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Updates & Progress

OHDSI Community Call
Oct. 1, 2024 • 11 am ET

October Community Calls

Date	Topic
Oct. 1	DARWIN EU® Review
Oct. 8	Recent Advances in Methodological Research
Oct. 15	Global Symposium Mad Minutes/Final Logistics
Oct. 22	No Meeting due to Global Symposium
Oct. 29	Welcome to OHDSI

Oct 8: Advances in Methods Research

Yong Chen

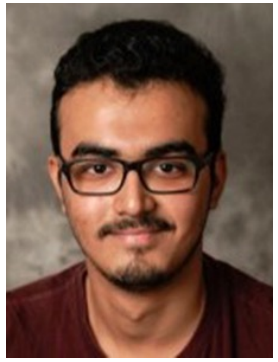
Professor of Biostatistics, University of Pennsylvania

Topic: negative controls in vaccine research

George Hripcsak

Vivian Beaumont Allen Professor of Biomedical Informatics, Columbia University

Topic: new diagnostics for covariate balance in small samples



Shounak Chattopadhyay

Postdoctoral Scholar, UCLA

Topic: performance of the concurrent comparator design

Three Stages of The Journey

Where Have We Been?

Where Are We Now?

Where Are We Going?

OHDSI Shoutouts!

Congratulations to the team of **Sang-In Park, Jung-Kyeom Kim, Uijeong Yu, and Ji In Park** on the publication of **Identification of factors associated with vancomycin-induced acute kidney injury: A retrospective analysis using the Common Data Model** in the *International Journal of Clinical Pharmacology and Therapeutics*.

Int. Journal of Clinical Pharmacology and Therapeutics, Upcoming Articles - N/A (0 - 8)

Identification of factors associated with vancomycin-induced acute kidney injury: A retrospective analysis using the Common Data Model

Sang-In Park[1,2], Jung-Kyeom Kim[3], Uijeong Yu[1], Ji In Park[4]
[1] Department of Pharmacology, College of Medicine, Kangwon National University, [2] Biomedical Research Institute, Kangwon National University Hospital, [3] Department of Medical Bigdata Convergence, Kangwon National University, and [4] Department of Internal Medicine, Kangwon National University Hospital, Kangwon National University School of Medicine, Gangwon-do, Chuncheon, Republic of Korea

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DOI 10.5414/CP204646

Abstract | Author Details | Log in for Subscribers | Citation

Abstract

Objective: Previous findings on predictors of vancomycin-induced acute kidney injury (AKI) are inconsistent. We aimed to identify the predictors of vancomycin-induced AKI using the Observational Medical Outcome Partnership Common Data Model. Materials and methods: We analyzed data from patients treated with vancomycin between January 1, 2012, and May 31, 2022, who were positive for Staphylococcus aureus and had undergone oxacillin susceptibility tests. After excluding patients without data for vancomycin or baseline serum creatinine levels, 116 patients were included in the final dataset. Data up to the third measured vancomycin concentration were collected for each patient. Logistic regression models were used to estimate the odds ratio and 95% confidence interval for each variable associated with vancomycin-induced AKI. Results: High baseline serum creatinine levels, intensive care unit admission, and concurrent renal disorders were significantly associated with vancomycin-induced AKI. Although high trough levels or area under the curve values were not significantly associated with vancomycin-induced AKI, both were significantly higher in patients with AKI than in those without AKI at the second vancomycin concentration measurement. The proportion with trough levels > 20 mg/L was higher in patients with AKI than in those without AKI at the third measurement. Conclusion: Our findings revealed that underlying renal disease and intensive care unit admission are more significantly associated with vancomycin-induced AKI than vancomycin pharmacokinetic parameters or dosage, likely due to vancomycin concentration-based dosage adjustment in clinical settings. Our findings may help develop strategies for reducing the incidence of vancomycin-induced AKI; however, further prospective studies are essential.

OHDSI Shoutouts!

Congratulations to the team of **Ming Luo, Yu Gu, Feilong Zhou, and Shaohong Chen** on the publication of **Implementation of the Observational Medical Outcomes Partnership Model in Electronic Medical Record Systems: Evaluation Study Using Factor Analysis and Decision-Making Trial and Evaluation Laboratory-Best-Worst Methods** in *JMIR Medical Informatics*.

Implementation Report

Implementation of the Observational Medical Outcomes Partnership Model in Electronic Medical Record Systems: Evaluation Study Using Factor Analysis and Decision-Making Trial and Evaluation Laboratory-Best-Worst Methods

Ming Luo[1], BS; Yu Gu[1], BS; Feilong Zhou[2], BS; Shaohong Chen[2], BS

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Abstract

Background: Electronic medical record (EMR) systems are essential in health care for collecting and storing patient medical data. They provide critical information to doctors and caregivers, facilitating improved decision-making and patient care. Despite their significance, optimizing EMR systems is crucial for enhancing health care quality. Implementing the Observational Medical Outcomes Partnership (OMOP) shared data model represents a promising approach to improve EMR performance and overall health care outcomes.

Objective: This study aims to evaluate the effects of implementing the OMOP shared data model in EMR systems and to assess its impact on enhancing health care quality.

Methods: In this study, 3 distinct methodologies are used to explore various aspects of health care information systems. First, factor analysis is utilized to investigate the correlations between EMR systems and attitudes toward OMOP. Second, the best-worst method (BWM) is applied to determine the weights of criteria and subcriteria. Lastly, the decision-making trial and evaluation laboratory technique is used to illustrate the interactions and interdependencies among the identified criteria.

Three Stages of The Journey

Where Have We Been?

Where Are We Now?

Where Are We Going?

Upcoming Workgroup Calls

Date	Time (ET)	Meeting
Wednesday	7 am	Medical Imaging
Wednesday	8 am	Psychiatry
Wednesday	4 pm	Joint Vulcan/OHDSI Meeting
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	10 am	GIS-Geographic Information System
Friday	11:30 am	Steering Group
Monday	9 am	Vaccine Vocabulary
Monday	10 am	Healthcare Systems Interest Group
Tuesday	9 am	OMOP CDM Oncology Genomic Subgroup

NEI/OHDSI Session: Oct. 30, 12 pm ET

National Eye Institute
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Home » About NEI » News and Events » Events » OHDSI Research Opportunities: Harnessing Healthcare Databases for Improved Outcomes

OHDSI Research Opportunities: Harnessing Healthcare Databases for Improved Outcomes

October 30, 2024
12:00 PM to 1:00 PM ET

Scheduled Speakers
Michelle Hribar
Cindy Cai
Patrick Ryan

Collaborator Spotlight: Yong Chen

Dr. Yong Chen, Professor of Biostatistics, founded and directs the Computing, Inference, and Learning Lab (PENNCIL) at the University of Pennsylvania.

Yong, who has been leading methodological work within the OHDSI community for several years, is an Elected Fellow in both the American Statistical Association (2020) and the the American College of Medical Informatics (ACMI) (2023), and he earned the 2021 OHDSI Titan Award for Methodological Research.

Learn more in the latest Collaborator Spotlight.

ohdsi.org/spotlight-Yong-Chen

Latest Newsletter is Available

OHDSI

The Journey Newsletter (October 2024)

October features three in-person events across three different continents, including the 2024 Global Symposium, which takes place Oct. 22-24 in New Brunswick, N.J. Registration information for the India, EHDEN and Global, as well as the Asia-Pacific (Dec. 4-8), Symposiums is available in this newsletter. You can also find the 2024 Titan Award nominees, recent publications out of the community, a collaborator spotlight with Yong Chen, and plenty more. #JoinTheJourney

Videocast: Symposia Around The World

In the latest On The Journey videocast, Patrick Ryan and Craig Sachson discuss the excitement of three in-person events coming up in October, including the first India Symposium and an EHDEN Symposium. They also discuss how newcomers can benefit from joining the community at the 2024 Global Symposium in New Brunswick, N.J. *(if video does not appear, please click 'View this email in your browser')*

Community Updates

Where Have We Been?

- The LEGEND-T2DM team published Comparative Effectiveness of Second-Line Antihyperglycemic Agents for Cardiovascular Outcomes: A Multinational, Federated Analysis of LEGEND-T2DM in the Journal of the American College of Cardiology last month. This study will be discussed during the plenary at the upcoming Global Symposium.
- The Vocabulary team completed its August 2024 refresh, and it shared many of the updates and changes during a recent community call.
- The Book of OHDSI was published five years ago and introduced at the 2019 Symposium. It was developed by community volunteers to be a central knowledge repository for OHDSI, and it focuses on describing our community, data standards, and tools. We looked back at the book's development and impact during a September community call.
- 72 individuals or teams were nominated for a 2024 Titan Award (see graphic below). These nominations were made by fellow collaborators within the OHDSI community, and the award winners will be announced during the Global Symposium.

Where Are We Now?

- Registration is open for the 2024 OHDSI Global Symposium, which will be held October 22-24 at the Hyatt Regency Hotel in New Brunswick, N.J., USA. The event will include a day of tutorials, a day of plenaries and the collaborator showcase, and a day of workgroup activities. Check out the event homepage for more information.

OHDSI2024 Month Is Here! Registration Remains Open for the Global Symposium

Registration is open for the 2024 OHDSI Global Symposium, which will be held October 22-24 at the Hyatt Regency Hotel in New Brunswick, N.J., USA. The event will include a day of tutorials, a day of plenaries and the collaborator showcase, and a day of workgroup activities. Check out the event homepage for more information.

There are more than 130 posters/demos that will be shared during the Collaborator Showcase, including eight that will be featured as lightning talks during the main conference Wednesday. There will also be plenaries on 'Clinical Insights from LEGEND-T2DM' and 'Value Proposition for Participating in OHDSI Network Studies like LEGEND-T2DM', and there is a panel on the recent JACC-OHDSI Partnership.

More details on the five tutorials, including the Introduction to OHDSI session, and the workgroup activities cane be found using the links below. We can't wait to see everybody later this month in New Brunswick!

Register for the OHDSI Global Symposium

2024 Global Symposium Homepage

Publications

Khera R, Aminorroaya A, Dhingra LS, Thangaraj PM, Pedroso Camargos A, Bu F, Ding X, Nishimura A, Anand TV, Arshad F, Blacketer C, Chai Y, Chattopadhyay S, Cook M, Dorr DA, Duarte-Salles T, DuVall SL, Falconer T, French TE, Hanchrow EE, Kaur G, Lau WCY, Li J, Li K, Liu Y, Lu Y, Man KKC, Matheny ME, Mathioudakis N, McLeggon JA, McLemore MF, Minty E, Morales DR, Nagy P, Ostropolets A, Pistillo A, Phan TP, Pratt N, Reyes C, Richter L, Ross JS, Ruan E, Seager SL, Simon KR, Viernes B, Yang J, Yin C, You SC, Zhou JJ, Ryan PB, Schuemie MJ, Krumholz HM, Hripcsak G, Suchard MA. Comparative Effectiveness of Second-Line Antihyperglycemic Agents for Cardiovascular Outcomes: A Multinational, Federated Analysis of LEGEND-T2DM. J Am Coll Cardiol. 2024 Sep 3;84(10):904-917. doi: 10.1016/j.jacc.2024.05.069. PMID: 39197980.

Choi S, Kim JK, Lee J, Choi SJ, Lee YK. Limitations of NHIC claim code-based surveillance and the necessity of UDI implementation in Korea. Sci Rep. 2024 Sep 9;14(1):21014. doi: 10.1038/s41598-024-72063-1. PMID: 39251861; PMCID: PMC11383859.

Cha JJ, Yum Y, Kim YH, Kim EJ, Rah YC, Park E, Im GJ, Song JJ, Chae SW, Choi J, Joo HJ. Association of the protective effect of telmisartan on hearing loss among patients with hypertension. Front Neurol. 2024 Aug 27;15:1410389. doi: 10.3389/fneur.2024.1410389. PMID: 39258156; PMCID: PMC11384575.

Sato A, Rodriguez-Molina D, Yoshikawa-Ryan K, Yamashita S, Okami S, Liu F, Farjat A, Oberprieler NG, Kovesdy CP, Kanasaki K, Vizcaya D. Early Clinical Experience of Finerenone in People with Chronic Kidney Disease and Type 2 Diabetes in Japan-A Multi-Cohort Study from the FOUNTAIN (FinerenOne mUltidatabase NeTwork for Evidence generAtIoN) Platform. J Clin Med. 2024 Aug 28;13(17):5107. doi: 10.3390/jcm13175107. PMID: 39274317; PMCID: PMC11396164.

Tan EH, Burn E, Barclay NL, Delmestri A, Man WY, Golozar A, Serrano ÀR, Duarte-Salles T, Cornford P, Prieto Alhambra D, Newby D; OPTIMA Consortium. Incidence, Prevalence, and Survival of Prostate Cancer in the UK. JAMA Netw Open. 2024 Sep 3;7(9):e2434622. doi: 10.1001/jamanetworkopen.2024.34622. PMID: 39298169.

Park SI, Kim JK, Yu U, Park JI. Identification of factors associated with vancomycin-induced acute kidney injury: A retrospective analysis using the Common Data Model. Int J Clin Pharmacol Ther. 2024 Sep 24. doi: 10.5414/CP204646. Epub ahead of print. PMID: 39315482.

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Latest Newsletter is Available

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2024 India Symposium

Oct. 5 • Jio World Convention Centre • Mumbai

2024 India Symposium

Oct. 5 • Jio World Convention Centre • Mumbai

2024 APAC Symposium

Dec. 4-8 • Marina Bay Sands & National University of Singapore (NUS)

Registration is OPEN!

Preliminary Dates To Know

Oct. 6: Collaborator Showcase Submission Deadline
Oct. 7-24: Collaborator Showcase Submission Review
Oct. 31: Notification of Acceptance

Symposium Agenda

Dec. 4: Tutorial at NUS
Dec. 5-6: Main Conference at Marina Bay Sands
Dec. 7-8: Datathon at NUS

ohdsi.org/APAC2024

2024 APAC Symposium

Dec. 4-8 • Marina Bay Sands & National University of Singapore (NUS)

Day 1 (December 4) – Tutorial at NUS

9:00 – 12:00 • Introduction of OHDSI/OMOP, ETL Process
12:00 – 13:00 • Lunch
13:00 – 17:00 • OHDSI Analytical Tools

Day 2-3 (December 5-6) – Main conference at Marina Bay Sands

Dec. 5

13:30 – 13:40 • Opening
13:40 – 14:10 • OHDSI for Real-World Evidence (RWE)
14:10 – 15:00 • OHDSI APAC Regional Chapter Updates
15:00 – 15:30 • Break
15:30 – 15:45 • OHDSI APAC Updates
15:45 – 16:45 • Community-Wide ETL Project: Recap and Lessons Learned
16:45 – 17:05 • Large Language Model and OHDSI
17:05 – 17:25 • HL7 Singapore Chapter and OHDSI Singapore Chapter Collaboration
17:25 – 17:30 • Closing

Dec. 6

9:00 – 9:40 • Opening
9:40 – 9:50 • Introduction of 2024 APAC Study
9:50 – 12:00 • 2024 APAC Study: Journey from Data to Evidence
12:00 – 13:30 • Lunch and Poster Presentations
13:30 – 14:30 • 2024 APAC Study: Panel Discussion
14:30 – 15:15 • Lightning Talks
15:15 – 15:30 • Closing

ohdsi.org/APAC2024

2024 Global Symposium

Oct. 22-24 • Hyatt Regency Hotel • New Brunswick • N.J.

Registration is OPEN for the 2024 OHDSI Global Symposium. Collaborator Showcase notifications are taking place this week. Agendas and tutorial/workgroup schedules are posted.

Tuesday: Tutorials
Wednesday: Plenary/Showcase
Thursday: Workgroup Activities

ohdsi.org/OHDSI2024

OHDSI2024 Conference Agenda

Time (ET)	Topic (Presenters)
7:30 - 8:15 am	**Registration, Newcomer Orientation and Lite Breakfast**
8:30 - 9:15 am	**State of the OHDSI Community** Where Have We Gone and Where Are We Going? (George Hripcsak, Columbia University) Expand OHDSI Initiative for Eye Care and Ocular Imaging Challenge (Amber Reed, Natiional Eye Institute) Titan Awards (George Hripcsak, Columbia University & Marc Suchard, UCLA)
9:15 - 10:15 am	**Plenary: Clinical Insights from LEGEND-T2DM** Introduction to LEGEND-T2DM (Moderator: Aline Pedroso, Brazil) Comparative Effectiveness of Second-line Antihyperglycemic Agents (Arya Aminorroaya, Yale University) Effectiveness of First-line Antihyperglycemia Agents (Phyllis Thangaraj, Yale University) Comparative Safety of SGLT2 for Risk of Diabetic Ketoacidosis (Hannah Yang/Evan Minty, University of Calgary) Comparative Safety of GLP1-RA and the Risk of Thyroid Tumors (Daniel Morales, University of Dundee)
10:15 - 10:35 am	**Networking Break**
10:35 - 11:20 am	**Plenary: Value Proposition for Participating in OHDSI Network Studies like LEGEND-T2DM** Introduction to OHDSI Evidence Network / Marketplace (Moderator: Clair Blacketer, Johnson & Johnson) Reflections from US Department of Veterans Affairs (Scott Duvall, VA) Reflections from SIDIAP (Spain) (Talita Duarte-Salles, IDIAP) Reflections from Taipei Medical University (Thanh-Phuc Phan, Taipei Medical University) Reflections from a Global Commercial Data Provider (Sarah Seager, IQVIA)
11:20 am - 12:00 pm	**Plenary Q&A: Lessons Learned on LEGEND-T2DM Journey** (Moderator: Fan Bu, University of Michigan; Panelists: LEGEND-T2DM co-authors)
12:00 - 12:45 pm	**Lunch**

*agenda is subject to change

Time (ET)	Topic (Presenters)
12:45 - 1:30 pm	**Plenary Panel: JACC-OHDSI Partnership** (Moderators: Nicole Pratt, University of South Australia / Marc Suchard, UCLA; Panelists: Harlan Krumholz, Yale University Seng Chan You, Yonsei University Yuan Lu, Yale University
1:30 pm - 2:00 pm	**Plenary Activity: OHDSI Scavenger Hunt - Form Your Network Study Dream Team**
2:00 pm - 3:00 pm	**Collaborator Showcase: Lightning Talks** (Moderator: Linying Zhang, Washington University School of Medicine in St. Louis) The missing link: Cross-species EHR data linkage offers new opportunities for improving One Health (Kathleen Mullen, University of Colorado) Comparing probabilistic and rule-based phenotype algorithms for hypotension and angioedema to the experience observed in randomized clinical trials (Joel Swerdel, Janssen R&D) Exploring the interplay between metabolic syndrome and brain volume in depression: Basis for Phenotype-Based Classification (Sujin Gan, Ajou University) Software demonstration: CohortConstructor – an R package to support cohort building pipelines (Edward Burn, University of Oxford) A Oneshot and Lossless Federated Generalized Linear Mixed Effect Model (Jiayi Tong, University of Pennsylvania) NCO-Calibrated DID Analysis: Addressing Unmeasured Confounding in Difference-in-Differences Analyses Using Negative Control Outcomes Experiments (Dazheng Zhang, University of Pennsylvania) Health Trends Across Communities in Minnesota: a Statewide Dashboard Leveraging the OMOP CDM to Monitor the Prevalence of Health Conditions (Samuel Patnoe, HealthPartners Institute) How Often: Large Scale Incidence Rate Calculation of Health Outcomes for Drugs Nested by Indication (Hsin Yi Chen, Columbia University)
3:00 pm - 5:00 pm	**Collaborator Showcase: Posters and Software Demos**
5:00 pm - 6:00 pm	**Closing Talk** (Patrick Ryan, Johnson & Johnson/Columbia University)
6:00 pm - 8:00 pm	**Game Night and Network Reception**

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The Center for Advanced Healthcare Research Informatics (CAHRI) at Tufts Medicine welcomes:

Vipina Keloth, PhD

Associate Research Scientist in Biomedical Informatics and Data Science at Yale University School of Medicine

‘Exploring the realm of large language models for information retrieval in the biomedical domain’

October 31, 2024, 11am-12pm EST
Virtually via Zoom

Please contact Marty Alvarez at malvarez2@tuftsmedicalcenter.org for calendar invite or questions.

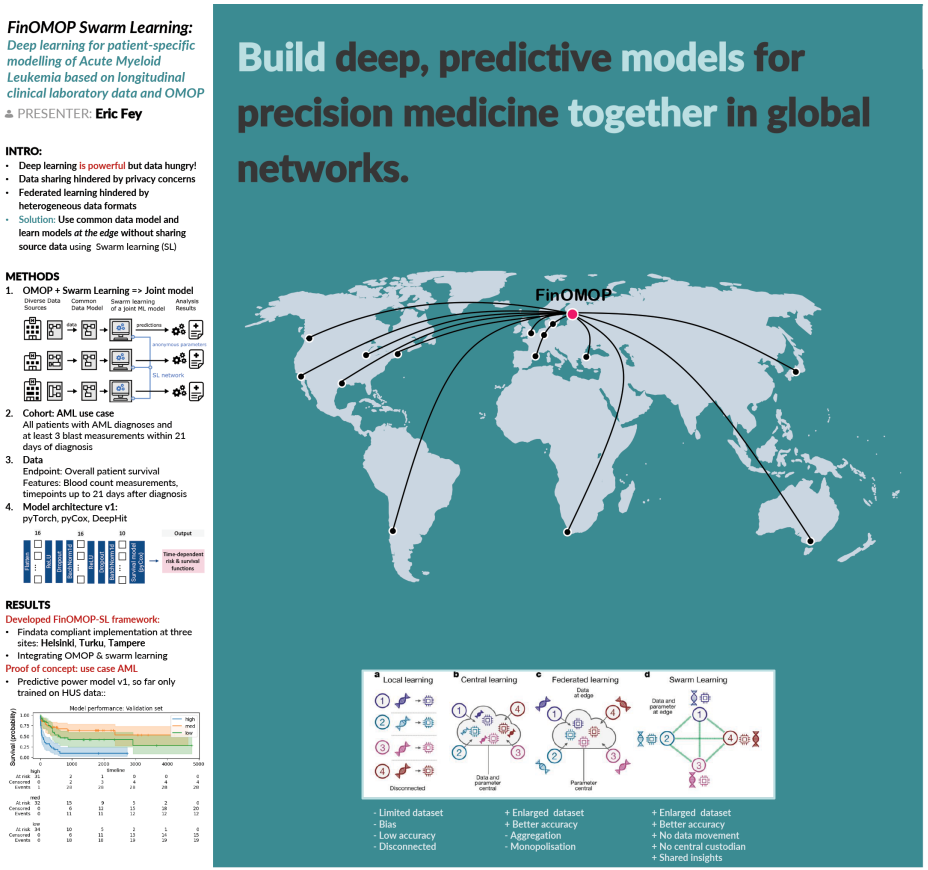
TuftsMedicine
Tufts Medical Center

#OHDSISocialShowcase

MONDAY

FinOMOP Swarm Learning: Deep learning for patient-specific modelling of Acute Myeloid Leukemia based on longitudinal clinical laboratory data and OMOP

(Eric Fey, Salma Rachidi, Alexey Ryzhenkov, Valtteri Nieminen, Tomi Mäkelä, Oscar Brück, Kimmo Porkka)



#OHDSISocialShowcase

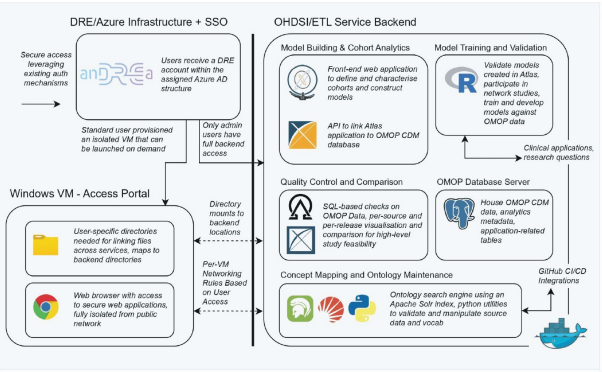
TUESDAY

Secure, scalable and sustainable architecture for ETL

(Marc Padros Goossens, Frank Leus, Ben Burke, Tom Feusels, Jared Houghtaling, Freija Descamps, Lauren Maxwell and Ankur Krishnan)

A potentially scalable, secure and cost-effective digital research environment-based service architecture to deploy and maintain ETL pipelines and OHDSI tooling for ECRAID-Base. To transform clinical data from **EU-wide, multicentre, prospective observational studies on infectious diseases and antimicrobial resistance** to OMOP-CDM

Background: European Clinical Research Alliance on Infectious Diseases (ECRAID) – Base is an EU-funded project which aims to efficiently generate rigorous evidence to improve the diagnosis, prevention, and treatment of infections, and to respond to (re)emerging infectious diseases (ID) and antimicrobial resistance (AMR) threats effectively and rapidly. At the heart of ECRAID-Base are 5 perpetual observational studies (POS). A POS is a multicentre, prospective, observational clinical study enrolling patients on a perpetual basis. Each POS creates a clinical research backbone, ready to concurrently or sequentially embed 'add-on' studies (observational, experimental, investigator-initiated, or commercial). Through EHDEN project we partnered with edenceHealth NV to transform clinical data from our POS on ventilator-associated pneumonia (VAP) in ICUs to OMOP-CDM. It was important for us to develop architecture, based on the concept of 'services-as-code' that: 1) ensures an isolated and secure workspace while preserving the privacy of patient data; 2) enables a collaborative and access-controlled virtual environment, with a degree of freedom and flexibility, for different users to work on their respective tasks concurrently; 3) provides a sustainable and cost-effective technical solution which can be quickly scaled up to ETL the other POS studies in ECRAID-Base to OMOP-CDM; 4) supports Continuous Integration/Continuous Deployment (CI/CD)



Methods:

- We **established a Digital Research Environment** (provided by Andrea Cloud – https://www.andrea-cloud.eu/azure-dre/) at University Medical Center Utrecht (UMCU) by setting up:
  - Frontend [Windows virtual machine (VM): Windows Server 2019, 2 cores, 8GB RAM]
  - Backend [Linux VM: Centos 7.5, 4 cores, 16GB RAM]
- The **ETL is orchestrated by a Python script** that executes the different SQL transformations and is packaged in a single Docker image that can be run with Docker or within a virtual environment
- The **code is version controlled using git and GitHub**. A new release of the ETL code is automatically built when a new tag is pushed to the repository
- OHDSI tooling including ARES, WebAPI, ATLAS and Athena were deployed using Docker containers
- Achilles and Data Quality Dashboard were executed together with the AresIndexer package as a single Docker process and were used for validation and iterative improvements of the data transformations
- **Initialisation scripts were written to deploy all the tools with appropriate orchestration and timing when the Linux VM is launched**
- **Users access and interact with the services via web browser at the frontend after establishing an ssh connection** with a port tunnel specific to the respective service(s)
- **We placed both the Linux and Windows VMs on a daily operating schedule to reduce costs**

Limitations: Some steps related to the maintenance and ingestion of concept mapping document were done manually and will benefit from better version control and a level of automation. Additionally, we are currently ETL-ing the other POS studies in ECRAID-Base to OMOP-CDM and will soon perform some planned studies and analyses with data partners outside and within our consortium to test the scalability, flexibility and ease-of-use of this collaborative, digital research environment-based service architecture.

Discussion:

All infrastructure requirements for ETL validation (ACHILLES, DQD, ARES, ATLAS) were successfully set up.

The data source was published on the EHDEN Database Catalogue ('ECRAID-Base POS VAP').

By starting up the VM's only when needed we were able to reduce our yearly running costs for the two VMs by 95% (i.e. instead of €2450 we ended up spending only €135). Although, this is not taking into account the storage accounts as they are continuous costs. Total costs for this setup over the last year were €455.

With environments that require more uptime, costs could be further controlled by scaling the VM to a specific task.

Additionally, **this setup can enable us to**:

- Quickly **increase the number of concurrent users** by simply adding Windows VMs to the network
- Easily **configure the computing power of the backend** to scale up or down, as per task requirements
- **Automate the orchestration of the configuration, deployment and management of the code-based services**
- **Provide and manage the services using predefined templates and automation scripts** to other research teams at UMCU and beyond
- Smoothly **onboard new team members**

Importantly, the ETL will enable us to effectively and efficiently perform studies initiated within the Ecraid consortium and in collaboration with partners in the global OHDSI community and beyond.

Marc Padros Goossens[a], Frank Leus[a], Ben Burke[b], Tom Feusels[b], Jared Houghtaling[a], Freija Descamps[b], Lauren Maxwell[a] and Ankur Krishnan[a]

a European Clinical Research Alliance on Infectious Diseases (Ecraid)
b edenceHealth NV

#OHDSISocialShowcase

WEDNESDAY

I.O.D.A. (InAH OMOP Data Analysis)

(Ahmed Kanfoud, M. Borshchivska, T. Helleputte)

I.O.D.A. (InAH OMOP Data Analysis)

PRESENTER: **Ahmed Kanfoud**
AUTHORS: A. Kanfoud, M. Borshchivska, T. Helleputte

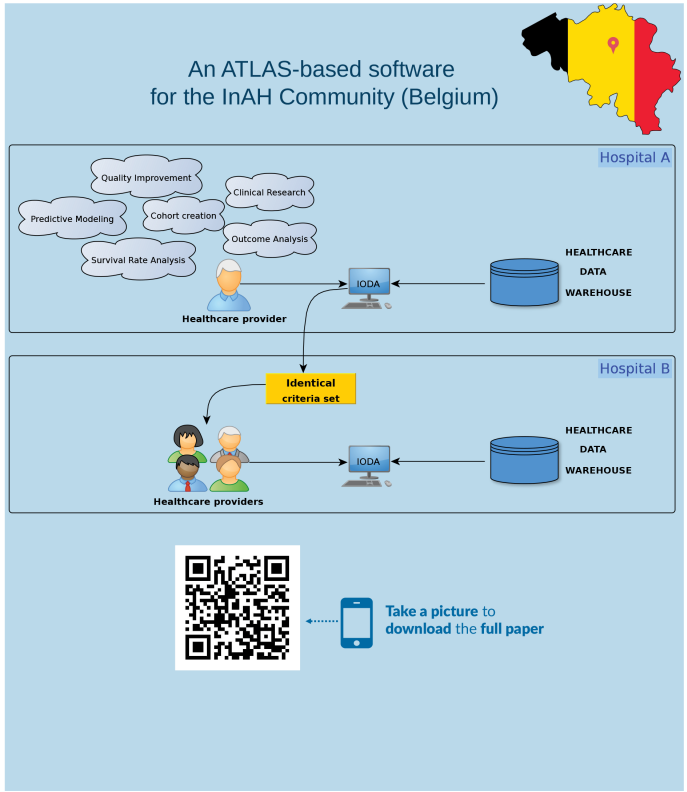
INTRO

I.O.D.A (INAH OMOP Data Analysis) is a powerful suite of tools designed to simplify the creation and execution of analyses on standardized patient-level observational data formatted in the OMOP Common Data Model (CDM).
It is based on **ATLAS**, an **OHDSI** community tool. The project has been adapted to meet the specific needs and requirements of **Belgian** healthcare institutions that are partners of the **Institute of Analytics for Health (InAH)** in Belgium. Inspired by the Broadsea open-source project, IODA includes additional customisations to facilitate integration and use in Belgian hospital infrastructures.

METHODS

IODA's **primary objective** is to enable doctors to perform advanced data analysis without requiring expertise in data science, achieved by simplifying the interface and analytical processes, thus **reducing the learning curve** and operational complexity for healthcare professionals.
It utilizes real-world medical data to support clinical research and try to improves treatment in hospitals. Regular **updates with the latest patient data** and maintenance scripts minimise the workload on IT staff by clearing cached data and redeploying database, a**voiding duplication of data**. It includes full documentation and support, making it easy to integrate and use in Belgian hospital infrastructures.

IODA supports the OMOP CDM and promotes standardised and comparable data, **encouraging collaboration** within the partners of InAH. It is also compatible with OHDSI community tools.



RESULTS

IODA represents a significant advance in the analysis of health data among INAH's Belgian partners, by simplifying installation and use, enhancing accessibility for doctors, and promoting collaboration and reproducibility across institutions. By adhering to the OMOP standard, **IODA ensures consistent use across four Belgian institutions**, reducing the technical burden on hospital IT staff and enabling quick deployment.

It provides doctors with easy access to accurate data analysis tools, allowing them to independently create cohorts, compare results, and interpret data effectively, thus enabling a broader range of **healthcare professionals to engage in data-driven decision-making and research**. The tool fosters collaboration by allowing multiple institutions to establish cohorts based on specific requirements, facilitating shared learning and continuous improvement in healthcare practices.

Future versions aim to integrate a **broader range of open-source and proprietary tools**, such as the Data Quality Dashboard, ARES, Cohort Explorer, and various Rshiny applications, to support evolving needs and drive advancements in both research and healthcare. The ongoing development of **IODA will focus on enhancing user experience, expanding analytical functionalities**, and ensuring compatibility with new and emerging data analysis tools, thereby continuously improving the effectiveness of research and its impact on healthcare.

#OHDSISocialShowcase

THURSDAY

Lessons Learned from Mapping UK Pain Datasets to the OMOP CDM

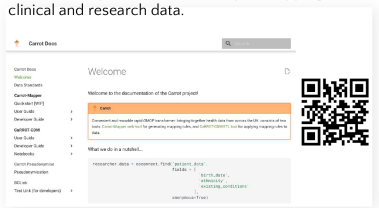
(Gordon Milligan, Erum Masood, Phil Appleby, Philip Quinlan, Sam Cox, Armando Mendez Villalon, Tom Giles, Calum MacDonald, Christian Cole)

Carrot Tools can make standardising data to OMOP more consistent to improve data reusability, interoperability and reduce time to map data. There is a need for a pain-specific standard vocabulary.

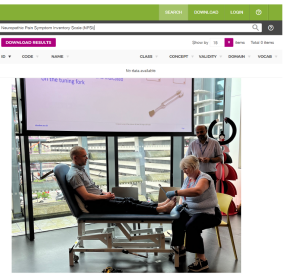
Lessons Learned from Mapping UK Pain Datasets to the OMOP CDM

Background: Chronic Pain affects up to 28M people in the UK and is poorly represented in electronic healthcare data. The aim of the Alleviate Pain Data Hub is to improve visibility and accessibility of pain data and ultimately facilitate access to research data across the UK. We have developed open-source tools which have supported the mapping of 5M records from across the UK and have found opportunities for improvement with pain data.

Result 1: We use Carrot tools with our mapping expertise to transform datasets to OMOP-CDM. The tools have improved the efficiency of mapping of clinical and research data.

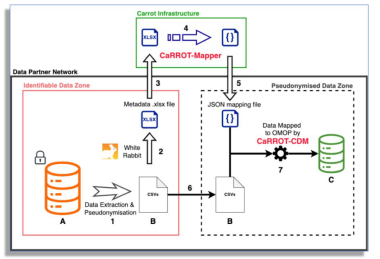


Result 2: We identified a lack of standard vocabulary representations for pain specific data (terms, scales such as Neuropathic Pain Symptom Inventory (NPSI) and tests such as Quantitative Sensory Testing (QST))

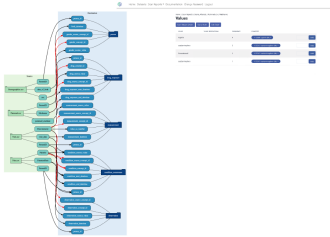


Methods

1 Carrot Tools mapping process.



2 Mapping data UI and rules



Note: The tools are open-source, under continued development and are having more features added as the project progresses to address the needs of those performing the data mapping.

University of Nottingham UK | CHINA | MALAYSIA

University of Dundee

Gordon Milligan, Erum Masood, Phil Appleby, Philip Quinlan, Sam Cox, Armando Mendez Villalon, Tom Giles, Calum MacDonald, Christian Cole

Alleviate The Advanced Pain Discovery Platform (APDP) Data Hub

#OHDSISocialShowcase

FRIDAY

Universal Patient Trajectory Extraction from OMOP CDM

(Markus Haug, Raivo Kolde)

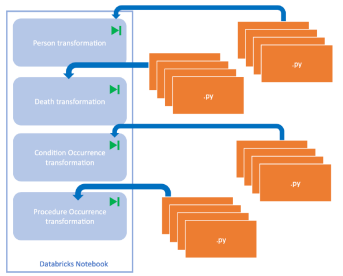
Key lessons from mapping population-wide electronic health records, in the NHS England Secure Data Environment, onto the OMOP Common Data Model v5.4, using Databricks and Apache Spark

Background: The Extract-Transform-Load (ETL) process for the Observational Medical Outcomes Partnership (OMOP) Common Data Model (CDM) v5.4, provides a conversion for data resources within the National Health System (NHS) England's Secure Data Environment (NHSE SDE), accessible via the British Heart Foundation (BHF) Data Science Centre's CVD-COVID-UK/COVID-IMPACT Consortium. The NHSE SDE is a secure data and research analysis platform with population-wide person-level electronic health records from over 57 million live people in England. The platform offers various technologies, including Databricks, Spark, R Studio, R Studio Server and an internal GitLab. The ETL was implemented using Apache Spark, an open-source and distributed computing system that provides a fast and general-purpose cluster computing framework for big data processing and analytics.

Objectives and Challenges

The objective of the ETL is to map person-level data from primary and secondary care records, death registrations and cardiovascular disease audit datasets into OMOP CDM v5.4. The main challenges of the project included:

- restricted access to the NHSE SDE for approved researchers only;
- utilisation of Apache Spark as the primary Python library for ETL development.



Architecture Overview

The NHSE SDE is provisioned with high standards of system security and permissions for Delta and Hive tables. Embracing a modular design, specific transformations were implemented in distinct Python modules, which were subsequently imported into a Databricks notebook, orchestrating the entire ETL pipeline.

Workflow to reduce Databricks costs

Databricks operates on a subscription-based model where organisations pay for the resources consumed on the platform. To reduce costs and leverage user-friendly development environments, we opted to use two distinct environments: a Python virtual environment and Databricks. Primary development took place in the virtual environment.

Best practices for Apache Spark

- Optimise the Directed Acyclic Graph (DAG) of Spark transformations to improve ETL performance and overall cluster efficiency.
- Use Spark-friendly approaches in implementation, such as zipWithIndex() to set the primary key of the OMOP tables.
- Avoid repeated scanning of the entire DataFrame to optimise performance.
- Instead of relying on dictionaries for mapping, the recommended approach when working with Apache Spark is to perform a join transformation on two DataFrames. This helps efficient data mapping without the performance drawbacks associated with using dictionaries.
- Choose the correct mode of joining depending on the dimensions of Spark DataFrame and potential use of broadcasting to handle the data skew.

Conclusion: This project has addressed some of the challenges of conducting an ETL to map population-wide electronic health records on over 57 million people within a Secure Data Environment onto the OMOP CDM v5.4, using Databricks. We recommend making essential workflow adjustments, including the use of multiple development environments and the use of best practices for Apache Spark, and highlight the 'team-science' approach that was integral to this project's success.

OHDSI

Silvia Jimenez[a], Mehrdad A. Mizani[b], Shirah Cashriel[a], Emma Gesquiere[a], Jadene Lewis[b], Angela Wood[b], Rouven Priedon[b], Anne Li[a]

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The Foundation

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Your Role

Are you passionate about using the power of AI to reduce inequality in low- and middle-income countries? Do you have experience working in developing countries on AI and digital health initiatives? If so, we want you to join our team at the largest nonprofit fighting poverty, disease, and inequity around the world.

The Senior Program Officer, Clinical AI Innovation is a key member of the AI team. This role will support several teams at the Foundation who are considering and investing in multiple applications of AI in Health, which is a high priority area for the Foundation. As such, this individual will be responsible for developing our overarching strategy to healthcare applications in AI; conceptualising, investing and managing investments in health applications of AI; providing advice and technical assistance to other program teams considering investment in this area; advocate for the safe, responsible use of AI as force multiplier to reducing inequality in health in LMICs.

What You'll Do

Develop the foundations' approach to AI and health

- Ensure we have an approach to evaluation of clinical AI applications/ use cases
- This would include existing and planned investment in multiple applications of AI in health across diagnostics, end user engagement, decision support and decision sciences for health
- Develop a clear understanding of specific ecosystem constraints and opportunities related to AI in health
- Identify a key set of partners and stakeholders in order to be successful in this focus area across the technical, advocacy, government, academic and funding spheres

Where Are We Going?

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

Please feel free to promote your #OHDSI2024 workshop or workgroup activity!

Three Stages of The Journey

Where Have We Been?

Where Are We Now?

Where Are We Going?

Oct 1: DARWINEU® Update

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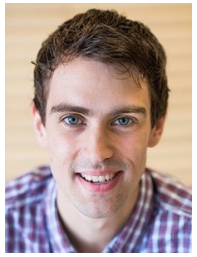

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DARWINEU® Network Operations Pillar Lead

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