forum post, and spoke about it briefly on the Sept. 28 community call. Clair will provide a live demo during a future OHDSI community call about v5.4, so please join the calls or follow our social channels for updates. Thank you to the entire CDM workgroup for leading this effort.

Where Are We Now
• The collaboration between OHDSI and HL7 took an important step forward this week during a two-day workshop that was jointly led by the two groups. Concepts that were explored included how to build the community and engage participants, reviewing near-term challenges regarding mapping and other issues, and working to establish a collaboration framework for moving forward, including setup of specific subgroups to advance individual use cases.
• The #OHDSISocialShowcase began this week and will continue for the next several months, as we highlight all the important and impressive research presented during our OHDSI2021 Collaborator Showcase. Each weekday, one presentation will be highlighted on both our Twitter and LinkedIn feeds. Please share with your networks to spread the word about our global efforts!

Where Are We Going
• The 2021 APAC Symposium will be held virtually Nov. 18, and some details

The Journey Newsletter (October 2021)

The #OHDSI2021 Global Symposium was another memorable event for the community. All presentations from the two main days are now available in this newsletter. We also have updates about the newest OMOP Common Data Model version, a look ahead at our October meeting schedule, and plenty more. #JoinTheJourney

(If images/videos don’t appear, please click “View this email in your browser” link above.)

Miss Any Of #OHDSI2021? Catch Up Here!

#OHDSI2021
• Plenary Presentations
• Reaction Panels
• Posters, Demos, Talks
• State of the Community
• Closing

As part of the OHDSI2021 Symposium, we unveiled a new book entitled “Our Journey: Where The OHDSI Community Has Been, And Where We Are Going.” Many people ordered it as their ‘Symposium Surprise’ and followed along with it during the State of the Community Presentation. If you didn’t order this 92-page book that focuses on all aspects of our community (research, data network, people, events and more), you can download a copy of it below.

Download “Our Journey: Where The OHDSI Community Has Been, And Where We Are Going”
# Linking Analysis Ready Multi-modal Clinical data

**Authors:** Priya Desai, Somalee Datta

**Stanford School of Medicine and Stanford Health Care**

**Background**

Building the clinical research data repository of OHDSS involves linking vast collections of data from multiple sources, including medical records, laboratory data, and epidemiological studies. This process is critical for advancing precision medicine and personalized healthcare. However, integrating these diverse data sources requires overcoming significant technical and ethical challenges.

**Objectives**

1. To develop a comprehensive multi-modal clinical data repository that can be seamlessly linked for research purposes.
2. To identify and address the key technical and ethical challenges in establishing a reliable multi-modal data repository.

**Methodology**

- **Data Collection:** OHDSS collects data from various sources, including electronic health records, laboratory records, and patient surveys.
- **Data Integration:** Using advanced data integration techniques, OHDSS links these disparate data sources to create a unified dataset.
- **Data Quality Assurance:** Continuously monitors the quality of the integrated data to ensure accuracy and reliability.

**Results**

- Successful integration of multi-modal clinical data from various sources.
- Enhanced research capabilities through improved data accessibility.

**Conclusion**

The project demonstrates the feasibility of establishing a comprehensive multi-modal clinical data repository, which can significantly impact research and patient care. Further work is needed to address emerging challenges and scale up the system for broader use.

**References**

Data Quality Dashboard Used to Improve the Quality of the EHDEN Network
Authors: Clair Blacketer, Erica Voss, Frank DeFalco, Maxim Moinat, Peter Rijnbeek

The Data Quality Dashboard improves data networks by exposing issues in both the source and standardized data.

Lightning Talk!

TUESDAY

Data Quality Dashboard Used to Improve Data Quality in the EHDEN Network
Authors: Clair Blacketer, Erica Voss, Frank DeFalco, Maxim Moinat, Peter Rijnbeek
GPU Parallelization of Massive Sample-size Survival Analysis

Jianxiao Yang, Marc A. Suchard
1. Department of Computational Medicine, David Geffen School of Medicine at UCLA 2. Department of Bioinformatics, UCLA Fielding School of Public Health 3. Department of Human Genetics, David Geffen School of Medicine at UCLA

Introduction

Large-scale Observational Data

- Observational datasets have millions of individuals [1] with thousands of patient characteristics and age 30 years of disease history [2]
- Resource for comparative effectiveness and safety study
- Survival analysis is a more statistical method in comparative effectiveness and safety study

- Problems computational burden

Methods

Cox Proportional Hazards Model

- The hazard model formula depends on a baseline survival function and a set of explanatory variables.
- Parameter estimation of the Cox proportional hazard model is carried out from the log-plot hazard function.

Fine Gray Sub-distribution Proportional Hazards Model

- The Fine-Gray model generalizes the Cox proportional hazards model to competing risks to account for events of more than one type of event.
- Competing risks arise when individuals can experience more than one type of event, and the occurrence of one type of event will prevent the occurrence of the other.

Massive Parallelization for Parameter Estimation with Profits Streams and Reduction

- We identify profits streams [3] and reductions in log-plot hazard of Cox model and Fine-Gray model due to the cumulative structure of the data set.
- We avoid unnecessary matrix computations by fixing profits streams and reductions expansions in log-plot calculations into a single kernel.
- We minimize data movements by exploiting the sparsity of the design matrix.

Results

GPU parallelization of massive sample-size survival analysis

Authors: Jianxiao Yang, Marc Suchard

WEDNESDAY
Characteristics and Treatment Pathways in Pediatric and Adult Hidradenitis Suppurativa: An Examination Using Real-World Data

J. Hardin RN,1 R. Makadia PhD,2 E. Brouwer PhD,3 S. Black PhD,4 I. Lara-Corral MD,5 L. Diaz MD,6 J.S. Kirby MD,7 C.M. Carver MD3

1Department of Medicine, F. Edward Hébert School of Medicine, Uniformed Services University of the Health Sciences, Bethesda, MD, USA. 2Department of Pediatrics, University of Massachusetts Medical School, Worcester, MA, USA. 3Department of Dermatology, University of California, San Francisco, CA, USA. 4Department of Dermatology, University of Colorado, Aurora, CO, USA. 5Department of Medicine, New York University School of Medicine, New York, NY, USA. 6Department of Dermatology, University of Miami, Miami, FL, USA. 7Department of Pediatrics, The University of Texas Southwestern Medical Center, Dallas, TX, USA.

BACKGROUND

Hidradenitis suppurativa (HS) is a chronic and inflammatory skin condition characterized by recurrent painful abscesses and sinus tract formation in the skin. It predominantly affects the axillae, groin, and peri-anal regions. HS is more common in women and can have a significant impact on quality of life. The disease can present in different forms, including nodulocystic, inflammatory, and acneiform. The etiology of HS is multifactorial, involving genetic, environmental, and hormonal factors. There is no cure for HS, and treatment options are limited.

METHODS

We conducted a retrospective cohort study using the Observational Research Database for Interventional Networks (ORDIN) to identify patients with HS. The study population included patients who met the inclusion criteria and had at least one HS-related encounter at a participating site. Patient characteristics, such as demographics, comorbidities, and treatment history, were collected. Treatment pathways and outcomes were analyzed.

RESULTS

A total of 1,234 patients with HS were identified. The mean age of the patients was 31 years, and the majority were female (85%). The most common treatment modality was oral antibiotics, followed by topical treatments and surgery. The incidence of HS-related hospitalizations was 0.6% per patient-year. The recurrence rate was 41.5% at 1 year.

CONCLUSIONS

Our study provides insights into the treatment pathways and outcomes of HS. The high recurrence rate highlights the need for more effective and targeted treatment strategies. Further research is needed to understand the underlying mechanisms and to develop novel therapeutic approaches.

THURSDAY

Examination of Characteristics and Treatments in Pediatric and Adult Hidradenitis Suppurativa

Authors: Jill Hardin, Rupa Makadia, Emily Brouwer, Shawn Black, Irene Lara-Corral, Lucia Z Diaz, Joslyn Sciaccia Kirby, Cynthia Marie Carver DeKlotz
Real-World Evaluation of Systematic Bias and Balance of Overall Patient Characteristics of Propensity Score Matching Versus Cardinality Matching

Authors: Stephen P Fortin, Martijn J Schuemie

### Background
- Propensity score matching (PSM) is subject to limitations, especially in studies of small sample size.
- Identified in a systematic review of the literature.
- 1. Selection bias due to factors not accounted for in the models.
- 2. Potential for overadjustment due to limited degrees of freedom.
- Cardiovascular trials often use integer programming for their large matched sample meeting a set of prespecified balance criteria.
- CM overcomes the limitations of PSM by matching directly on the observed distribution of covariates.
- Prior research has shown logistic CM with superior patient retention and comparable attrition free as compared to propensity PSM; however, imprecise methods may not be applicable in the setting of small sample sizes.

### Study Objectives

- To compare the performances of PSM and CM in the context of a study of new users of a new class of antihypertensive drug.
- To compare the performances of PSM and CM in the context of a study of new users of a new class of antihypertensive drug.

### Methods

#### Study Design
- Comparative study with random assignment.

#### Data Source
- Data were from the IMPACT database (Commercial Claims and Encounters database).

#### Study Population

#### Covariates
- Matching covariates included in the PS model and CM: included patient demographics such as age, sex, continuity and chronic characteristics (e.g., comorbidities, competing the Charlson Comorbidity Index, and the Hospital Readmission Risk Score).

#### Outcomes
- Observed outcomes included patient demographics, and all conditions, drug exposures and other health service use behaviors observed and reported in the database prior to index date.

#### Analysis
- PSM was conducted through greedy matching (1:1 match, caliper=0.1).
- CM performed through 1:1 matching with the following prespecified balance criteria: max SMHS=0.05, distance limit 0.25.

#### Results

- **Pre-match:**
  - 2.40% of 33,893 (38,946) total users in 10 (5) groups matched the study criteria.
  - 18.87% (36,677, 67.7%) and 56% (2,137, 45) patients were included in each strata of the 10% and 0.25% sample groups, respectively.

- **Post-match:**
  - Average 20% and 0.25% sample groups observed in the study.

- **Post-match results:**
  - The PSM achieved improved observed balance as compared to CM.
  - The CM achieved improved observed balance as compared to PSM.
  - The CM was superior to PSM.

#### Conclusions
- CM found the largest matched sample meeting a set of prespecified balance criteria. At smaller sample sizes, PSM and CM achieved comparable balance in overall patient characteristics and reductions in systematic bias after CM had improved performance of more stringent prespecified balance criteria (e.g., SMHS=0.05), improved adverse event balance in both matched groups. It was observed that CM at larger sample sizes was superior to PSM in terms of balance across all covariates.
Where Are We Going?

Any other announcements of upcoming work, events, deadlines, etc?
Three Stages of The Journey

Where Have We Been?
Where Are We Now?
Where Are We Going?
Oct. 5 Community Call: Workgroup Updates

Clinical Trials
Mike Hamidi

Health Equity
Jake Gillberg

Phenotype Development & Evaluation
Gowtham Rao

Vaccine Vocabulary
Adam Black