2024 Winter Vocabulary Release

OHDSI Community Call
March 5, 2024 • 11 am ET

Upcoming Community Calls

Date	Topic
Mar. 5	New Vocabulary Release Update
Mar. 12	March Madness & April Olympians
Mar. 19	NO MEETING
Mar. 26	Recent OHDSI Publications
coming in April	*CDM Month*

March 5: Vocabulary Release Update

Alexander Davydov

Director, Lead of Medical Ontologies
Odysseus Data Services

Oleg Zhuk

Vocabulary Technical Lead
Odysseus Data Services

Anna Ostropolets

Associate Director, Observational Health Data Analytics
Janssen Research and Development

Christian Reich

CEO
Odysseus Data Services

This call will also include a closing presentation on Phenotype Phebruary 2024.

Thank you to everybody who joined in this community activity!

Three Stages of The Journey

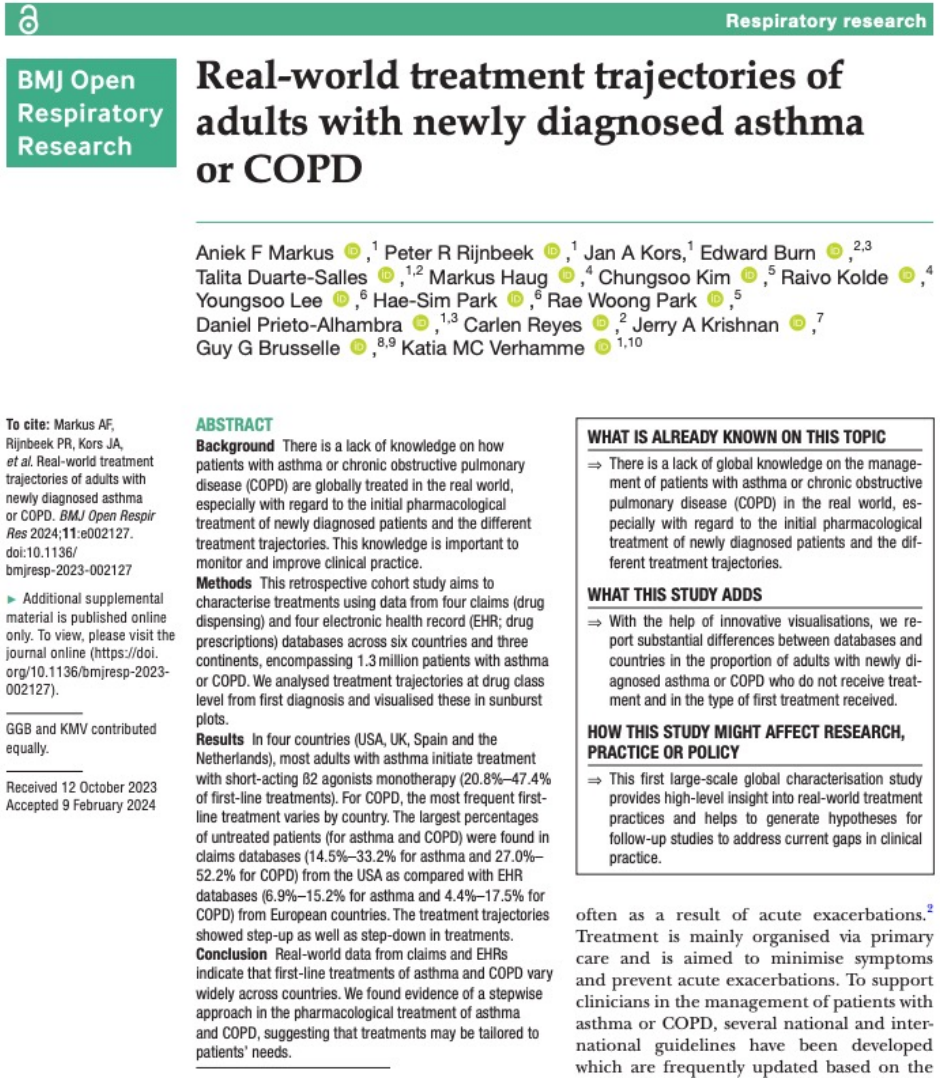
Where Have We Been?

Where Are We Now?

Where Are We Going?

OHDSI Shoutouts!

Congratulations to the team of **Aniek F Markus, Peter R Rijnbeek, Jan A Kors, Edward Burn, Talita Duarte-Salles, Markus Haug, Chungsoo Kim, Raivo Kolde, Youngsoo Lee, Hae-Sim Park, Rae Woong Park, Daniel Prieto-Alhambra, Carlen Reyes, Jerry A Krishnan, Guy G Brusselle, and Katia MC Verhamme** on the publication of **Real-world treatment trajectories of adults with newly diagnosed asthma or COPD** in *BMJ Open Respiratory Research.*



Respiratory research

BMJ Open Respiratory Research

Real-world treatment trajectories of adults with newly diagnosed asthma or COPD

Aniek F Markus,[1] Peter R Rijnbeek,[1] Jan A Kors,[1] Edward Burn,[2,3] Talita Duarte-Salles,[1,2] Markus Haug,[4] Chungsoo Kim,[5] Raivo Kolde,[4] Youngsoo Lee,[6] Hae-Sim Park,[6] Rae Woong Park,[5] Daniel Prieto-Alhambra,[1,3] Carlen Reyes,[2] Jerry A Krishnan,[7] Guy G Brusselle,[8,9] Katia MC Verhamme[1,10]

To cite: Markus AF, Rijnbeek PR, Kors JA, *et al*. Real-world treatment trajectories of adults with newly diagnosed asthma or COPD. *BMJ Open Respir Res* 2024;**11**:e002127. doi:10.1136/bmjresp-2023-002127

► Additional supplemental material is published online only. To view, please visit the journal online (https://doi.org/10.1136/bmjresp-2023-002127).

GGB and KMV contributed equally.

Received 12 October 2023
Accepted 9 February 2024

ABSTRACT

Background There is a lack of knowledge on how patients with asthma or chronic obstructive pulmonary disease (COPD) are globally treated in the real world, especially with regard to the initial pharmacological treatment of newly diagnosed patients and the different treatment trajectories. This knowledge is important to monitor and improve clinical practice.

Methods This retrospective cohort study aims to characterise treatments using data from four claims (drug dispensing) and four electronic health record (EHR; drug prescriptions) databases across six countries and three continents, encompassing 1.3 million patients with asthma or COPD. We analysed treatment trajectories at drug class level from first diagnosis and visualised these in sunburst plots.

Results In four countries (USA, UK, Spain and the Netherlands), most adults with asthma initiate treatment with short-acting ß2 agonists monotherapy (20.8%–47.4% of first-line treatments). For COPD, the most frequent first-line treatment varies by country. The largest percentages of untreated patients (for asthma and COPD) were found in claims databases (14.5%–33.2% for asthma and 27.0%–52.2% for COPD) from the USA as compared with EHR databases (6.9%–15.2% for asthma and 4.4%–17.5% for COPD) from European countries. The treatment trajectories showed step-up as well as step-down in treatments.

Conclusion Real-world data from claims and EHRs indicate that first-line treatments of asthma and COPD vary widely across countries. We found evidence of a stepwise approach in the pharmacological treatment of asthma and COPD, suggesting that treatments may be tailored to patients' needs.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ There is a lack of global knowledge on the management of patients with asthma or chronic obstructive pulmonary disease (COPD) in the real world, especially with regard to the initial pharmacological treatment of newly diagnosed patients and the different treatment trajectories.

WHAT THIS STUDY ADDS

⇒ With the help of innovative visualisations, we report substantial differences between databases and countries in the proportion of adults with newly diagnosed asthma or COPD who do not receive treatment and in the type of first treatment received.

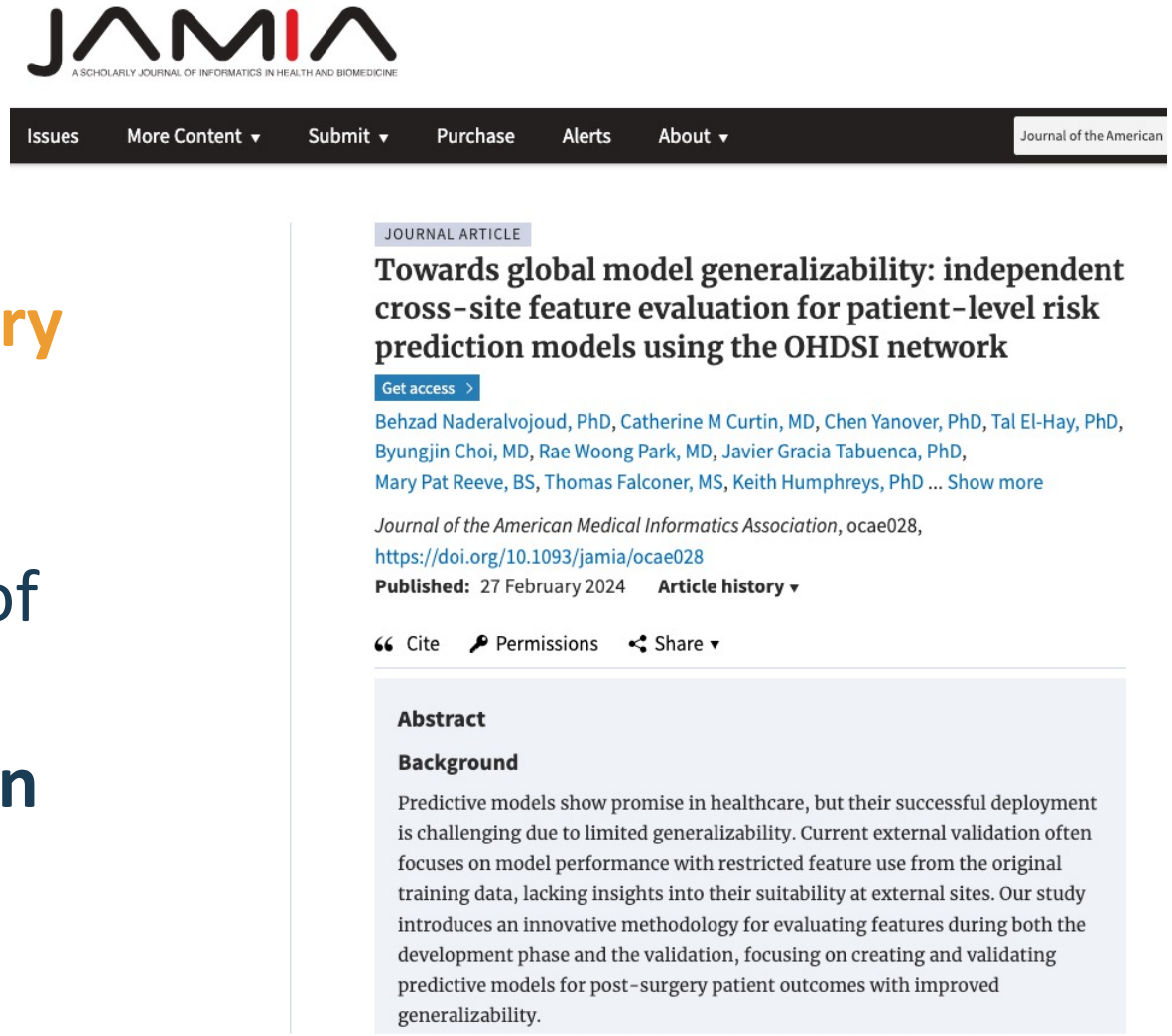
HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ This first large-scale global characterisation study provides high-level insight into real-world treatment practices and helps to generate hypotheses for follow-up studies to address current gaps in clinical practice.

often as a result of acute exacerbations.[2] Treatment is mainly organised via primary care and is aimed to minimise symptoms and prevent acute exacerbations. To support clinicians in the management of patients with asthma or COPD, several national and international guidelines have been developed which are frequently updated based on the

OHDSI Shoutouts!

Congratulations to the team of **Behzad Naderalvojoud, Catherine Curtin, Chen Yanover, Tal El-Hay, Byungjin Choi, Rae Woong Park, Javier Gracia Tabuenca, Mary Pat Reeve, Thomas Falconer, Keith Humphreys, Steven M Asch, and Tina Hernandez-Boussard** on the publication of **Towards global model generalizability: independent cross-site feature evaluation for patient-level risk prediction models using the OHDSI network** in *JAMIA*.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JOURNAL ARTICLE

Towards global model generalizability: independent cross-site feature evaluation for patient-level risk prediction models using the OHDSI network

Get access

Behzad Naderalvojoud, PhD, Catherine M Curtin, MD, Chen Yanover, PhD, Tal El-Hay, PhD, Byungjin Choi, MD, Rae Woong Park, MD, Javier Gracia Tabuenca, PhD, Mary Pat Reeve, BS, Thomas Falconer, MS, Keith Humphreys, PhD ... Show more

Journal of the American Medical Informatics Association, ocae028, https://doi.org/10.1093/jamia/ocae028

Published: 27 February 2024 **Article history**

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Abstract

Background

Predictive models show promise in healthcare, but their successful deployment is challenging due to limited generalizability. Current external validation often focuses on model performance with restricted feature use from the original training data, lacking insights into their suitability at external sites. Our study introduces an innovative methodology for evaluating features during both the development phase and the validation, focusing on creating and validating predictive models for post-surgery patient outcomes with improved generalizability.

OHDSI Shoutouts!

Congratulations to the team of **Star Liu, Asieh Golozar, Nathan Buesgens, Jody-Ann McLeggon, Adam Black, and Paul Nagy** on the publication of **A framework for understanding an open scientific community using automated harvesting of public artifacts** in *JAMIA Open*.

https://doi.org/10.1093/jamiaopen/ooae017
Research and Applications

Research and Applications

A framework for understanding an open scientific community using automated harvesting of public artifacts

Star Liu, MS[1,*], Asieh Golozar, MD, PhD, MHS, MPH[2,3], Nathan Buesgens, BS[1], Jody-Ann McLeggon, MPH[4], Adam Black, MA[3], Paul Nagy, PhD[1]

[1]Biomedical Informatics and Data Science, Johns Hopkins University School of Medicine, Baltimore, MD 21205, United States, [2]OHDSI Center at the Roux Institute, Northeastern University, Boston, MA 04101, United States, [3]Odysseus Data Services, Cambridge, MA 02142, United States, [4]Biomedical Informatics, Columbia University, New York, NY 10032, United States

*Corresponding author: Star Liu, MS, Johns Hopkins University School of Medicine, 2024 E. Monument St, Baltimore, MD 21205, United States (sliu197@jhmi.edu)

Abstract

Background: The Observational Health Data Sciences and Informatics (OHDSI) community has emerged as a leader in observational research on real-world clinical data for promoting evidence for healthcare and decision-making. The community has seen rapid growth in publications, citations, and the number of authors. Components of its successful uptake have been attributed to an open science and collaborative culture for research and development. Investigating the adoption of OHDSI as a field of study provides an opportunity to understand how communities embrace new ideas, onboard new members, and enhance their impact.

Objective: To track, study, and evaluate an open scientific community's growth and impact.

Method: We present a modern architecture leveraging open application programming interfaces to capture publicly available data (PubMed, YouTube, and EHDEN) on open science activities (publication, teaching, and engagement).

Results: Three interactive dashboard were implemented for each publicly available artifact (PubMed, YouTube, and EHDEN). Each dashboard provides longitudinal summary analysis and has a searchable table, which differs in the available features related to each public artifact.

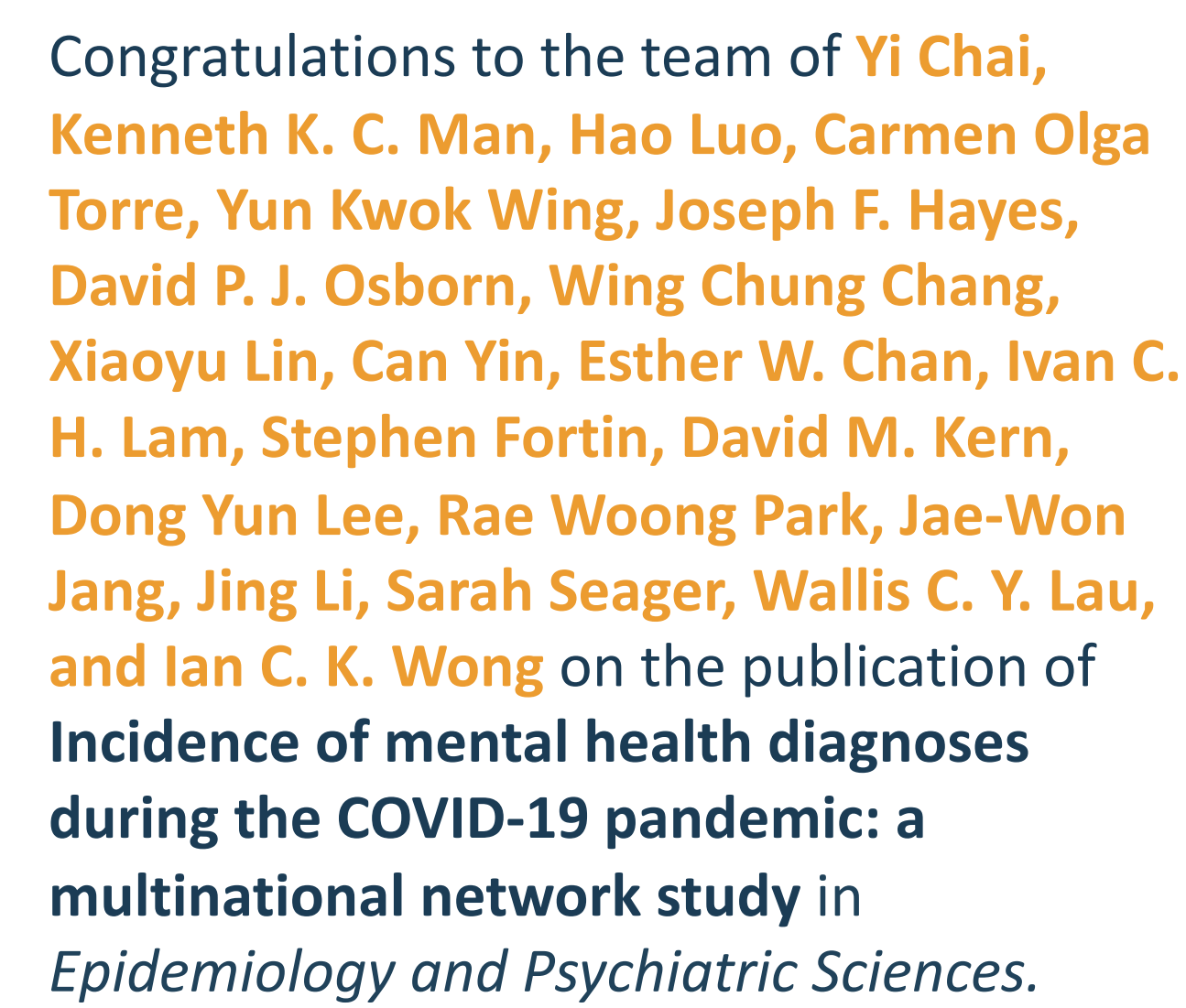
Conclusion: We discuss the insights enabled by our approach to monitor the growth and impact of the OHDSI community by capturing artifacts of learning, teaching, and creation. We share the implications for different users based on their functional needs. As other scientific networks adopt open-source frameworks, our framework serves as a model for tracking the growth of their community, driving the perception of their development, engaging their members, and attaining higher impact.

Lay Summary

The Observational Health Data Sciences and Informatics (OHDSI) community has emerged as a leader in observational research on real-world clinical data for promoting evidence for healthcare and decision-making. Keys to its successful uptake, its open science, and its collaborative culture incentivize an understanding of how it embraces new ideas, onboards new members, and enhances their impact organically. We developed an open-source framework to evaluate the health and impact of an open-science scientific community. We built dedicated dashboards to automatically track public artifacts generated from OHDSI's major areas of activities (PubMed articles, YouTube videos, and European Health Data Evidence Network Academy training courses). Other open science communities could take our framework and approach to begin to understand their network, track their growth, and enhance their impact.

OHDSI Shoutouts!

Congratulations to the team of **Yi Chai, Kenneth K. C. Man, Hao Luo, Carmen Olga Torre, Yun Kwok Wing, Joseph F. Hayes, David P. J. Osborn, Wing Chung Chang, Xiaoyu Lin, Can Yin, Esther W. Chan, Ivan C. H. Lam, Stephen Fortin, David M. Kern, Dong Yun Lee, Rae Woong Park, Jae-Won Jang, Jing Li, Sarah Seager, Wallis C. Y. Lau, and Ian C. K. Wong** on the publication of **Incidence of mental health diagnoses during the COVID-19 pandemic: a multinational network study** in *Epidemiology and Psychiatric Sciences.*



Epidemiology and Psychiatric Sciences

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Original Article

Cite this article: Chai Y *et al.* (2024) Incidence of mental health diagnoses during the COVID-19 pandemic: a multinational network study. *Epidemiology and Psychiatric Sciences* **33**, e9 1–13. https://doi.org/10.1017/S2045796024000088

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COVID-19; mental health; OHDSI; OMOP; psychiatric disorder; SARS-CoV-2

Corresponding author: I. Wong;
Email: wongick@hku.hk

Incidence of mental health diagnoses during the COVID-19 pandemic: a multinational network study

Yi Chai[1,2], Kenneth K. C. Man[1,3,4], Hao Luo[2,5,6], Carmen Olga Torre[1,7,8], Yun Kwok Wing[9], Joseph F. Hayes[10,11], David P. J. Osborn[10,11], Wing Chung Chang[12,13], Xiaoyu Lin[14], Can Yin[14], Esther W. Chan[1,4,15], Ivan C. H. Lam[1], Stephen Fortin[16], David M. Kern[17], Dong Yun Lee[18], Rae Woong Park[18], Jae-Won Jang[19], Jing Li[14], Sarah Seager[14], Wallis C. Y. Lau[1,3,4] and Ian C. K. Wong[1,3]

[1]Centre for Safe Medication Practice and Research, Department of Pharmacology and Pharmacy, LKS Faculty of Medicine, The University of Hong Kong, Hong Kong; [2]The Hong Kong Jockey Club Centre for Suicide Research and Prevention, The University of Hong Kong, Hong Kong; [3]Research Department of Practice and Policy, UCL School of Pharmacy, London, UK; [4]Laboratory of Data Discovery for Health (D²4H), Hong Kong Science Park, Hong Kong; [5]Department of Social Work and Social Administration, The University of Hong Kong, Hong Kong; [6]Sau Po Centre on Ageing, The University of Hong Kong, Hong Kong; [7]Real World Data Sciences, Roche, Welwyn Garden City, UK; [8]School of Science and Engineering, University of Groningen, Groningen, The Netherlands; [9]Li Chiu Kong Family Sleep Assessment Unit, Department of Psychiatry, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong; [10]Division of Psychiatry, University College London, London, UK; [11]Camden and Islington NHS Foundation Trust, London, UK; [12]Department of Psychiatry, School of Clinical Medicine, LKS Faculty of Medicine, The University of Hong Kong, Hong Kong; [13]State Key Laboratory of Brain and Cognitive Sciences, The University of Hong Kong, Hong Kong; [14]Real-World Solutions, IQVIA, Durham, NC, USA; [15]The University of Hong Kong Shenzhen Institute of Research and Innovation, Shenzhen, Guangdong, China; [16]Observation Health Data Analytics, Janssen Research & Development, Titusville, NJ, USA ; [17]Department of Epidemiology, Janssen Research & Development, Titusville, NJ, USA; [18]Department of Biomedical Informatics, Ajou University School of Medicine, Suwon, South Korea and [19]Department of Neurology, Kangwon National University Hospital, Kangwon National University School of Medicine, Chuncheon, South Korea

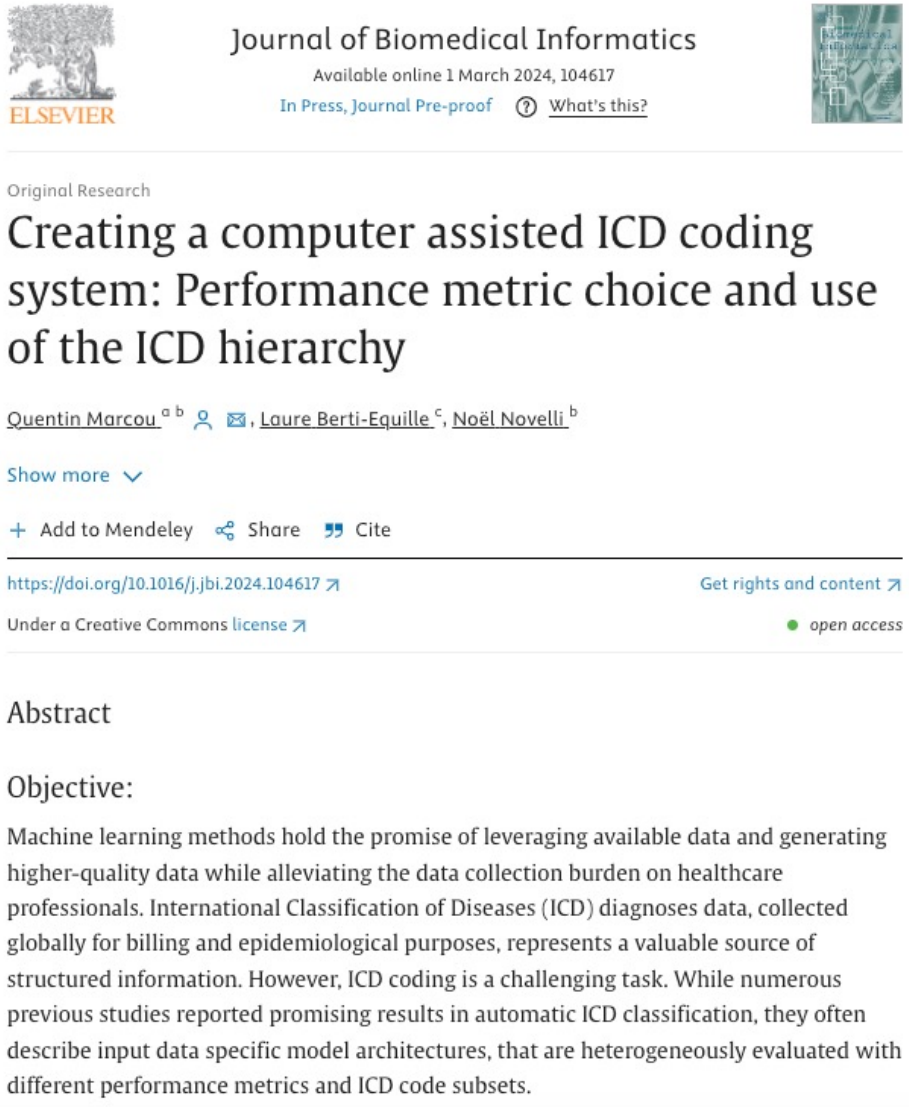
Abstract

Aims. Population-wide restrictions during the COVID-19 pandemic may create barriers to mental health diagnosis. This study aims to examine changes in the number of incident cases and the incidence rates of mental health diagnoses during the COVID-19 pandemic.

Methods. By using electronic health records from France, Germany, Italy, South Korea and the UK and claims data from the US, this study conducted interrupted time-series analyses to compare the monthly incident cases and the incidence of depressive disorders, anxiety disorders, alcohol misuse or dependence, substance misuse or dependence, bipolar disorders, personality disorders and psychoses diagnoses before (January 2017 to February 2020) and after (April 2020 to the latest available date of each database [up to November 2021]) the introduction of COVID-related restrictions.

OHDSI Shoutouts!

Congratulations to the team of **Quentin Marcou, Laure Berti-Equille, and Noël Novelli** on the publication of **Creating a computer assisted ICD coding system: Performance metric choice and use of the ICD hierarchy** in the *Journal of Biomedical Informatics*.



ELSEVIER

Journal of Biomedical Informatics

Available online 1 March 2024, 104617

In Press, Journal Pre-proof What's this?

Original Research

Creating a computer assisted ICD coding system: Performance metric choice and use of the ICD hierarchy

Quentin Marcou [a b], Laure Berti-Equille [c], Noël Novelli [b]

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Abstract

Objective:

Machine learning methods hold the promise of leveraging available data and generating higher-quality data while alleviating the data collection burden on healthcare professionals. International Classification of Diseases (ICD) diagnoses data, collected globally for billing and epidemiological purposes, represents a valuable source of structured information. However, ICD coding is a challenging task. While numerous previous studies reported promising results in automatic ICD classification, they often describe input data specific model architectures, that are heterogeneously evaluated with different performance metrics and ICD code subsets.

Three Stages of The Journey

Where Have We Been?

Where Are We Now?

Where Are We Going?

Upcoming Workgroup Calls

Date	Time (ET)	Meeting
Tuesday	12 pm	CDM Vocabulary Subgroup
Wednesday	8 am	Psychiatry
Wednesday	7 pm	Medical Imaging
Thursday	9:30 am	Themis
Thursday	11 am	Industry
Thursday	12 pm	Methods Research
Thursday	1 pm	OMOP CDM Oncology Vocabulary/Development Subgroup
Thursday	7 pm	Dentistry
Friday	9 am	Phenotype Development & Evaluation
Friday	10 am	GIS – Geographic Information System
Friday	11:30 am	Steering Group
Friday	10 pm	China Chapter
Monday	9 am	Vaccine Vocabulary
Monday	10 am	Healthcare Systems Interest Group
Monday	11 am	Early-Stage Researchers
Tuesday	9 am	OMOP CDM Oncology Genomic Subgroup

OHDSI Global Symposium

The **2024 OHDSI Global Symposium** will be held Oct. 22-24 at the Hyatt Regency Hotel in New Brunswick, NJ.

Tentative symposium format:

Oct. 22 – tutorials

Oct. 23 – plenaries, collaborator showcase

Oct. 24 – workgroup activities

OHDSI Europe Symposium

Registration is now OPEN for the **2024 OHDSI Europe Symposium**, which will be held June 1-3 in Rotterdam, Netherlands.

June 1 – tutorial/workshop
June 2 – tutorial/workshop
June 3 – main conference

ohdsi-Europe-org

Collaborator Spotlight: Ross Williams

Ross Williams is a scientific researcher working in the group of Dr. Peter Rijnbeek at Erasmus MC, where he is part of the Health Data Science group. His main focus is creating tools and analysis methods to develop personalised medical risk prediction. His specific areas of interest are on the external validation of prediction models, net benefit assessment and techniques for temporal health data analysis. He co-leads both the Patient Level Prediction workgroup and the Early-Stage Researcher workgroup.

A 2021 Titan Award honoree, Ross obtained his PhD at Erasmus University Medical Center (2023) and his MSc (2017) in Data Science from King's College London. He previously obtained his BSc in Physics and Philosophy from the same institution. Before starting work at Erasmus MC he spent time working on a Marie Curie scholarship on the TRANSACT project under the EU FP7 initiative.

Ross discusses his career journey, how observational data impacts prediction models, the opportunities for junior researchers in OHDSI, and plenty more in the latest edition of the Collaborator Spotlight.

Can you discuss your career journey and your major research focuses?

My career started by studying Physics and Philosophy as an undergraduate. This in a roundabout way led to an interest in machine learning and specifically machine learning for healthcare. Following my BSc I spent a year working in Brno, Czech Republic, doing NMR spectroscopy. Whilst there I first encountered the use of machine learning in healthcare. That focused on using either image or spectral data for outcome prediction. This lead to doing an MSc in Data Science during which I created several prediction models based on clinical trial data. A major pain of this was the lack of interoperability, which even in this small data environment took up the majority of my time.

ohdsi.org/spotlight-ross-williams

March Newsletter – On The Journey

OHDSI

The Journey Newsletter (March 2024)

OHDSI workgroups present opportunities for all community members to find a home for their talents and passions, and make meaningful contributions. Over the last months, more than 30 workgroups highlighted their individual missions and goals for 2024. We also engaged in a third Phenotype Phebruary, where we worked to advance the science of phenotyping using four community-voted use cases. Read about both, information regarding two 2024 OHDSI symposiums, eleven February publications, and more! **#JoinTheJourney**

Videocast: Phenotypes, Workgroups

Community Updates

Where Have We Been?

- Thirty-one OHDSI workgroups shared their mission and 2024 objectives and key results (OKRs) during February community calls. Our workgroups are always seeking new collaborators to further our impact on healthcare. Learn more on our new workgroups homepage, and if you see something that intrigues you, please use this form to join the team.
- During Phenotype Phebruary, the community investigated four phenotypes (Alzheimer's Disease, pulmonary hypertension, major depression disorder and pulmonary arterial hypertension) while also focusing on advancing the science of phenotyping. Conversations and updates from the month are available on the event homepage, and there will be a wrap-up presentation during the March 5 community call.

Where Are We Now?

- Registration is now open for the 2024 OHDSI Europe Symposium, which will be held June 1-3 in Rotterdam, Netherlands. The main conference will be held Monday, June 3, on the Steam Ship Rotterdam, and submissions for the collaborator showcase are being accepted until March 15.
- **James Weaver**, an Associate Director of Observational Health Data Analytics at Janssen Research and Development, will speak during a panel session on Current Approaches for Distributed Analysis on Thursday, March 14 (1 pm ET) during a Health Data Research Network Canada event. This will be a virtual conversation; more information and a registration link are available here.
- More than 50 members of our global community volunteered to join the 2024 Scientific Review Committee to help prepare for the Global Symposium (more on that next). We had a record-breaking number of showcase submissions last year, and we are excited for the possibilities this year. Our first meeting will be March 7.

30+ Workgroups Share New Objectives Towards Furthering OHDSI's Mission in 2024

OHDSI workgroups present opportunities for all community members to find a home for their talents and passions, and make meaningful contributions. Each year, our workgroups evaluate their objectives and key results (OKRs) for the upcoming year, and they share them with the global community during February meetings.

It was exciting to see the wide range of objectives set throughout OHDSI's 30+ workgroups, some of which have existed for many years, and some of which are in its earliest days. Whether veteran or new, each workgroup always welcomes new collaborators, from those who want to be active Day 1 to those who simply want to join and learn.

Our new OHDSI workgroups homepage features all of the new OKRs for our workgroups. If you see one (or more) that fits your talents, passions or interests, please use the link below to join the workgroup.

Workgroup Homepage

Join A Workgroup

February Publications

Park WY, Jeon K, Schmidt TS, Kondylakis H, Alkasab T, Dewey BE, You SC, Nagy P. Development of Medical Imaging Data Standardization for Imaging-Based Observational Research: OMOP Common Data Model Extension. J Imaging Inform Med. 2024 Feb 5. doi: 10.1007/s10278-024-00982-6. Epub ahead of print. PMID: 38315345.

Kim HC. Impact of COVID-19 on the development of major mental disorders in patients visiting a university hospital: a retrospective observational study. J Yeungnam Med Sci. 2024 Feb 6. doi: 10.12701/jyms.2023.01256. Epub ahead of print. PMID: 38317275.

Zhang X, Feng Y, Li F, Ding J, Tahseen D, Hinojosa E, Chen Y, Tao C. Evaluating MedDRA-to-ICD terminology mappings. BMC Med Inform Decis Mak. 2024 Feb 7;23(Suppl 4):299. doi: 10.1186/s12911-023-02375-1. PMID: 38326827; PMCID: PMC10851449.

Bhattacharjee T, Kiwuwa-Muyingo S, Kanjala C, Maoyi ML, Amadi D, Ochola M, Kadengye D, Gregory A, Kiragga A, Taylor A, Greenfield J, Slaymaker E, Todd J; INSPIRE Network. INSPIRE datahub: a pan-African integrated suite of services for harmonising longitudinal population health data using OHDSI tools. Front Digit Health. 2024 Jan 29;6:1329630. doi: 10.3389/fdgth.2024.1329630. PMID: 38347885; PMCID: PMC10859396.

Zisser M, Aran D. Transformer-based time-to-event prediction for chronic kidney disease deterioration. J Am Med Inform Assoc. 2024 Feb 13:ocae025. doi: 10.1093/jamia/ocae025. Epub ahead of print. PMID: 38349850.

Peng Y, Bathelt F, Gebler R, Gött R, Heidenreich A, Henke E, Kadioglu D, Lorenz S, Vengadeswaran A, Sedlmayr M. Use of Metadata-Driven Approaches for Data Harmonization in the Medical Domain: Scoping Review. JMIR Med Inform. 2024 Feb 14;12:e52967. doi: 10.2196/52967. PMID: 38354027.

Boeker M, Zöller D, Blasini R, Macho P, Helfer S, Behrens M, Prokosch HU, Gulden C. Effectiveness of IT-supported patient recruitment: study protocol for an interrupted time series study at ten German university hospitals. Trials. 2024 Feb 16;25(1):125. doi: 10.1186/s13063-024-07918-z. PMID: 38365848; PMCID: PMC10870691.

New Workgroups Homepage

OHDSI Workgroups

OHDSI's central mission is to improve health by empowering a community to collaboratively generate the evidence that promotes better health decisions and better care. We work towards that goal in the areas of data standards, methodological research, open-source analytics development, and clinical applications.

Our workgroups present opportunities for all community members to find a home for their talents and passions, and make meaningful contributions. We are always looking for new collaborators. Learn more about these workgroups by checking out this page.

See an area where you want to contribute? Please Join The Journey!

Join A Workgroup

Workgroup Meeting Schedule

Get to Know the OHDSI Workgroups

Africa Chapter
APAC
ATLAS/WebAPI
Clinical Trials
Common Data Model
CDM Vocabulary Subgroup
Dentistry
Early-Stage Researchers
Electronic Animal Health Records
Eye Care & Vision Research
FHIR and OMOP
Generative AI & Analytics in Healthcare (GAIA)
GIS – Geographic Information System
HADES
Health Equity
Healthcare Systems
Industry
Latin America
Medical Devices
Medical Imaging
Methods Research
Natural Language Processing
Network Data Quality
Oncology
Open-Source Community
Patient-Level Prediction
Perinatal and Reproductive Health
Phenotype Development & Evaluation
Psychiatry
Registry
Steering Group
Surgery and Perioperative Medicine
Themis
Vaccine Vocabulary

Workgroup	Lead(s)	2024 Objectives & Key Results (OKRs)

Asia-Pacific (APAC)

2024 OKR slides

Mui Van Zandt

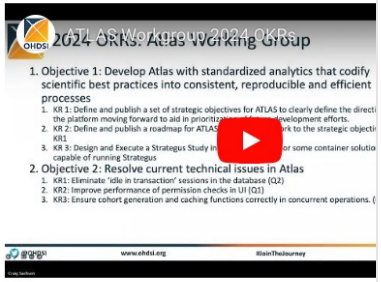
ATLAS/ WebAPI

2024 OKR slides

Christopher Knoll

Alexey Manoylenko

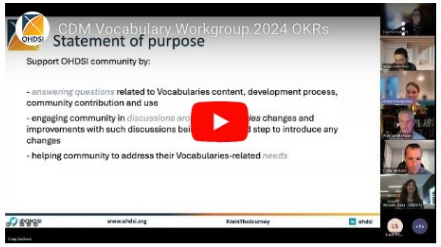
Anthony Sena



CDM Vocabulary Subgroup

2024 OKR slides

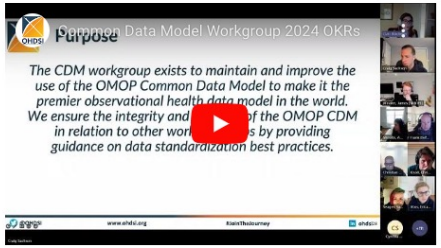
Anna Ostropolets



Common Data Model

2024 OKR slides

Clair Blacketer

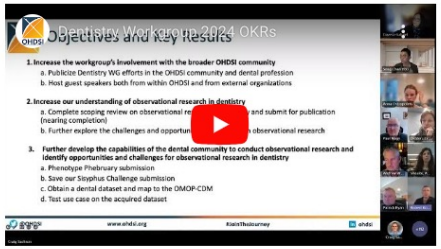


Dentistry

2024 OKR slides

Danielle Boyce

Robert Koski



ohdsi.org/workgroups

#OHDSISocialShowcase This Week

MONDAY

Implementing a common data model in ophthalmology: Comparison of general eye examination mapping to standard OMOP concepts across two major EHR systems

(Justin C. Quon, William Halfpenny, Cindy X. Cai, Sally L. Baxter, Brian C. Toy)

Implementing a common data model in ophthalmology: Comparison of general eye examination mapping to standard OMOP concepts across two major EHR systems

Justin C. Quon[1], William Halfpenny[2], Cindy X. Cai[3], Sally L. Baxter[2,4], Brian C. Toy[1]

[1] Roski Eye Institute, Keck School of Medicine, University of Southern California, Los Angeles, CA, USA
[2] Division of Biomedical Informatics, Department of Medicine, University of California San Diego, La Jolla, CA, USA
[3] Wilmer Eye Institute, Johns Hopkins School of Medicine, Baltimore, MD, USA
[4] Division of Ophthalmology Informatics and Data Science, Viterbi Family Department of Ophthalmology and Shiley Eye Institute, University of California San Diego, La Jolla, CA, USA

Background

- Increasing utilization of electronic health records has highlighted data standardization as an increasingly important objective.
- One challenge associated with data standardization is that EHR implementations differ across institutions, resulting in limited interoperability due to variations in data structures and terminology.
- In ophthalmology, the specialized eye exam findings pose an additional challenge.

- The Observational Medical Outcomes Partnership (OMOP) Common Data Model (CDM) harmonizes disparate source data into standard vocabulary concepts with consistent and unambiguous interpretations.
- Previous studies have demonstrated significant coverage gaps by the OMOP CDM in all areas of the general eye examination of the Epic Foundation EHR.

- The objectives of this study are to
  1. Investigate concept coverage of the standard "model experience" Cerner Millennium EHR and compare these findings with Epic Foundation EHR to determine shared areas of poorly represented EHR concepts
  2. Identify opportunities for improving representation of clinically relevant ophthalmology source data in the OMOP CDM

Methods

- Source data elements were extracted from the ophthalmology examination PowerForms of the default Cerner Model Experience implementation of the Cerner Millennium EHR.

- All source data elements were mapped to the semantically closest standard concept in the OMOP CDM using the Automated Terminology Harmonization, Extraction, and Normalization for Analytics (Athena) web application and the USAGI software tool, which suggests target concepts based on textual similarity.

- All mappings were classified into one of four categories:
  - *Exact*: no loss or addition of information
  - *Wider*: target standard concept lost information compared to source data
  - *Narrower:* target standard concept included additional information
  - *Unmatched:* no standard concept in OMOP CDM that adequately represents the source data

Results

- There were exact mappings in the OMOP CDM for only **25.9% (110/425) of Cerner** and **25.4% (177/698) of Epic** source data elements.
- Imprecise (not *exact*) mappings spanned all areas of the general eye examination for both EHR systems.
- Most mappings were *wider* with loss of clinical granularity, accounting for 49.4% (210/425) of Cerner and 49.9% (348/698) of Epic mappings.

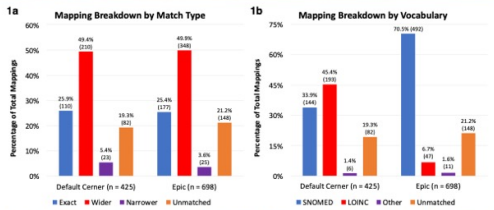


Figure 1. Distribution of mappings for source data elements to OMOP standard concepts by (a) match type and (b) vocabulary of target standard concept

- A key discrepancy between Epic and Cerner mappings was the proportion of *wider* mappings that were missing laterality (75.6% of wider mappings in Epic, and 38.6% for the Cerner EHR).
- This discrepancy was due to differences in vocabularies for target standard concepts.
  - Epic mappings preferred SNOMED terms (90% of data elements excluding unmatched terms)
  - Cerner mappings preferred LOINC concepts, which were missing laterality in less than 10% of mapped Cerner concepts
- This difference is mainly due to whether laterality was pre-coordinated into the standard concept or left as a post-coordination modifier.

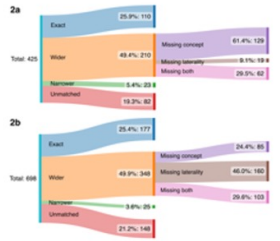


Figure 2. Sankey diagrams depicting match type breakdown for (a) Cerner EHR and (b) Epic EHR general eye examination source data

- During the mapping process, inconsistencies in how the OMOP CDM handles semantically equivalent standard concepts were discovered.
  - For example, the data *left eye IOP* had semantically equivalent mappings to both SNOMED and LOINC, but *intraocular pressure of left eye [SNOMED]* and *left eye intraocular pressure [LOINC]* were listed as two distinct concepts in the same domain.
- Another example of an inconsistency in the OMOP CDM is that *LogMAR visual acuity left eye* is classified in the *[observation]* table, but there exists another distinct concept for *Visual acuity log MAR Eye – left* in the *[measurement]* domain.

Conclusions

- We demonstrate that the OMOP CDM has coverage gaps for all areas of the general eye examination, which may limit its utility in clinical practice and research.
- Suggestions for improving concept coverage and efficiency of data access may include (1) adding more clinical granularity to standard concepts, (2) standardizing pre-coordination or post-coordination for laterality, (3) ensuring that semantically equivalent concepts have unambiguous mappings, and (4) harmonizing the storage location of eye examination data.

#OHDSISocialShowcase This Week

TUESDAY

Measuring Study Potential Through the Use of Data Diagnostics

(Clair Blacketer, Frank DeFalco)

Measuring Study Potential Through the Use of Data Diagnostics

PRESENTER: **Clair Blacketer**

INTRO

- The Data Diagnostics tool assesses database feasibility using pre-computed summary statistics and user-defined criteria.
- This analysis examined one of the four SOS challenge studies and how well data diagnostics performed.
- We evaluated the performance of Data Diagnostics in the SOS challenge study "Risk of kidney failure associated with intravitreal anti-vascular endothelial growth factor (anti-VEGF)", comparing its output with study diagnostics.

METHODS

1. The SOS study compared ranibizumab, aflibercept and bevacizumab to estimate the risk of kidney failure after intravitreal anti-VEGF.
2. Prior to requesting OHDSI data partners (DP) run the study, Data Diagnostics was run to identify databases that would be the best fit.
3. The databases identified then ran the full study, which also included study diagnostics.
4. We characterized which databases ran the three study questions and which passed study diagnostics.

RESULTS

- 31 databases were assessed for study potential for aflibercept vs bevacizumab and the kidney failure outcome.
- Of the 15 that ran the study, 14 were identified as having all required elements and one was not. Of those, 10 ran study diagnostics and 6 passed (**table 1**).
- For all three study questions, every database that passed study diagnostics first passed Data Diagnostics.
- DP8 did not pass Data Diagnostics for two of the study questions and also did not pass study diagnostics.

Using only **aggregate summary statistics**, Data Diagnostics can **consistently identify databases** across a federated network **with the potential to generate evidence** given a **clinical question of interest**

Take a picture to **download** the **full paper**

Table 1: Data and study diagnostic results by Data Partner for the comparison of aflibercept and bevacizumab for the outcome end stage renal disease

	Passed Data Diagnostics	Ran Study Diagnostics	Passed Study Diagnostics
DP1			
DP2			
DP3			
DP4			
DP5			
DP6			
DP7			
DP8			
DP9			
DP10			
DP11			
DP12			
DP13			
DP14			
DP15			

Table 2: Data and study diagnostic results by Data Partner for the comparison of aflibercept and ranibizumab for the outcome end stage renal disease

	Passed Data Diagnostics	Ran Study Diagnostics	Passed Study Diagnostics
DP1			
DP2			
DP3			
DP4			
DP5			
DP6			
DP7			
DP8			
DP9			
DP10			
DP11			
DP12			
DP13			
DP14			
DP15			

CONCLUSIONS

- Data Diagnostics was able to consistently and accurately identify databases with the potential to generate evidence using only aggregate summary statistics.
- Additional study diagnostics are needed to determine if the evidence generated is reliable.

Clair Blacketer, Frank DeFalco

janssen
Erasmus MC
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#OHDSISocialShowcase This Week

WEDNESDAY

Utilizing Graph Embeddings for Multiple Sclerosis Disease Modifying Therapy Adverse Events

(Jason Patterson)

Utilizing Graph Embeddings for Multiple Sclerosis Disease Modifying Therapy Adverse Event Prediction

Jason Patterson[1]

[1]Tatonetti Lab, Department of Biomedical Informatics, Columbia University

Background

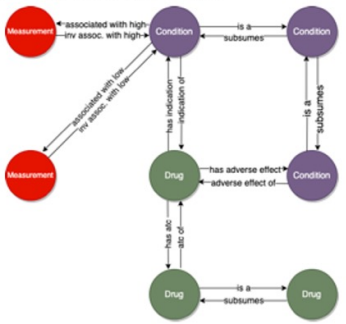
Multiple sclerosis (MS) is one of the leading causes of disability among young adults. Currently, the administration of disease modifying therapy (DMT) through immunosuppressive drugs is the front-line management strategy for the disease. However, the use of higher efficacy DMT frequently leads to the occurrence of adverse drug events (ADE), and risks must be assessed when selecting treatment.

ADE knowledge predominantly originates from clinical trials and post-market surveillance via the Federal Adverse Events Reporting Service (FAERS). However, both methods are limited to population-level statistics and fail to address ADE risk on an individual level.

In this work, we use sequences of OMOP medical concepts from electronic health records (EHRs) to create individual-level predictive models for ADE occurrence related to MS DMT. With the aid of Graph Convolutional Networks (GCNs), we also created a novel method for explaining the output of the predictive model in terms of feature importance. We attempted to address gaps in other EHR ADE prediction methods, including inattention to the time-varying nature of EHR data, stringent feature selection methods, and failure to address causation.

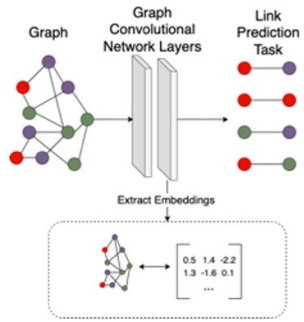
Methods

A. ADE Knowledge Graph

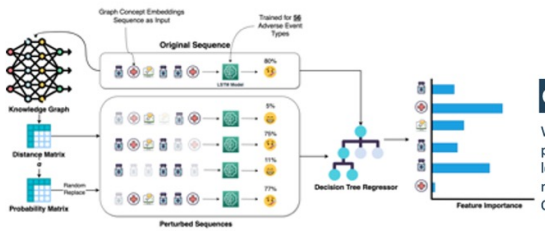


Methods (continued)

B. GCN Training and Concept Embeddings Extract

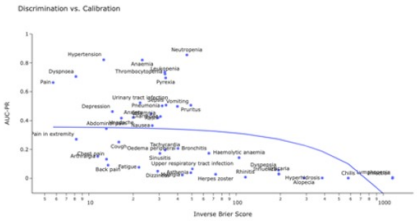


C . ADE Predictive Models and Explanation Engine

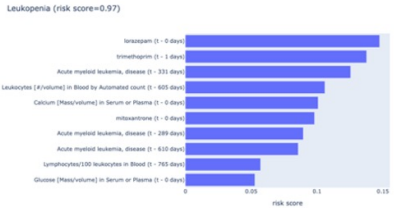


Results

D. Evaluation of ADE Model Performances



E. Example Model Explanation



Conclusions

We trained 56 ADE prediction models with various levels of performance. Some, particularly those for blood disorders, had high levels of calibration and discriminative ability. Furthermore, our novel model explanation method utilized a knowledge graph to highlight OMOP concepts that were important to prediction.

Future work will be required to further explore temporal windows of ADE occurrences beyond a generic 1-year window used here. Additionally, we will need a more formal evaluation method for model explanations.

Contact: jp3477@cumc.columbia.edu

#OHDSISocialShowcase This Week

THURSDAY

Comorbidity Co-occurrence in Women with Endometriosis: A Retrospective Matched Cohort Study

(Tamar Zelovich, Vered Klaitman-Mayer, Chen Yanover)

Comorbidity Co-occurrence in Women with Endometriosis: A Matched Retrospective Cohort Study

PRESENTER: Tamar Zelovich

INTRO:

Endometriosis (endo') is a chronic, gynecological, multi-systemic, inflammatory, and estrogen-dependent disease that affects 10% of women

METHODS:

Study population:
Females, aged 14-50 years, diagnosed with endometriosis or adenomyosis

Comparison group:
Age-matched females, not (ever) diagnosed with endo'

Data source:
IQVIA Medical Research Data (IMRD) contains longitudinal non-identified patient electronic healthcare records (EHR) collected from UK General Practitioner (GP) clinical systems incorporating data from THIN, a Cegedim database

Statistical analysis:
For each comorbidity:
1. Compare its prevalence in the endo' and non-endo' cohorts
2. Measure discrepancy using Standardized Mean Differences (SMD; values >0.1 considered meaningful); assign an adjusted P-value (values <0.05 considered significant)

Increased risk of comorbidities in endometriosis patients

Misdiagnosis, surveillance bias, or causal mechanism?

Take a picture to download the poster and abstract

CONCLUSIONS:

Increased risk of comorbidities in endometriosis patients

Potential mechanisms:
1. Misdiagnosis of endometriosis-like symptoms
2. Enhanced health surveillance
3. Shared or related physiological mechanism, e.g., inflammatory response elicited by endometriosis, higher sensitivity to hormones fluctuation

POTENTIAL IMPACT:

- ✓ Better understanding of disease mechanism
- ✓ Shorter diagnosis times for endometriosis and comorbidities
- ✓ Support preventive medicine in endo` and related comorbidities
- ✓ Insights into how endometriosis affects women's overall health

RESULTS:

	IMRD-UK		
	Endo	Non-endo	P-value†
N	26,605		–
Age [years]	35 [29, 41]		–
Baseline period [years]	4.6 [2.4, 8.5]	5.1 [2.7, 8.9]	<0.001
Follow-up period [years]	5.0 [2.1, 9.9]	5.0 [2.0, 9.7]	0.018

	IMRD-UK			
Comorbidity	N	Endo`	Non-endo`	SMD
Allergy, Mast Cell	467,609	4,997 (19%)	3,867 (15%)	0.11
Anemia	184,795	3,083 (12%)	2,237 (8.4%)	0.11
Autonomic Nervous System Disorders	341,288	5,921 (22%)	4,263 (16%)	0.2
Fatigue, Asthenia	606,663	10,360 (39%)	7,171 (27%)	0.3
Female Infertility	119,378	4,061 (15%)	1,477 (5.6%)	0.3
Fibromyalgia	28,706	783 (2.9%)	370 (1.4%)	0.11
Inflammatory Bowel Disease	64,579	1,320 (5.0%)	802 (3.0%)	0.1
Migraine + Headache	741,920	11,821 (44%)	8,274 (31%)	0.3
Pelvic Inflammatory Disease	205,747	4,514 (17%)	2,479 (9.3%)	0.2
Uterine Fibroids	53,236	2,007 (7.5%)	627 (2.4%)	0.2

Adjusted P-value for all presented comorbidities <0.001

LIMITATIONS:

Rare diseases may be underdiagnosed → undetected in data

FUTURE PLANS:

- Data-driven risk analysis of all occurring condition groups
- Compare endo to other diseases

Tamar Zelovich[1], Vered Klaitman-Mayer[2], Chen Yanover[1]

[1]KI Research Institute, Kfar Malal, Israel;
[2]Maccabi Health Services South District, Faculty of Health Sciences, Ben Gurion University of the Negev, Beer Sheva, Israel

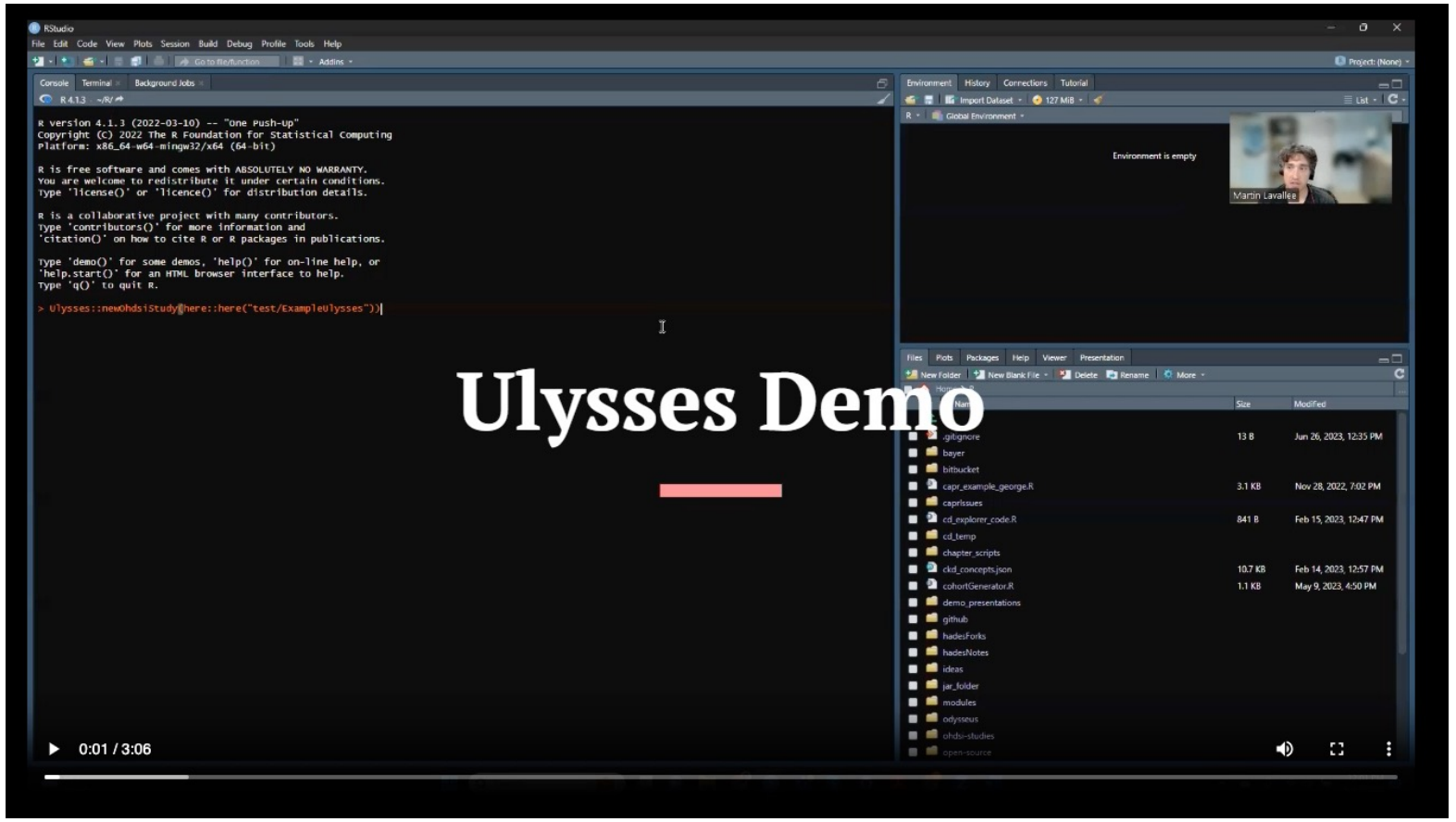
OHDSI

#OHDSISocialShowcase This Week

FRIDAY

Ulysses: Introducing a workflow R package for assisting in the development of OHDSI studies

(Martin Lavallee, Asieh Golozar)



Opening: Biomedical Informatics Data Scientist at Stanford

Stanford MEDICINE Health Care

Who We Are | What We Offer | How We Hire | Career Areas | Search

Biomedical Informatics Data Scientist

1.0 FTE • Full time • Day - 08 Hour • R2335119 • Hybrid • 84866 IT RESEARCH • Technology & Digital Solutions • 455 Broadway,REDWOOD CITY,California •

1.0 FTE Full time Day - 08 Hour R2335119 Hybrid 84866 IT RESEARCH Technology & Digital Solutions 455 Broadway,REDWOOD CITY,California

If you're ready to be part of our legacy of hope and innovation, we encourage you to take the first step and explore our current job openings. Your best is waiting to be discovered.

Day - 08 Hour (United States of America)

This is a Stanford Health Care job.

A Brief Overview

The Biomedical Informatics Data Scientist will partner with researchers and clinicians to enable effective and efficient use of data and resources available via Stanford's research clinical data repository (STARR) including the Electronic Health Records in the OMOP Common Data Model, radiology and cardiology imaging data and associated metadata, and new data types as they get integrated along with their databases and respective cohort query tools and interfaces e.g., OHDSI ATLAS. This individual will enable researchers to maximize their understanding, interpretation and use of these clinical and research tools for more informed and productive research, clinical trials, patient care and quality outcome projects.

Clean, extract, transform and analyze various kinds of clinical data to create analysis-ready datasets that follow the FAIR (Findable, Accessible, Interoperable and Re-usable) principles. Partner with researchers and clinicians to enable effective and efficient use of Stanford Clinical data and resources for the advancement of research and the educational mission.

(I²DB)

Postdoc/Senior Data Analyst Opening at WashU

The Zhang Lab at Washington University School of Medicine in St. Louis has **one postdoct/senior data analyst position** to work on **causal machine learning** and **responsible AI** for reliable real-world evidence generation.

PI: Linying Zhang, PhD

- More details at https://linyingzhang.com
  - Postdoc: https://linyingzhang.com/files/Postdoc.pdf
  - Data analyst: https://linyingzhang.com/files/Analyst.pdf
- If interested, please send CV and cover letter to linyingz@wustl.edu

Washington University School of Medicine in St. Louis

Opening: Epidemiology UX/Web Design Intern at J&J

Career Programs

Epidemiology UX/Web Design Intern

JOB TITLE	Epidemiology UX/Web Design Intern
FUNCTION	Career Programs
SUB FUNCTION	Non-LDP Intern/Co-Op
LOCATION	Raritan, New Jersey, United States
DATE POSTED	Jan 19 2024
REQUISITION NUMBER	2406163977W

DESCRIPTION

Janssen Research & Development, L.L.C., a division of Johnson & Johnson's Family of Companies is recruiting for Epidemiology UX/Web Design Intern. This position is a member of the Observational Health Data Analytics (OHDA) team. OHDA's mission is to improve the lives individuals and quality of healthcare by efficiently generating real-world evidence from the world's observational health data, transparently disseminating evidence-based insights to real-world decision-makers, and objectively advancing the science and technology behind reliab

Apply Now

Opening: Three Positions at Gilead

Sr. Director, Head of Data Office

Apply

Job Description:
As a Senior Director in our Data Office, you will play a pivotal role in shaping and executing our data strategy. In this leadership position, you will oversee and drive activities related to data sharing, governance, and access across the organization. Working closely with cross-functional teams, you will define and implement data acquisition policies and practices, ensuring the efficient and effective use of data to support our scientific and business objectives.

Director, Data Acquisition - Clinical Data Science

Apply

Director, Data Acquisition - Clinical Data Science

This role reports to the Head of Gilead data office, RWE Generation, Clinical Data Science and is based at different Gilead sites. This individual has responsibility for acquiring all data across clinical, development, medical affairs function and Gilead affiliates. This individual will work in close collaboration with the Development organization, Commercial, Procurement, Medical Affairs, IT, and other functions at Gilead in implementing data acquisition processes and is expected to operate with a "one Gilead" mindset & play a key role in the global Gilead Data Office set up.

Director, RWE - Data Science - OHDSI

Apply

Responsibilities:
Collaborate with researchers and data scientists to understand project requirements and translate them into OHDSI-compatible solutions. Work with databases, ensuring data integrity and optimization for OHDSI-related queries and analyses. Perform data analyses in OHDSI-related tools like ATLAS. Customize and extend OHDSI tools and applications to meet specific project needs. Collaborate with cross-functional teams to troubleshoot and resolve technical issues related to OHDSI implementations. Stay informed about OHDSI community updates, best practices, and emerging trends in observational health data research. Contribute to the development and documentation of data standards and conventions within the OHDSI community.

About Us

GILEAD

Gilead Sciences, Inc. is a biopharmaceutical company that has pursued and achieved breakthroughs in medicine for more than three decades, with the goal of creating a healthier world for all people. The company is committed to advancing innovative medicines to prevent and treat life-threatening diseases, including HIV, viral hepatitis and cancer. Gilead operates in more than 35 countries worldwide, with headquarters in Foster City, California.

Where Are We Going?

Any other announcements of upcoming work, events, deadlines, etc?

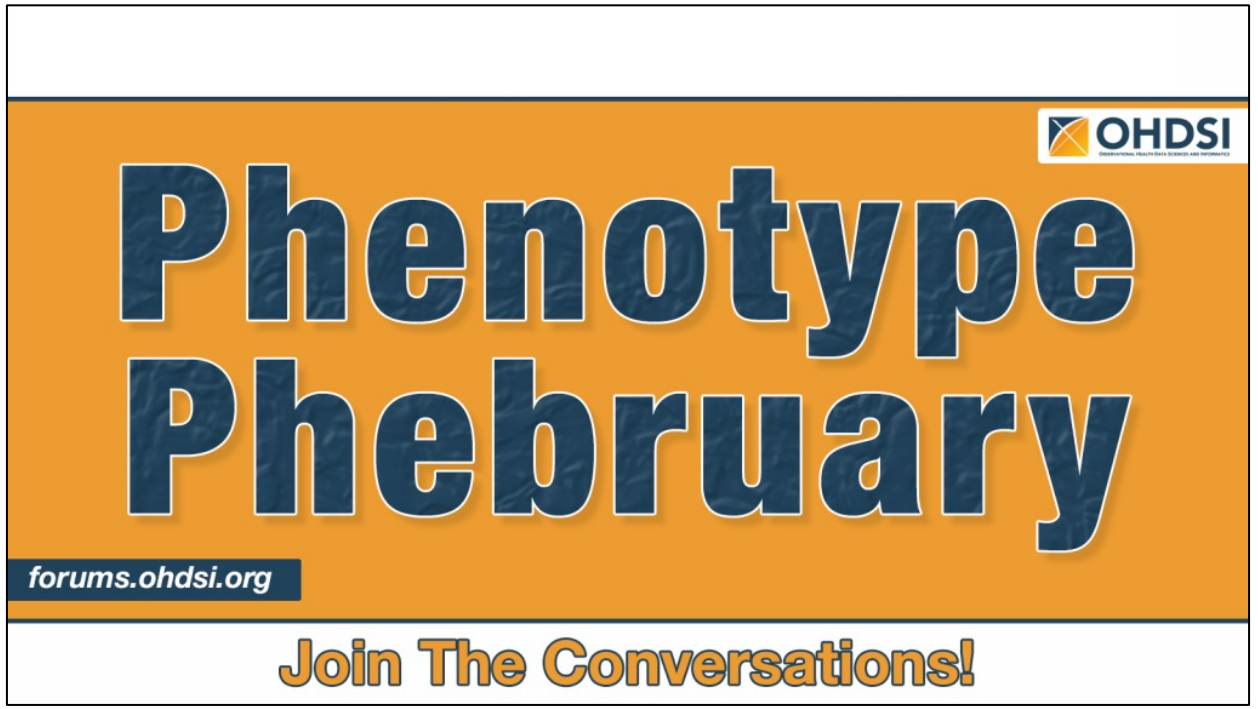
Three Stages of The Journey

Where Have We Been?

Where Are We Now?

Where Are We Going?

2024 Edition



Closing

Assess heterogeneity in phenotype definitions, representations, and evaluation methods across published observational studies for four clinical conditions.

2024 Phenotype Phebruary team

Anna Ostropolets

Asieh Golozar

Jamie Weaver

Joel Swerdel

Evan Minty

Septi Melisa

Lisa Schilling

Azza Shoaibi

Jessica Mo

Harold Lehmann

Buchi Anikpezie

Bill Baumgartner

Vojtech Huser

Fanny Franchini

Dave Kern

Hayden Spence

Andreas Weinberger Rosen

Judy Racoosin

Steve Johnson

Andrew Kanther

Eva-maria Didden

Tsonko Tsonkov

David Dorr

Seung In Seo

Buchi Anikpezie

Bill Baumgartner

Thamir Alshammari

Alexey Ryzhenkov

Atif Adam

Linying Zhang

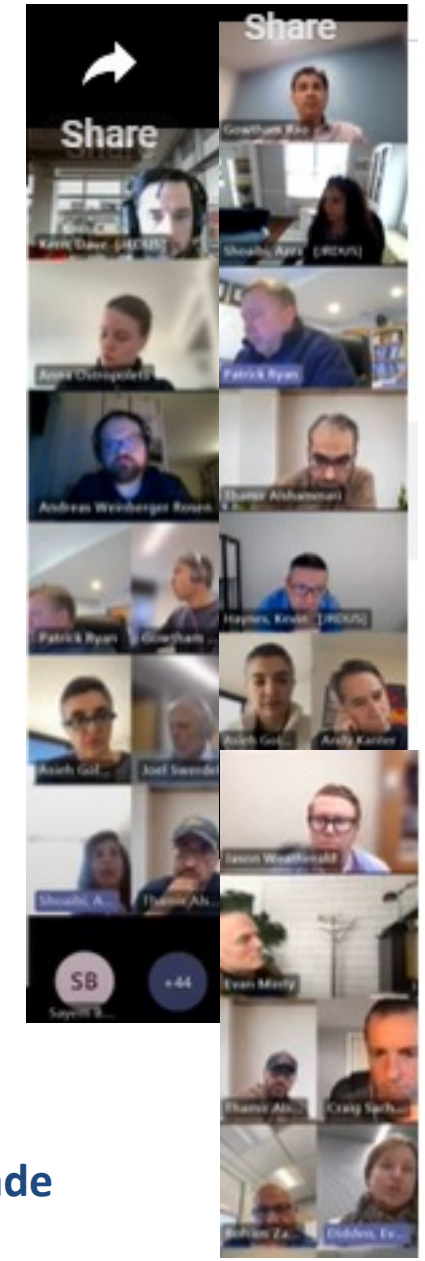
Gowtham Rao

Huan-Ju Shih

Ruochong Fan

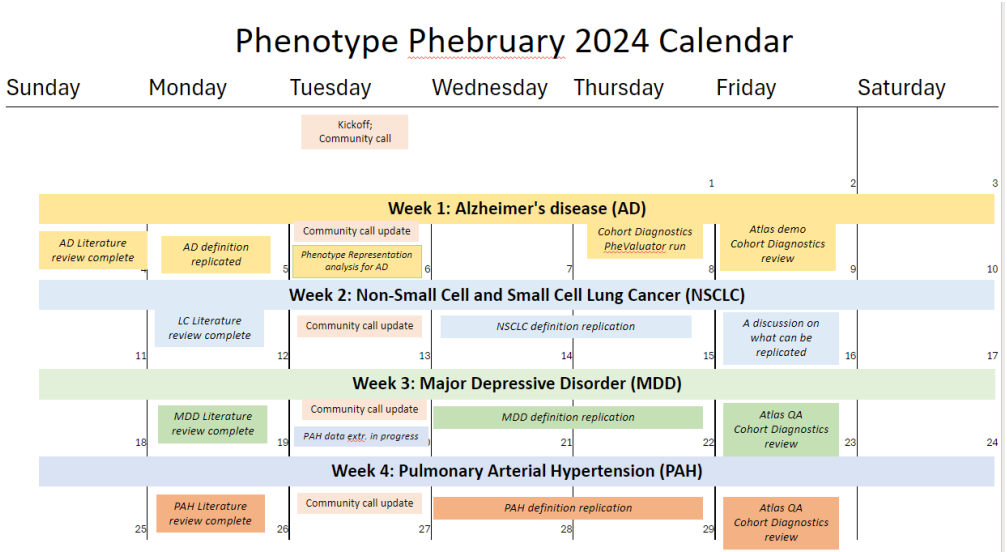
Anthony Louder

Bolu Oluwalade



Phenotype Phebruary 2024 **in numbers**

- **4** condition phenotypes discussed
- **93** clinical studies identified and reviewed
- **1** Atlas and CD demo
- **30** Cohort definitions built and publicly shared
- **3** shiny apps with full cohort diagnostics on results.ohdsi.org
- **8784** Incidence rate estimates
- **40** collaborators interacted in the posts, conducted LR, built cohorts, or attended calls
- **1** AMIA submission in the pipeline



http://results.ohdsi.org/app/18_PhenotypePhebPah

http://results.ohdsi.org/app/17_PhenotypePhebMdd

http://results.ohdsi.org/app/16_PhenotypePhebAlzh

https://www.ohdsi.org/phenotype-phebruary-2024/

Phenotype Phebruary content location:
https://ohdsiorg.sharepoint.com/:f:/s/Workgroup-PhenotypeDevelopmentandEvaluation/EmBu-iRmhfBCoNfGAKGPflMBTlKwzk1YStSJEN40mgiSPQ?e=UyuT0s

Main findings

As we reviewed papers for 4 outcomes over the last 4 weeks, we saw tremendous variance in phenotype algorithms.

Heterogeneity of the algorithms impacted incidence of ~2-40x and measurement error with substantial differences in sensitivity and specificity.

The weekly OHDSI community call is held every Tuesday at 11 am ET.

Everybody is invited!

Links are sent out weekly and available at: ohdsi.org/community-calls