



OHDSI Evidence Network

Patrick Ryan PhD

Johnson & Johnson

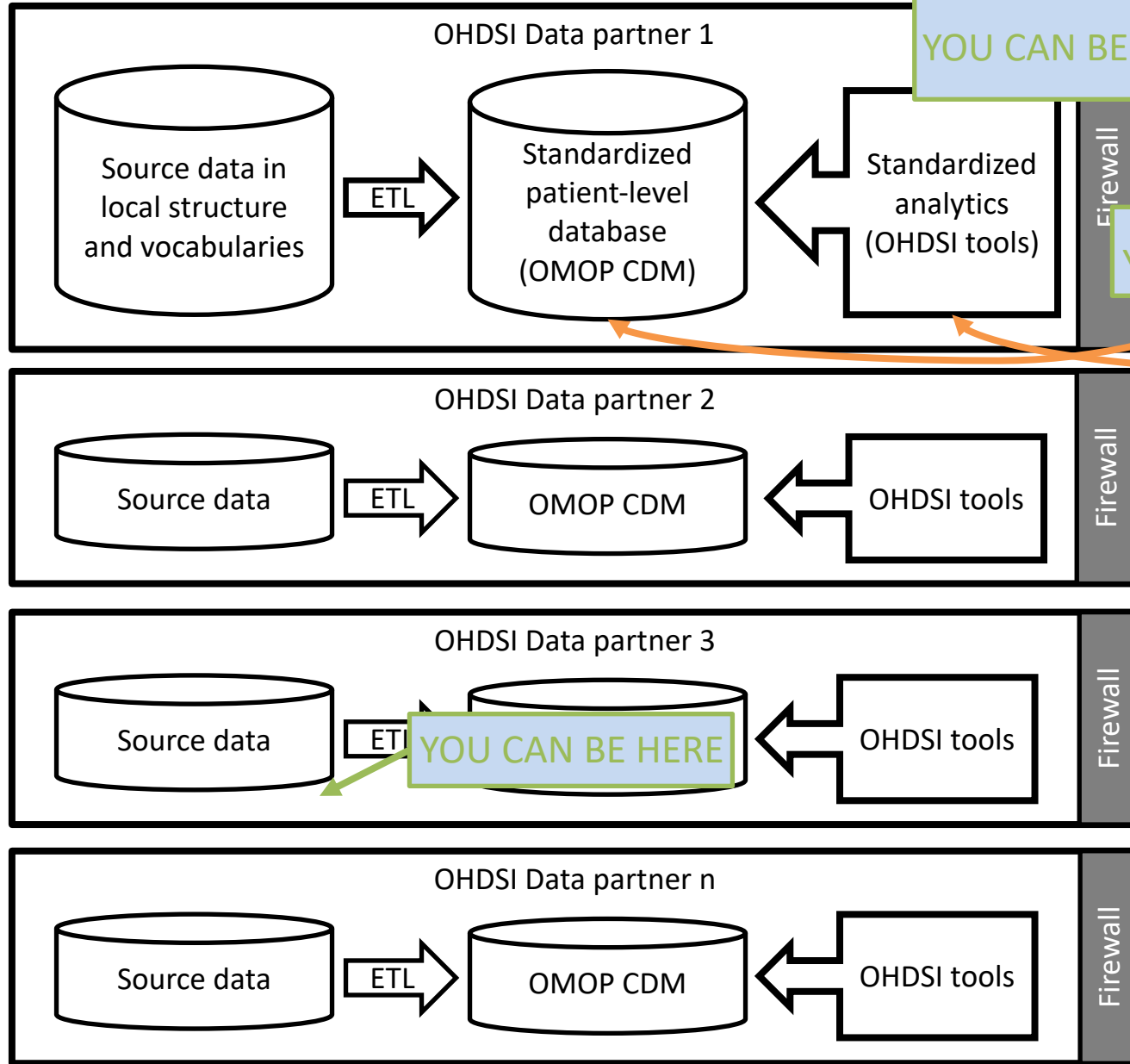
Columbia University Irving Medical Center



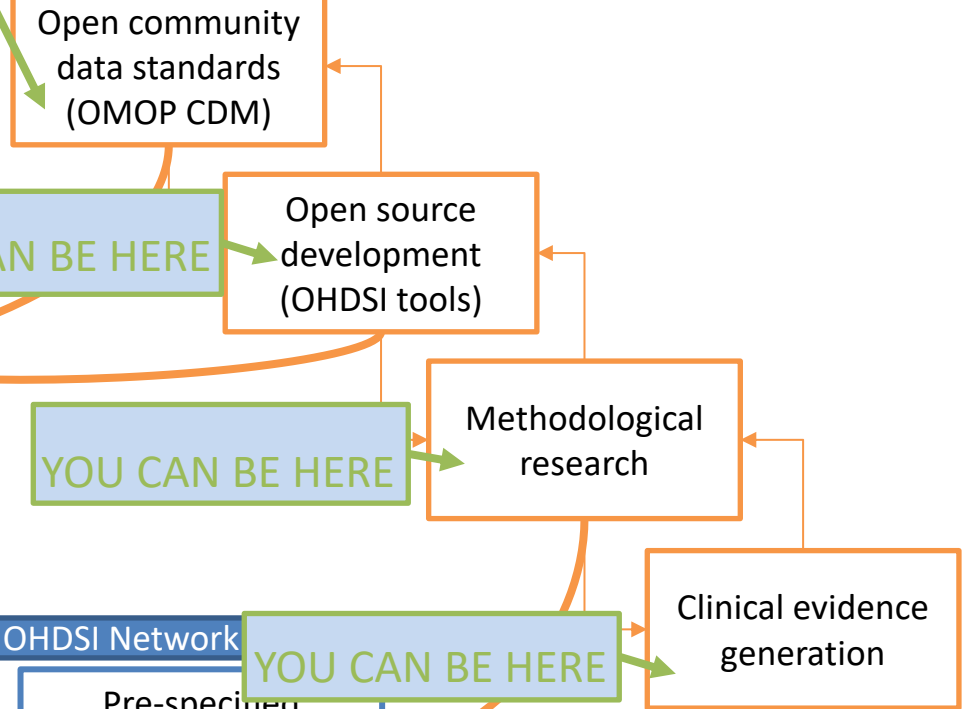
OHDSI's mission

To improve health by empowering a community to collaboratively generate the evidence that promotes better health decisions and better care

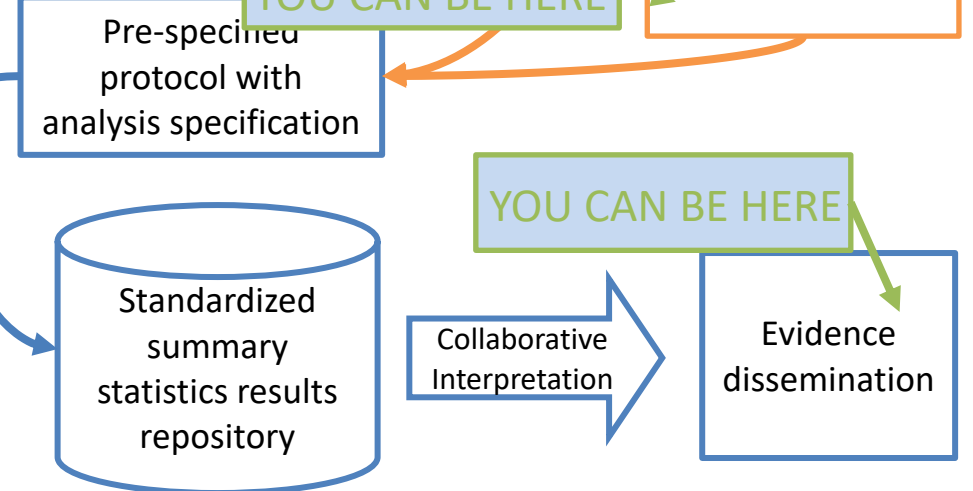
OHDSI data network



OHDSI collaborations



OHDSI Network



YOU CAN BE HERE

YOU CAN BE HERE

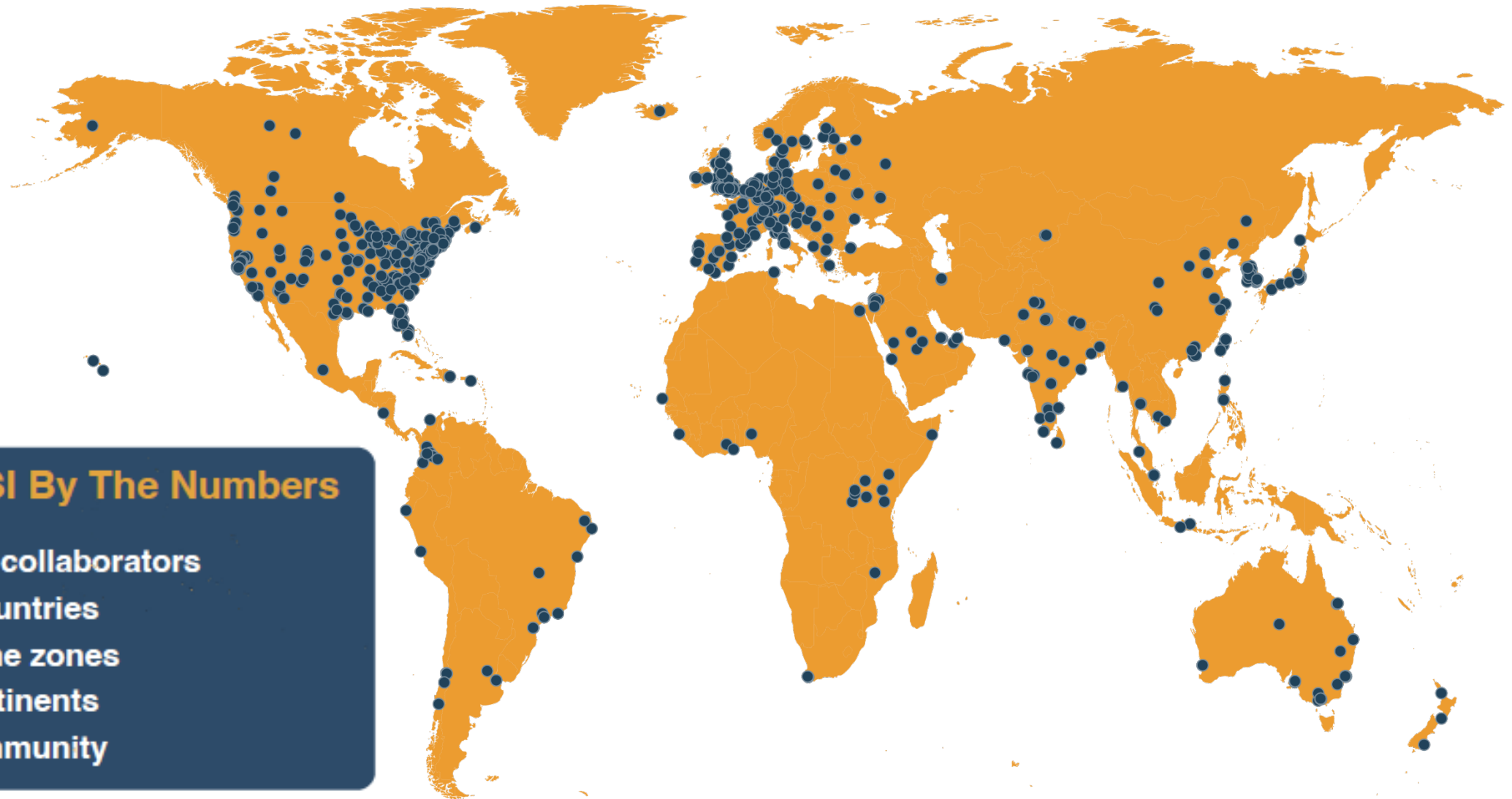
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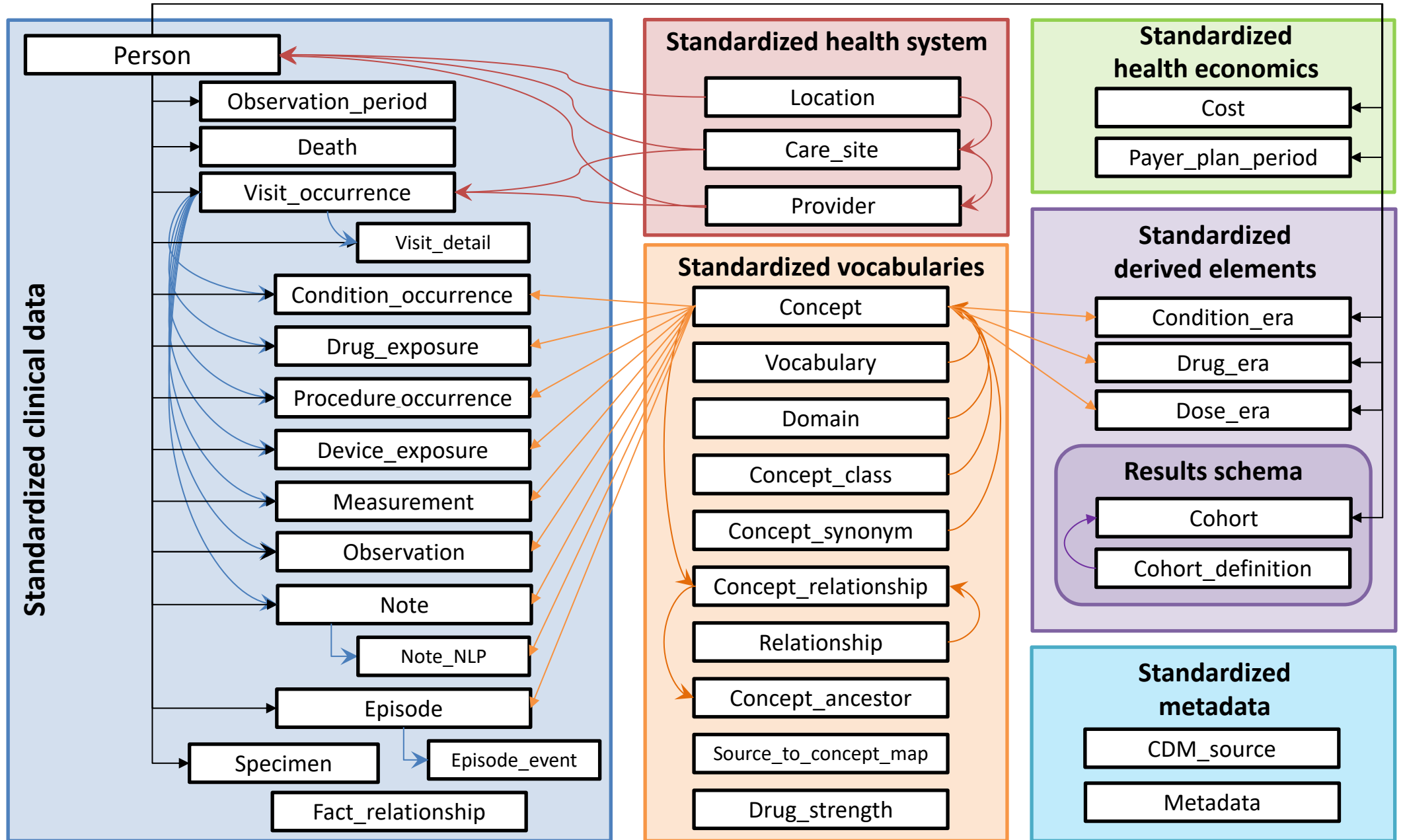
Map of collaborators



OHDSI By The Numbers

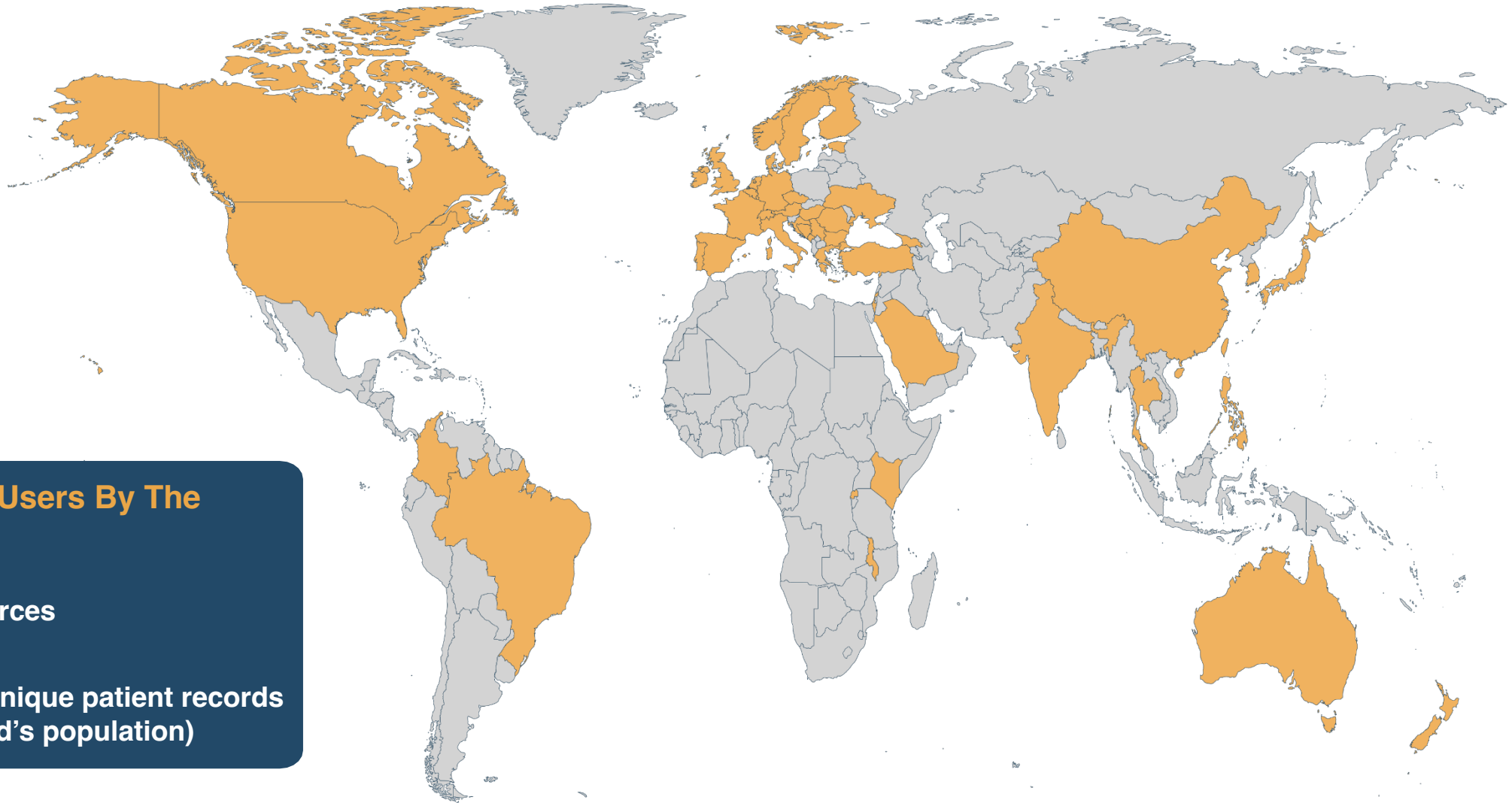
- 3,758 collaborators
- 83 countries
- 21 time zones
- 6 continents
- 1 community

OMOP Common Data Model v5.4





OMOP Common Data Model adoption



OMOP CDM Users By The Numbers

- 534 data sources
- 49 countries
- 956 million unique patient records (12% of world's population)



Largest published OHDSI Network study to date

eClinicalMedicine



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ARTICLES | [VOLUME 58, 101932, APRIL 2023](#)

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Contextualising adverse events of special interest to characterise the baseline incidence rates in 24 million patients with COVID-19 across 26 databases: a multinational retrospective cohort study


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Methods

Data sources

Rates were obtained from 26 databases, which included 8 administrative claims databases, 12 EHRs, 1 EHR with a registry, and 5 general practitioner (GP) databases. These databases represented 11 countries: Belgium, Estonia, France, Germany, Japan, the Netherlands, Serbia, Spain, Turkey, the United Kingdom (UK), and the United States of America (US). All of these databases represent subsets of the total population from which they originate.

[Open Access](#) • Published: April 04, 2023 • DOI: <https://doi.org/10.1016/j.eclinm.2023.101932>

 Check for updates





OHDSI Evidence Network

OHDSI is proud to have a global community dedicated to generating real-world evidence and which recognizes the opportunity to collaborate together as part of a distributed network based on standardized data and standardized analytics.

The OHDSI Evidence Network consists of organizations equipped with access to one or more databases standardized to the OMOP CDM who express a keen interest in participating in OHDSI network studies. Collaboratively, OHDSI Evidence Network partners share aggregate summary statistics about their databases, which are used to support Database Diagnostics, helping identify databases within the network that are fit-for-use for particular research questions. Additionally, partners have the opportunity to opt in and contribute to network studies proposed by the OHDSI community.

The recent SOS challenge serves as a compelling demonstration of the OHDSI Evidence Network's current capabilities and its promising future potential. We wholeheartedly encourage all organizations that are adopting the OMOP CDM and aspire to apply standardized analytics for the reliable generation of real-world evidence to become part of the OHDSI Evidence Network.

A message from Common Data Model workgroup lead Clair Blacketer ...

During the first community call of 2023, Patrick Ryan unveiled the strategic priorities for the OHDSI Community for the year. Among these, a key focus is on enhancing the transparency and maturity of the OHDSI network.

To address this objective, we began by considering how network studies are currently conducted, recognizing the challenges and complexities faced by collaborating organizations when contributing to

the body of evidence. This investigation led to the creation of Database Diagnostics, a tool designed to answer a critical question: when tackling a specific research inquiry, which data sources within the OHDSI Evidence Network are the most relevant and suitable for generating robust evidence?

This innovative approach leverages aggregated summary statistics from each data source, obtained through the open-source tool dbProfile. It evaluates data fitness-for-use across various dimensions, including patient demographics, domain coverage, longitudinal data availability, and the capture of target, comparator, and outcome variables. The overarching vision was to establish these database profiles as the foundation to enable the OHDSI Evidence Network.



Pillar #2: Standardized data network

- Opportunity: Increase transparency and maturity of OHDSI data network
- Proposed solutions:
 - Create OHDSI data network catalog to encourage network studies across interested partners and promote data quality practices
 - Generate OHDSI network concept prevalence data and make accessible for ATLAS users to enable more generalizable phenotype development
 - Promote database diagnostics by having data partners share limited subset of ACHILLES to allow for users to identify databases that satisfy study criteria

Organizations and Data Sources in the OHDSI Evidence Network

- Ajou University • Ajou University
- Casa di Cura Igea • Casa di Cura Igea
- Clinical Center of Montenegro • Clinical Center of Montenegro
- Columbia University Medical Center • Columbia University Medical Center
- Hong Kong University • UK THIN
- IQVIA • Australia EMR
- IQVIA • Disease Analyzer France
- IQVIA • Disease Analyzer Germany
- IQVIA • Japan Claims
- IQVIA • Japan HIS
- IQVIA • Longitudinal Patient Database (LPD) in Belgium
- IQVIA • Longitudinal Patient Database (LPD) in France
- IQVIA • Longitudinal Patient Database (LPD) in Italy
- IQVIA • Longitudinal Patient Database (LPD) in Spain
- IQVIA • OMOP US Hospital Data Master
- IQVIA • Pharmetrics Plus
- IQVIA • UK Medical Research Data EMIS
- IQVIA • UK Medical Research Data THIN
- IQVIA • US Open Claims
- Janssen Research & Development • JMDC
- Janssen Research & Development • Merative®
- Marketscan® Commercial Claims and Encounters
- Janssen Research & Development • Merative®
- Marketscan® Medicare Supplemental
- Janssen Research & Development • Merative®
- Marketscan® Multi-State Medicaid
- Janssen Research & Development • Optum's Clinformatics® Data Mart - Date of Death
- Janssen Research & Development • Optum's Clinformatics® Data Mart - Socio-Economic Status
- Janssen Research & Development • Optum's Longitudinal EHR Repository
- Janssen Research & Development • Premier Healthcare Database
- Johns Hopkins University • Johns Hopkins University
- National University of Singapore • National University of Singapore
- Northeastern • IQVIA Pharmetrics Plus
- Organization Name • Data Source Name
- Taipei Medical University • Taipei Medical University
- Tufts University Medical Center • Tufts University Medical Center
- University of Nebraska Medical Center • University of Nebraska Medical Center
- University of Southern California • Keck Medical Center
- US Department of Veteran's Affairs • US Department of Veteran's Affairs
- Yinzhou Bigdata Platform • Yinzhou Bigdata Platform

On March 28, 2023, the OHDSI Global Community initiated the Save Our Sisyphus (SOS) Challenge, a groundbreaking opportunity for collaborative research involving simultaneous participation in four different network studies. What made it truly remarkable was that any organization interested in joining the OHDSI Evidence Network could contribute to these studies by sharing their database profiles for the data sources they had access to. These profiles were centrally aggregated at the OHDSI Central Coordinating Center, enabling us to empirically determine which of the four study questions each data source was best suited to address. This inaugural OHDSI Evidence Network endeavor encompassed 36 diverse data sources from 16 different organizations. Not only did this foster rapid evidence generation and collaboration during the SOS Challenge, but it also positioned us for future collaborations on additional network studies as part of the OHDSI Evidence Network.

If you are interested in becoming a part of the OHDSI Evidence Network and contributing to advancing evidence-based healthcare, please use the provided QR code to complete a brief form about your organization and your data source. A member of the OHDSI Network Data Quality Working Group will reach out to you to explore this exciting opportunity further!

Join The OHDSI Evidence Network



Our first published use of OHDSI Evidence Network from 2023 SOS Challenge

Ophthalmology
Retina





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RESEARCH ARTICLE | ARTICLES IN PRESS

Similar Risk of Kidney Failure among Patients with Blinding Diseases Who Receive Ranibizumab, Aflibercept, and Bevacizumab

An Observational Health Data Sciences and Informatics Network Study

Cindy X. Cai, MD, MS   • Akihiko Nishimura, PhD • Mary G. Bowring, MPH • Erik Westlund, PhD • Diep Tran, MSc • Jia H. Ng, MD, MSCE • Paul Nagy, PhD • Michael Cook, BS • Jody-Ann McLeggon, MPH • Scott L. DuVall, PhD • Michael E. Matheny, MD, MPH • Asieh Golozar, PhD • Anna Ostropelets, MD, PhD • Evan Minty, MD, MSc • Priya Desai, MS • Fan Bu, PhD • Brian Toy, MD • Michelle Hribar, PhD • Thomas Falconer, MS • Linying Zhang, PhD • Laurence Lawrence-Archer, MSc • Michael V. Boland, MD, PhD • Kerry Goetz, MS • Nathan Hall, MS • Azza Shoaibi, PhD • Jenna Reys, PhD • Anthony G. Sena, BA • Clair Blacketer, MPH • Joel Swerdel, PhD, MPH • Kenar D. Jhaveri, MD • Edward Lee, BS • Zachary Gilbert, BS • Scott L. Zeger, PhD • Deidra C. Crews, MD, ScM • Marc A. Suchard, MD, PhD • George Hripcsak, MD, MS • Patrick B. Ryan, PhD • [Show less](#)

[Open Access](#) • Published: March 20, 2024 • DOI: <https://doi.org/10.1016/j.oret.2024.03.014>



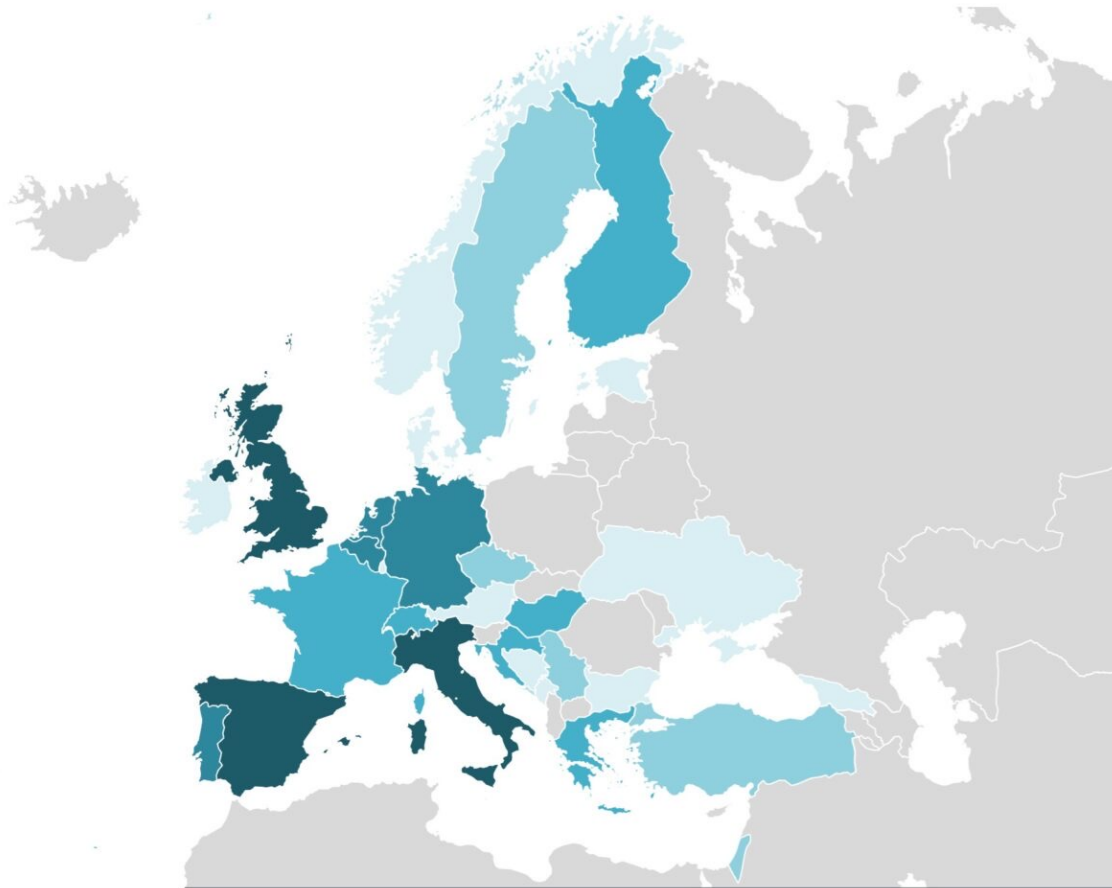
Methods

Study Design

This was a retrospective cohort study across 12 databases (6 administrative claims and 6 electronic health records) standardized to OHDSI's OMOP CDM.²² In this CDM, local clinical concepts (e.g., International Classification of Diseases diagnosis codes or Current Procedural Terminology codes) are mapped to OMOP concepts through an extract-transform-load process. The OMOP CDM normalizes the structure and content of source data, which allows disparate health care databases to be queried in a standardized manner. Database details are included in the appendix ([Table S1](#), available at www.opthalmologyretina.org). All data partners had local institutional review board approval or exemption for their participation. The study adhered to the tenets of the Declaration of Helsinki and complied with Health Insurance Portability and Accountability Act.



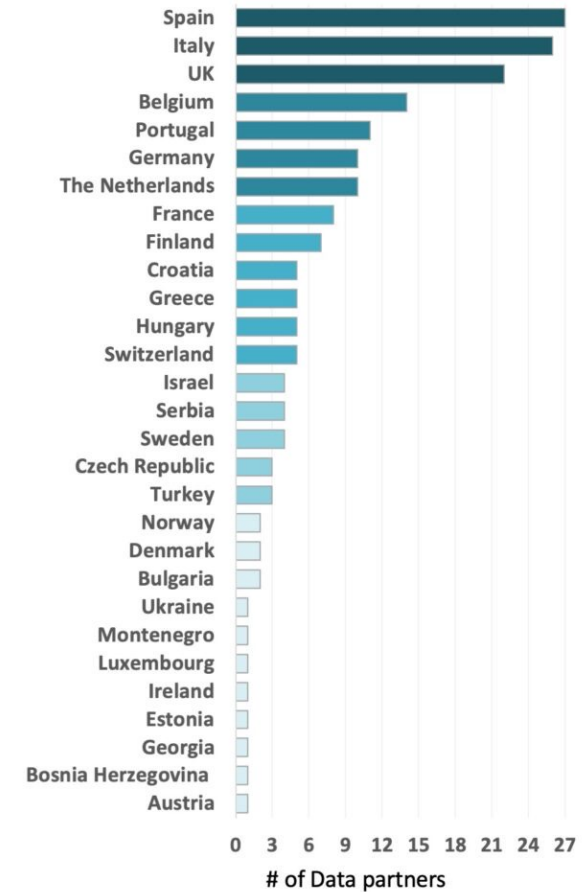
EHDEN



Geographic spread of data partners. The shade of blue indicates the # of data partners in that country (darker = more)

Applications (n=563)

 Awarded applications (n=187)



193 Data sources from 30 different countries = >33% of OMOP CDM adopters and >60% of countries

EHDEN portal

EHDEN PORTAL

Free text search EHDEN

Network Dashboard

Country Filter

COUNTRY

Type or Select [Country]

Database Type Filter

TYPE

Type or Select [Type]

Data Source Filter

DATA SOURCE

Type or Select [Data Source]

Overview Demographics Data Domains Data Provenance Visit Concept Browser About

Countries



30

Data Sources

193

Patients

363M

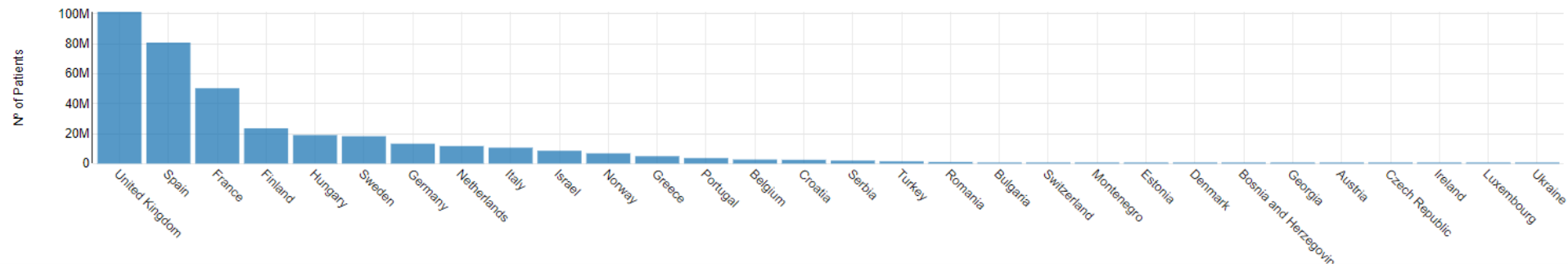
Datasource Types

Hospital Registry Hospital + Lab Results Hospital 1/23



Total number of patients per country (only the records that were mapped into OMOP CDM)

Patients by Country





From OHDSI Europe Symposium 2024



Trends over time in medicines with suggested shortages in Europe

Lead by:

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University of Oxford



AIMS OF THE STUDY

- To study incidence and prevalence of medicines with suggested shortages and its alternatives
- To describe incident and prevalent users of medicines with suggested shortages

STEPS OF THE STUDY

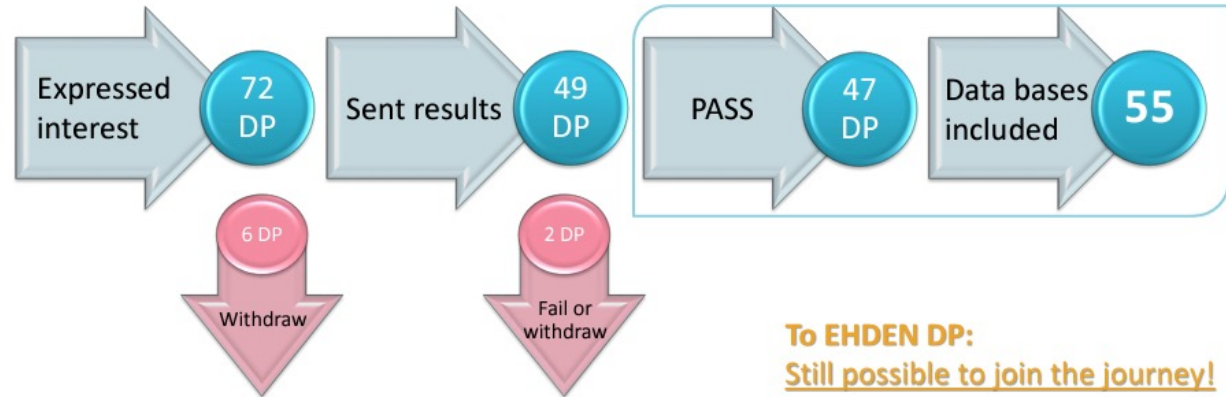
- 1) Feasibility check
- 2) Incidence-Prevalence
- 3) Drug utilisation study (e.g. Characterisation)

Medicines under suggested shortage: n= 25
Alternatives: n= 32



DATA PARTNERS INVOLVED

1) Feasibility Step



**To EHDEN DP:
Still possible to join the journey!**



Research

JAMA Ophthalmology | **Original Investigation**

Risk of Nonarteritic Anterior Ischemic Optic Neuropathy in Patients Prescribed Semaglutide

CONCLUSIONS AND RELEVANCE This study's findings suggest an association between semaglutide and NAION. As this was an observational study, future study is required to assess causality.

JAMA Ophthalmol. doi:[10.1001/jamaophthalmol.2024.2296](https://doi.org/10.1001/jamaophthalmol.2024.2296)

Published online July 3, 2024.

the non-GLP-1 RA cohort. The cumulative incidence of NAION for the semaglutide vs non-GLP-1 RA cohorts over 36 months was 6.7% (95% CI, 3.6%-9.7%) and 0.8% (95% CI, 0%-1.8%), respectively. A Cox proportional hazards regression model showed a higher risk of NAION for patients prescribed semaglutide (HR, 7.64; 95% CI, 2.21-26.36; $P < .001$).



HEALTH AND SCIENCE

Novo Nordisk shares shrug off concerns over study linking weight loss drugs to rare eye condition

PUBLISHED THU, JUL 4 2024 6:23 AM EDT | UPDATED FRI, JUL 5 2024 2:40 PM EDT



April Roach
@APRIL__ROACH

SHARE

KEY POINTS

- Blockbuster weight loss drugs such as Wegovy and Ozempic may be associated with a rare eye condition, according to a new study released Wednesday. A Novo Nordisk spokesperson said there were “key methodological limitations” to the study.
- One analyst described the results as “hardly a game-changer,” adding that a worst-case scenario would likely result in a further update to the drug’s label.
- Novo Nordisk shares were little changed on Thursday, dipping in early morning trade before rising just 0.1% as of 11:00 a.m. London time.

FORBES > BUSINESS

BREAKING

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What would it take for OHDSI to answer the call to action?

- ✓ Standardized questions to frame the problem
 - ✓ Characterization- incidence: Amongst patients who are new users of **semaglutide** for **Type 2 Diabetes Mellitus**, how many patients experienced **NAION** within 1 year of initiating treatment?
 - ✓ Estimation – comparative effectiveness: Does exposure to **semaglutide** have a different risk of experiencing **NAION** while on treatment for **Type 2 Diabetes Mellitus**, relative to **non-GLP1 antihyperglycemic agents (SGLT2, DPP4, SU)**?
 - ✓ Prediction – treatment safety: For a given patient who is a new user of **semaglutide** for **Type 2 Diabetes Mellitus**, what is the probability that they will have **NAION** in 1 year?
- ✓ Standardized analytic tools to conduct proper causal assessment
 - ✓ Strategus framework employing HADES packages: Characterization, CohortIncidence, CohortMethod, SelfControlledCaseSeries, PatientLevelPrediction, EvidenceSynthesis
- ✓ Standardized data from the OHDSI Evidence Network
 - ✓ Generalizable phenotypes to allow for consistent and reproducible execution across network
 - ✓ Fit-for-purpose sources that have sufficient exposure, outcome, longitudinal follow-up
- ✓ A community willing collaboratively generate the evidence that promotes better health decisions and better care
 - ✓ Eye Care & Vision Research Workgroup: join Michelle and friends on Thursday July 11 6pm ET !





What we need for OHDSI network to be successful

- List of data sources and partner organizations who have standardized their data to OMOP CDM and are willing to consider participating in future OHDSI network studies
- For each source, we need to capture minimum necessary information to:
 - Enable ‘network-aware’ design of phenotypes and analyses
 - Conduct efficient preliminary fitness-for-use assessments
 - Connect community and facilitate collaborations
- Proposed starting point for OHDSI Evidence Network:
 - Data source name and Partner organization contact details
 - Extrinsic meta-data: Population entry criteria, Care context, Data provenance
 - Intrinsic meta-data: population demographics + concept record counts



Joining the OHDSI Evidence Network



5 Rationale and Background

The Observational Health Data Sciences and Informatics (OHDSI) federated network is a collaborative effort aimed at leveraging healthcare data from multiple institutions for large-scale federated observational research. In its current state there are over 500 data sources from over 49 countries mapped to the OMOP Common Data Model, the standard that enables such ambitious evidence generation. One major challenge of federated network studies is the assessment of network data quality, study feasibility and data fitness-for-use across these data sources in such a way that does not strain the time and resources of data holders while still supporting rigorous evidence generation that engenders trust and buy-in from the larger research community.

To facilitate collaborative research efforts and ensure the quality and integrity of the data across the OHDSI network, it is imperative to understand the characteristics and variability of the databases within the network. This study aims to collect summary statistics from participating sites to describe the databases and learn about the network as a whole. The output of the study will inform and enhance the research capabilities of the OHDSI community by enabling rapid data quality and fitness-for-use assessments.

5.1 Research Questions

...ics of the databases within the OHDSI federated network?



Please fill out a short google form to indicate your intent to join the study



What can we do with OHDSI Evidence Network summary meta-data?

- Source benchmark reporting
 - Aggregate resources for community
 - Phenotyping using ATLAS
 - OHDSI Standardized Vocabularies development
 - Data diagnostics
-



Using aggregate information in ATLAS

ATLAS English

Home | Data Sources | Search | Concept Sets | Cohort Definitions | Characterizations | Cohort Pathways | Incidence Rates | Profiles | Estimation | Prediction | Reusables | Jobs | Configuration | Feedback

Vocabulary > Concept

Ischemic optic neuropathy

Details | Related Concepts | Hierarchy | Record Counts | Drilldown Report

Show columns | Copy | CSV | Show 25 entries | Filter: Search... | Previous 1 Next

	Id	Code	Name	Class	RC	DRC	Distance	Domain	Vocabulary
Vocabulary									
ICD10CM (6)									
SNOMED (1)									
Standard Concept									
Non-Standard (6)									
Standard (1)									
Invalid Reason									
Valid (7)									
Class									
6-char billing code (4)									
4-char nonbill code (1)									
Disorder (1)									
3-char nonbill code (1)									
Domain									
Condition (7)									
Relationship									
Subsumes (4)									
Is a (2)									
Non-standard to Standard map (OMOP) (1)									
Has Records									
true (7)									
Has Descendant Records									
true (7)									
Distance									
1 (7)									

Showing 1 to 7 of 7 entries

Showing 1 to 7 of 7 entries

Previous 1 Next

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Classification Non-Standard Standard