How did OHDSI do in 2021?
OHDSI OKR end-of-year review

Patrick Ryan, PhD

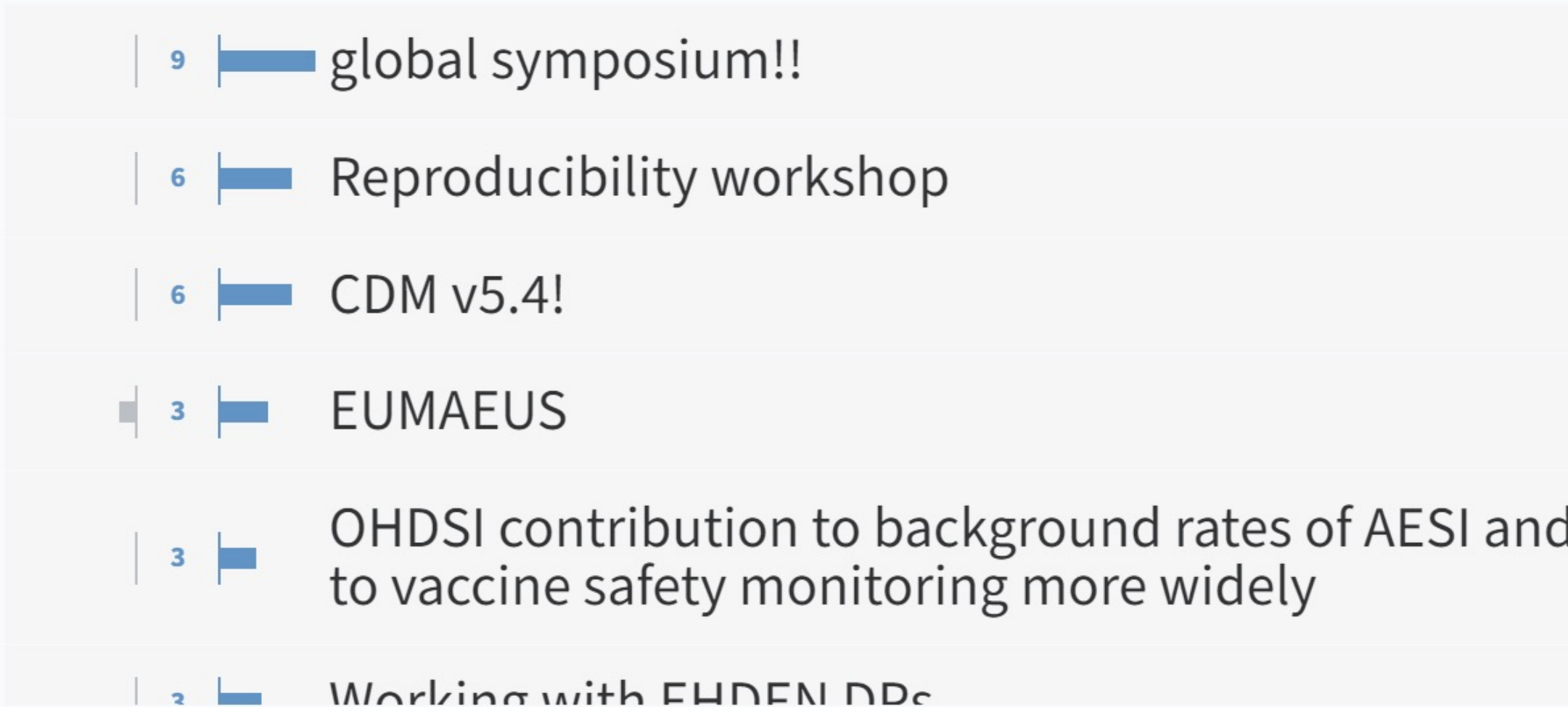
Janssen Research & Development

Columbia University

Respond at **PollEv.com/patrickryan800**

What was your highlight from OHDSI in 2021?

Top



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OHDSI's mission

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

12 Jan 2021

Where have we been?
Where should we go in 2021?

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Why are you on the journey with OHDSI?

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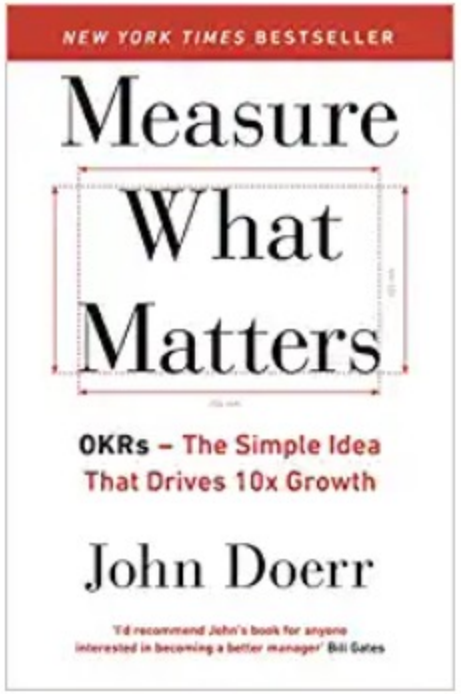
24	To collaborate with other researchers around the world
19	I want to generate evidence
16	To develop open source solutions to public health problems
11	For the data network
7	To be part of a community trying to make a positive impact
6	improve the quality of epidemiological studies using observational data
5	To improve the way in which medical evidence is generated!

An organizing framework

- Objective: Ambitious goal of what is to be achieved
- Key Result: Specific measurable to benchmark and monitor how we get to the objective



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Writing effective OKRs

- Objectives are the 'Whats'. They:
  - Express goals and intents
  - Are aggressive yet realistic
  - Must be tangible, objective, and unambiguous; should be obvious to a rational observer whether an objective as been achieved
  - The successful achievement of an objective must provide clear value to the organization
- Key results are the 'Hows'. They:
  - Express measureable milestones which, if achieved, will advance objective(s) in a useful manner to their constituents
  - Must describe **outcomes**, not activities
  - Must include evidence of completion. This evidence must be available, credible and easily discoverable.

What should be OHDSI's 2021 Objectives?

Top

OKR review and grading

Score range	Question to ask:
9.5 - 10	Are we being ambitious enough?
6.5 - 9.4	What have we learned?
4.0 - 6.4	How can we focus/help?
1.5 - 3.9	What do we need to change?
0 - 1.4	Should this remain an priority objective?

OHDSI in 2021

Objective: Generate and disseminate real-world evidence about the 3 substantial public health issues: COVID-19, type 2 diabetes, and health inequalities.

Key Results:

- 3 fully-reproducible study packages executed across at least 20 OHDSI data partners
- 10 publications accepted in journals with impact factor > 10
- 10 uses of OHDSI results by external stakeholders that demonstrate influence in policy or clinical decision-making

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Key result 1: 3 fully-reproducible study packages executed across at least 20 OHDSI data partners

README.md

Evaluating Use of Methods for Adverse Event Under Surveillance (for vaccines)

Study Status: Results Available

- Analytics use case(s): **Population-Level Estimation**
- Study type: **Methods Research**
- Tags: -
- Study lead: **Martijn Schuemie**
- Study lead forums tag: schuemie
- Study start date: **January 12, 2021**
- Study end date: -
- Protocol: HTML document, ENCEPP registration
- Publications: -
- Results explorer: Shiny app

Similar to our previous research on the evaluation of causal effe
systematically evaluate methods for (safety) surveillance of vacc

README.md

Calculating the background rates of adverse events of special interest (AESI) for the COVID vaccines

Study Status: Design Finalized

- Analytics use case(s): Characterization
- Study type: Clinical Application
- Tags: COVID-19
- Study lead: George Hripcsak, Patrick Ryan, Marc Such
- Study lead forums tag: Patrick_Ryan
- Study start date: -
- Study end date: -
- Protocol: pdf file
- Publications: -
- Results explorer: -

Calculating the background rates of adverse events of spe

README.md

Evaluating the Sensitivity Of Prediction Model Development and Performance Due To Phenotypes Applied To COVID-19 VACCINES

Study Status: Started

- Analytics use case(s): **Patient-Level Prediction**
- Study type: **Methods Research, Clinical Application**
- Tags: **COVID-19**
- Study lead: **Jenna Reps**
- Study lead forums tag: jreps
- Study start date: **2021-03-21**
- Study end date: -
- Protocol: Click Here
- Publications: -
- Results explorer: -

Method research into the target population and outcome phenotypes we should use to develop COVID-19 vaccine prediction models for various outcomes of interest

Key result 2: 10 publications accepted in journals with impact factor > 10

1. PMID: 34304580

Comparative First-Line Effectiveness and Safety of ACE (Angiotensin-Converting Enzyme) Inhibitors and Angiotensin Receptor Blockers: A Multinational Cohort Study.

Chen R, Suchard MA, Krumholz HM, Schuemie MJ, Shea S, Duke J, Pratt N, Reich CG, Madigan D, You SC, Ryan PB, Hripcsak G.

Hypertension. 2021 Sep;78(3):591-603. doi: 10.1161/HYPERTENSIONAHA.120.16667. Epub 2021 Jul 26.

PMID: 34304580

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2. PMID: 34284037

Outcomes of SARS-CoV-2 Infection in Patients With Chronic Liver Disease and Cirrhosis: A National COVID Cohort Collaborative Study.

Ge J, Pletcher MJ, Lai JC; N3C Consortium.

Gastroenterology. 2021 Nov;161(5):1487-1501.e5. doi: 10.1053/j.gastro.2021.07.010. Epub 2021 Jul 18.

PMID: 34284037 Free PMC article.

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3. PMID: 33982938

Comparative Effectiveness of Famotidine in Hospitalized COVID-19 Patients.

Shoaibi A, Fortin SP, Weinstein R, Berlin JA, Ryan P.

Am J Gastroenterol. 2021 Apr;116(4):692-699. doi: 10.14309/ajg.0000000000001153.

PMID: 33982938

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4. PMID: 33975825

Use of repurposed and adjuvant drugs in hospital patients with covid-19: multinational network cohort study.

Prats-Uribe A, Sena AG, Lai LYH, Ahmed WU, Alghoul H, Alser O, Alshammari TM, Areia C, Carter W, Casajust P, Dawoud D, Golozar A, Jonnagaddala J, Mehta PP, Gong M, Morales DR, Nyberg F, Posada JD, Recalde M, Roel E, Shah K, Shah NH, Schilling LM, Subbian V, Vizcaya D, Zhang L, Zhang Y, Zhu H, Liu L, Cho J, Lynch KE, Matheny ME, You SC, Rijnbeek PR, Hripcsak G, Lane JC, Burn E, Reich C, Suchard MA, Duarte-Salles T, Kostka K, Ryan PB, Prieto-Alhambra D.

BMJ. 2021 May 11;373:n1038. doi: 10.1136/bmj.n1038.

PMID: 33975825 Free PMC article.

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5. PMID: 33775125

Comprehensive Comparative Effectiveness and Safety of First-Line β-Blocker Monotherapy in Hypertensive Patients: A Large-Scale Multicenter Observational Study.

Chan You S, Krumholz HM, Suchard MA, Schuemie MJ, Hripcsak G, Chen R, Shea S, Duke J, Pratt N, Reich CG, Madigan D, Ryan PB, Woong Park R, Park S.

Hypertension. 2021 May 5;77(5):1528-1538. doi: 10.1161/HYPERTENSIONAHA.120.16402. Epub 2021 Mar 29.

PMID: 33775125

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6. PMID: 33342753

Renin-angiotensin system blockers and susceptibility to COVID-19: an international, open science, cohort analysis.

Morales DR, Conover MM, You SC, Pratt N, Kostka K, Duarte-Salles T, Fernández-Bertolín S, Aragón M, DuVall SL, Lynch K, Falconer T, van Bochove K, Sung C, Matheny ME, Lambert CG, Nyberg F, Alshammari TM, Williams AE, Park RW, Weaver J, Sena AG, Schuemie MJ, Rijnbeek PR, Williams RD, Lane JCE, Prats-Uribe A, Zhang L, Areia C, Krumholz HM, Prieto-Alhambra D, Ryan PB, Hripcsak G, Suchard MA.

Lancet Digit Health. 2021 Feb;3(2):e98-e114. doi: 10.1016/S2589-7500(20)30289-2. Epub 2020 Dec 17.

PMID: 33342753 Free PMC article.

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Key result 3: 10 uses of OHDSI results by external stakeholders that demonstrate influence in policy or clinical decision-making

5

FDA U.S. FOOD & DRUG ADMINISTRATION

Center for Biologics Evaluation and Research
Office of Biostatistics and Epidemiology

CBER Surveillance Program

COVID-19 Vaccine Safety Surveillance: Active Monitoring Master Protocol

February 10, 2021

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AstraZeneca's COVID-19 vaccine: EMA finds possible link to very rare cases of unusual blood clots with low blood platelets

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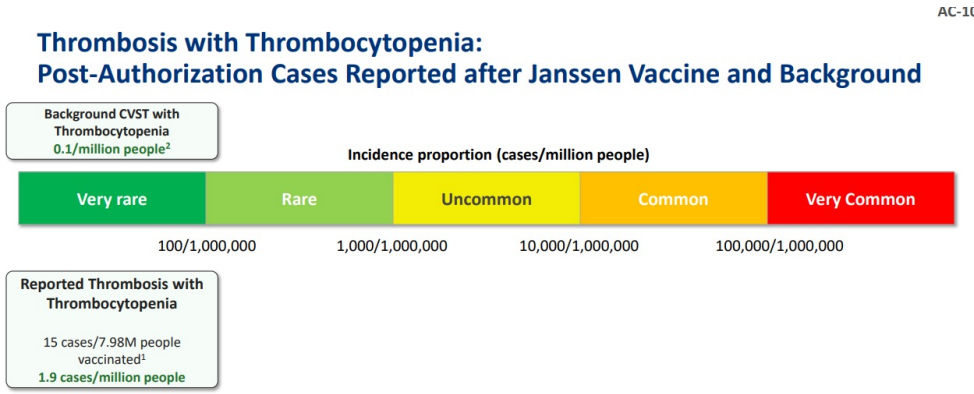
News 07/04/2021

EMA confirms overall benefit-risk remains



1. Cases, # people vaccinated: CDC (April 22)
2. Incidence based on CVST + Thrombocytopenia in 2018 from 5 observational sources (n=63 million persons)

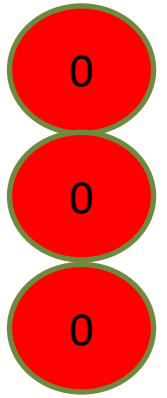
OHDSI in 2021

Objective:

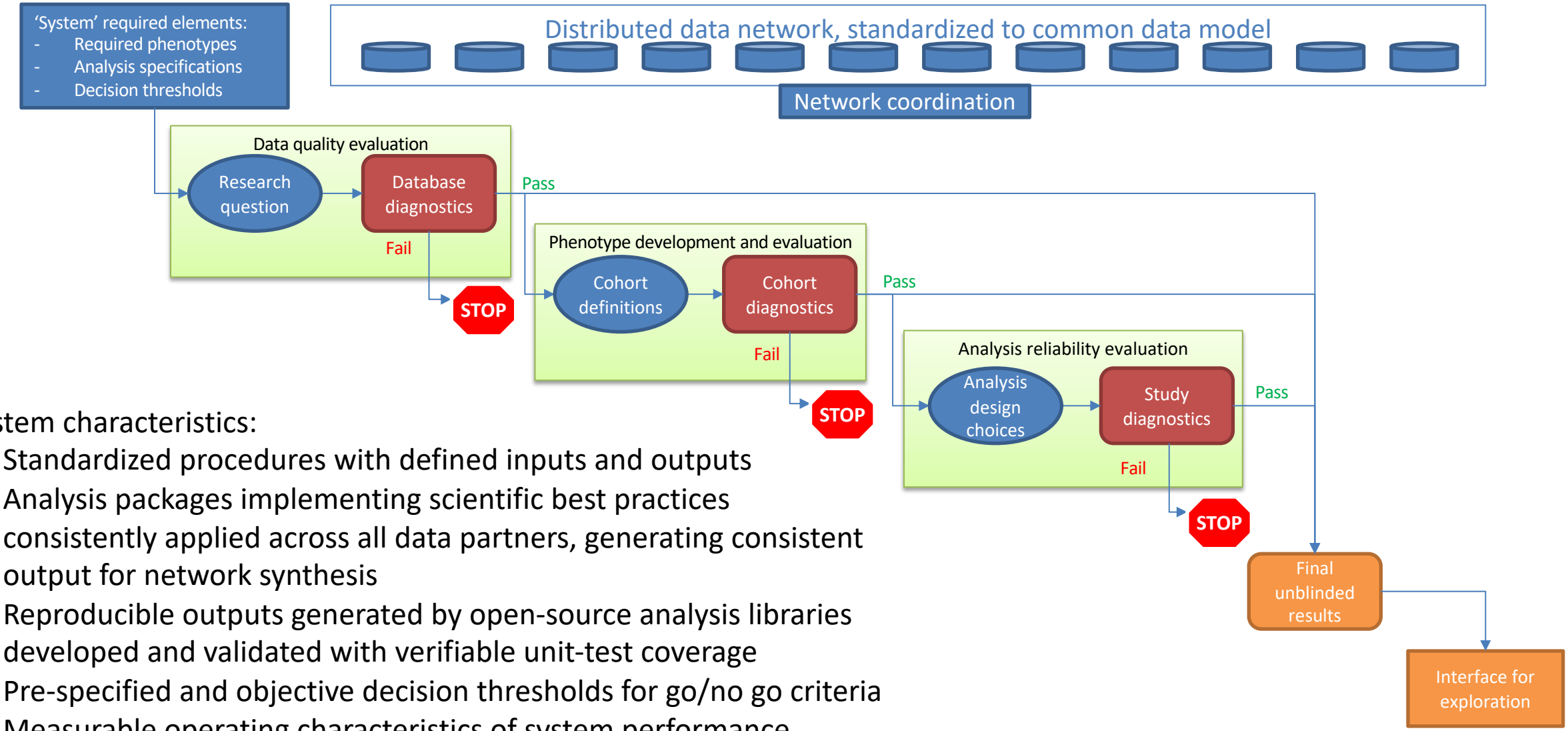
Build an international medical product safety surveillance system that provides all stakeholders access to evidence about the incidence and risk of outcomes associated with drug exposure

Key Results:

- Population-level effect estimation and characterization results generated for 500 drugs and 500 outcomes across 20 databases
- 100 organizations with at least 1 active user
- 10 regulatory actions taken as a result of OHDSI system



Engineering open science systems that build trust into the real-world evidence generation and dissemination process



System characteristics:

- Standardized procedures with defined inputs and outputs
- Analysis packages implementing scientific best practices consistently applied across all data partners, generating consistent output for network synthesis
- Reproducible outputs generated by open-source analysis libraries developed and validated with verifiable unit-test coverage
- Pre-specified and objective decision thresholds for go/no go criteria
- Measurable operating characteristics of system performance

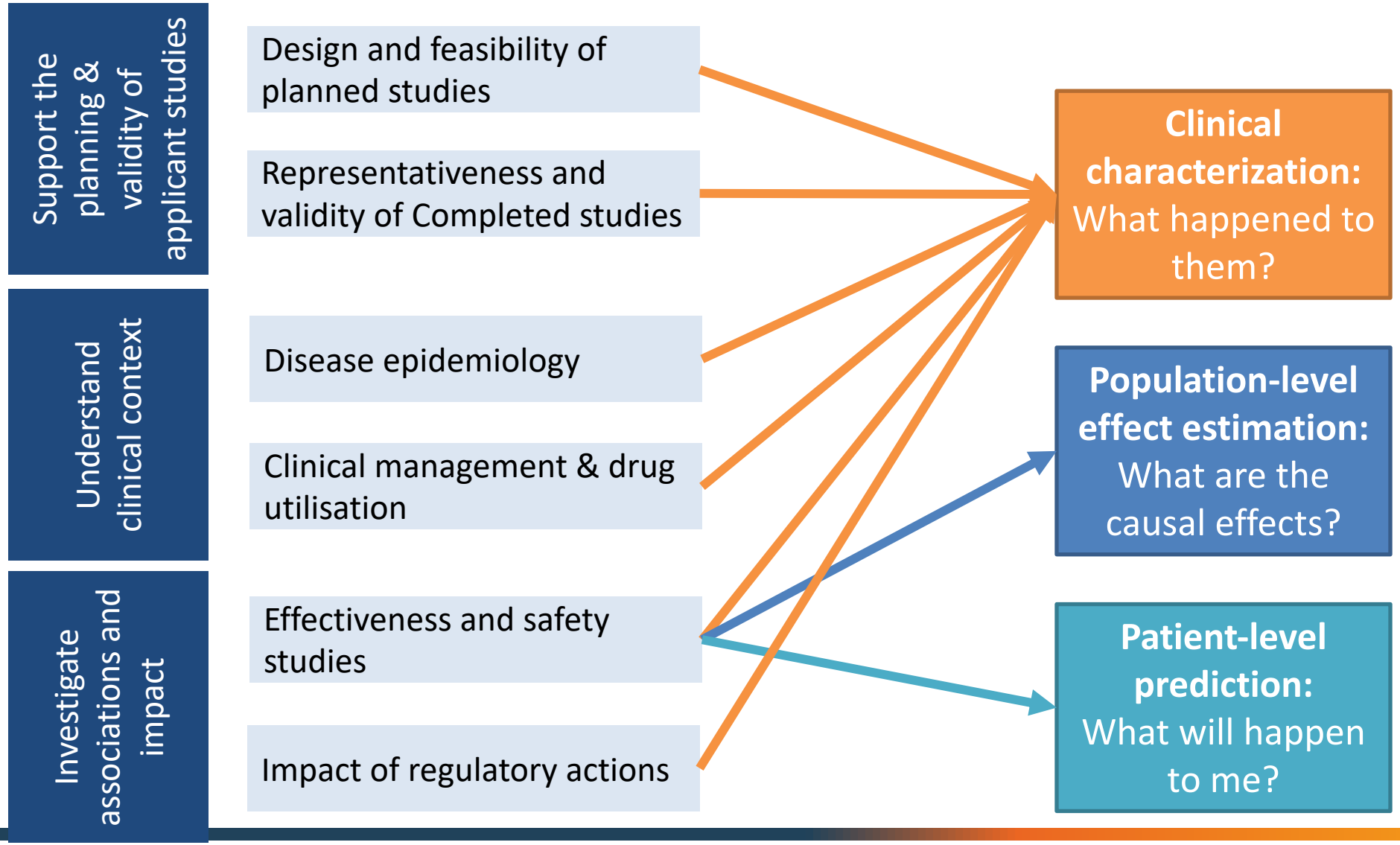
Three potential use cases for the support to committees' decision-making

From a regulatory perspective, RWE aims to support committees' decision-making in three main areas

Use case objective	**Support the planning & validity of applicant studies**	**Understand clinical context**	**Investigate associations and impact**
Use case category	Design and feasibility of planned studies	Disease epidemiology	Effectiveness and safety studies
	Representativeness and validity of Completed studies	Clinical management & drug utilisation	Impact of regulatory actions

with permission from Peter Arlett

Mapping regulatory use cases to evidence types



Questions that can be informed with real world evidence:

Who are the patients with disease eligible for treatment?
Who are the patients exposed to those treatments?
How often do outcomes occur amongst those patients?

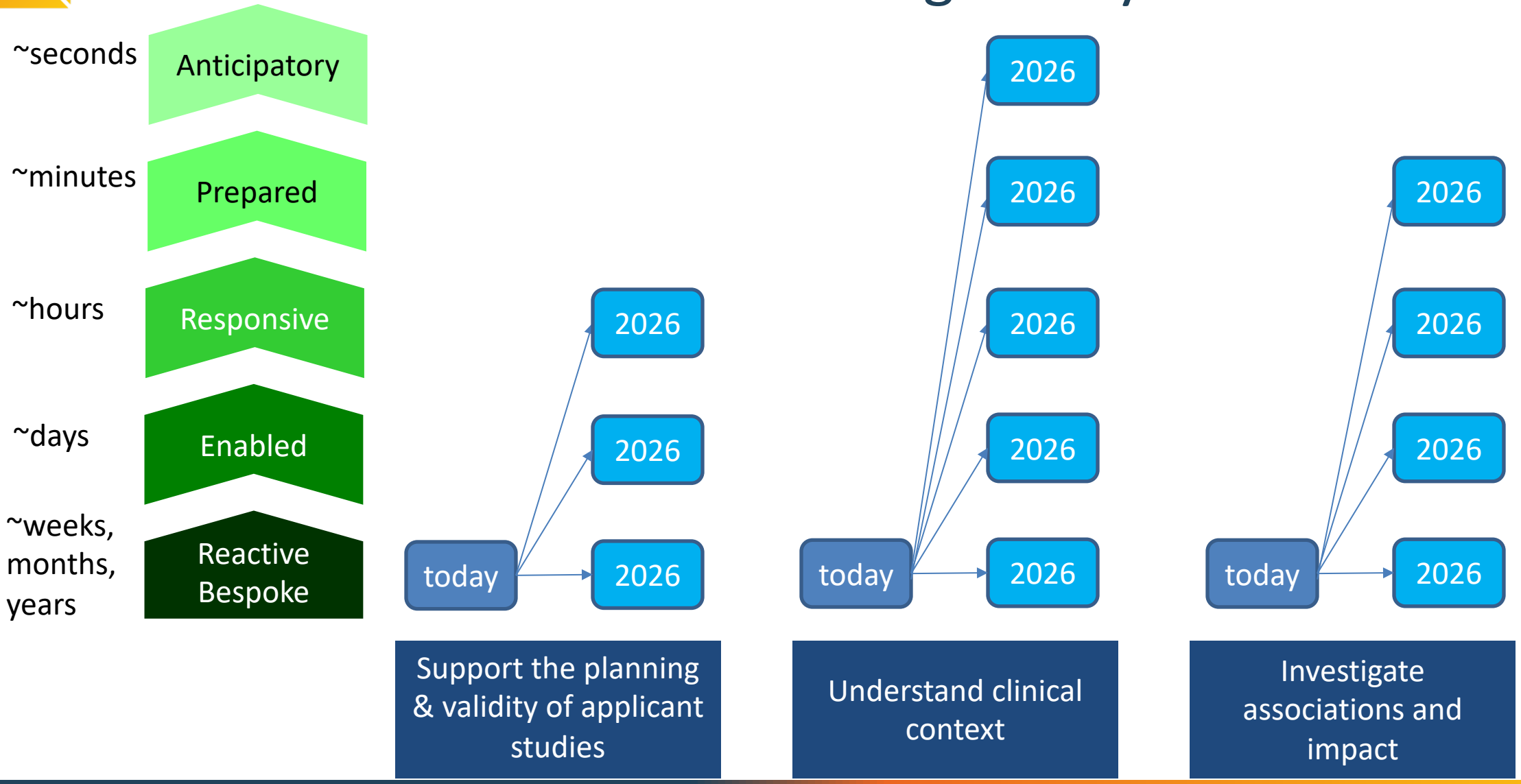
Is the outcome causally related to exposure to treatment?
How does the risk compare with alternative treatments?

Which risks can be actionably predicted with available data?
Which patients are at highest risk of adverse events?

Level of proactivity in delivering real-world evidence

Time-to-evidence			
~seconds	Anticipatory	Generate and deliver insights without being asked; answer questions before requested by 'pushing' relevant pre-computed evidence to potential evidence consumers	Standardized dissemination +
~minutes	Prepared	Produce pre-computed evidence to enable answer retrieval in 'real time' by qualified users when requested; standardized analysis packages executed across network generate results 'at-scale' across many target, outcome cohorts	Standardized analysis configurations +
~hours	Responsive	Enable fast evidence generation by using interface that allow qualified users to set defined input parameters, execute standardized analyses, and view results upon request.	Standardized analysis tools +
~days	Enabled	Design and execute standardized analysis packages that apply validated statistical libraries with defined input parameters and fixed output to compile summary results across a network standardized to a common data model	Standardized data, network execution
~weeks, months, years	Reactive Bespoke	Service bespoke project requests by convening team to align on problem statement, author protocol/analysis plan documents, implement statistical programming code to custom specification, execute analysis across databases, iteratively review results and request post hoc analyses, write summary of results as report, and deliver to decision-maker to ensure it meets their needs	

A 5-year vision for expanding the proactive use of real-world evidence across regulatory use cases



OHDSI in 2021

Objective:

Enable a community to generate real-world evidence using OHDSI tools and scientific best practices

Key Results:

- 100 organizations have a fully-operational technical infrastructure (CDM + ATLAS + HADES) sufficient to perform local analyses
- 1000 researchers complete RWE curriculum through EHDEN Academy
- 100 publications generated using and citing OHDSI tools

?

9

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OHDSI Data Partners

What does it take to be an OHDSI data partner? Anyone with access to observational data can standardize their database in the OMOP Common Data Model, apply OHDSI's open-source tools, and participate in collaborative research.

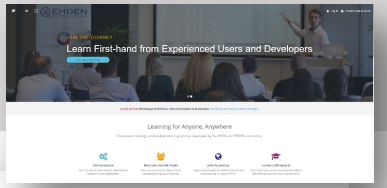
Who has already joined the journey and adopted the OMOP CDM? There are currently 331 databases, including 284 electronic health records and 28 administrative claims sources, that come from 34 different countries. Together, these databases represent more than 810 million unique patient records, approximately 11% of the world's population.

Aarhus University Hospital Database (Claims; Denmark)
Advocate Aurora Health & University of Madison Health Non-Muscle Invasive Bladder Cancer (EHR; USA)
Advocate Aurora Health / U of Madison Bladder Cancer (EHR; USA)
Agenzia regionale di sanità della Toscana (ARS) (Claims; Italy)
Ajou University Hospital (EHR; South Korea)
Ajou University Hospital Bio-signals (ICU + EHR; South Korea)
Akrivia Health (EHR; UK)
All of Us Research Program (EHR, Survey; USA)
ALTAMED (University of Southern California) (EHR; USA)
Amsterdam UMC (EHR; Netherlands)
APDP (EHR; Portugal)
APHP-EDS (CDW; France)
Asan Medical Center (EHR; South Korea)
Assistance Publique - Hopitaux de Marseille (EHR; France)
ATS Bergamo (Regional Dataset; Italy)
AU-ePBRN (Australian Electronic practice based research network) (Claims; Australia)
Australian Electronic practice based research network (EHR; Australia)
AZ Delta (EHR; Belgium)
AZ Klina (EHR; Belgium)
Azienda Ospedaliera SS Antonio e Biagio e Cesare Arrigo (CDW; Italy)
Azienda Ospedaliera Universitaria Integrata Verona (EHR; Italy)
Barts Health NHS Trust (EHR; UK)
BCB Medical Ltd. (EHR; Finland)
Beijing Anding Psychiatry Hospital (EHR; China)
BIOEFUCES BIZKAIA HEALTH RESEARCH INSTITUTE (EHR; Spain)
Blue Health Intelligence (Claims; USA)
Bordeaux hospital (EHR; France)
Bordeaux PharmacoEpi (EHR; France)
Boston Medical Center (EHR; USA)
Brown University - Rhode Island HIE (EHR; USA)
Bucheon Sejong Hospital (EHR; South Korea)
Buddhimed Technologies (EHR; India)
CALIBER (EHR; UK)
CancerDataNet GmbH (EHR; Germany)
Carilion Clinic (Claims; USA)
Case Western (EHR; USA)
CEGEDIM HEALTH DATA (Registry; France)
Center for Surgical Science (CSS) (EHR; Denmark)
Centre Hospitalier Universitaire de Montpellier (EHR; France)
Centro Clínico Académico a Braga, Associação (2CA-Braga) (EHR; Portugal)
Centro Clínico Académico a Braga, Associação (EHR; South Korea)
Cerner (EHR; USA)
Charité - Universitätsmedizin Berlin (EHR; Germany)
Cherokee Health Systems (EHR; USA)
Children's Hospital of Colorado (EHR; USA)
Children's Hospital of Los Angeles (EHR; USA)
Children's Hospital of Philadelphia (EHR; USA)
Children's National (EHR; USA)
Chonnam National University Hospital (EHR; South Korea)
Chonnam National University Hwasun Hospital (EHR; South Korea)
CHU de Toulouse (EHR; France)
Chungnam National University Hospital (EHR; South Korea)
Clinical Center of Serbia (EHR; Serbia)
Clinical centre of Nis (EHR; Serbia)
Clinical Hospital Dubrava (EHR; Croatia)
Clinical Practice Research Datalink (CPRD) (EHR; UK)
Columbia University Irving Medical Center (EHR; USA)
Connected Bradford (EHR; UK)
Consorci Mar Parc de Salut de Barcelona (PSMAR) (EHR; Spain)
CRHFEI (EHR; USA)
Daegu Catholic University Medical Center (CDW; South Korea)
Dankook University Hospital (EHR; South Korea)
DARTNet Institute: CER2 Study (EHR; USA)
DataSUS Ambulatory (EHR; Brazil)
Decision Resources Group (DRG) (EHR; USA)
Department of Health Services - Los Angeles (CDW; USA)
Dongguk University Ilsan Hospital (Claims; South Korea)
Duke University (Claims; EHR; USA)
Eau Claire Cooperative Health Center (Claims; USA)
EBMT: The European Society for Blood and Marrow Transplantation (EHR; Netherlands)
Estonian Genome Center at the University of Tartu (EGCUT) (EHR; Estonia)
European Society for Blood and Marrow Transplantation (Registry; Finland)
Ewha Womans University Medical Center Mokdong (EHR; South Korea)
Finnish Hematology Registry/ HUS (Biobank; Finland)
Flatiron - OSCER (EHR; USA)
Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico (EHR; Italy)
Fondazione IRCCS Istituto Neurologico Carlo Besta (EHR; Italy)
Fondazione IRCCS Policlinico San Matteo (EHR; Italy)
Fondazione Istituto Nazionale dei Tumori (EHR; Italy)
Fondazione Policlinico Istituto Ospedaliero (EHR; Italy)
Fundació Institut d'Investigacions Mèdiques (FIMM) (EHR; Spain)
Fundacion de Investigacion Biomedica del Hospital Universitario 12 de Octubre (CDW; Spain)
FUNDACION PARA LA INVESTIGACION DEL HOSPITAL UNIVERSITARIO LA FE DE LA COMUNIDAD VALENCIANA (HULAFE) (EHR; Spain)
Fundacion Para La Investigacion del Hospital Universitario La Fe de la Comunidad Valenciana (HULAFE) (EHR; Spain)
Gachon University Gil Medical Center (EHR; South Korea)
Gangnam Severance Hospital (EHR; South Korea)
Geisinger Health System (CDW; USA)
GENERAL HOSPITAL OF KAVALA (EHR; Greece)
General Hospital of Kavala (EHR; USA)
Geneva Cancer Registry (EHR; Switzerland)
Georgetown University ARIA (EHR; USA)
GenOMOP (Registry; USA)
GOSH (EHR; UK)
Great Ormond Street Hospital NHS Foundation Trust (GOSH) (EHR; South Korea)
Hanover Medical School, Germany (EHR; Germany)
Harvard University Mass General Brigham (Nursing home + drug; USA)
Harvey Walsh Ltd. (CDW; UK)
Health Data Hub (EHR; France)
Health Informatics Centre (HIC) (EHR; UK)
Health Insurance Review & Assessment Service (National Dataset; South Korea)
Healthcare Cost and Utilization Project, Nationwide Inpatient Sample (HCUP/NIS) (Hospital Billing; USA)
HealthVerity (EHR; USA)
Hierarchia d.o.o. & University Hospital Centre Zagreb (EHR; Croatia)
HM Hospitals (Claims; Spain)
Hospital da Luz Learning Health (Claims; Portugal)
Hospital del Mar (HMAR) (EHR; Spain)
Hospital District of Helsinki and Uusimaa (EHR; Finland)
Hospital District of Southwest Finland (EHR; Finland)
HUG and SCDM (EHR; Switzerland)
HUS Datalake eCareforMe POC (EHR; Finland)
IBM CED (EHR; USA)
IBM MarketScan CCAE + MDCR (EHR; USA)
IBM(R) MarketScan(R) Commercial Claims (CCAE) (Registry; USA)
IBM(R) MarketScan(R) Medicare Supplemental Database (MDCR) (EHR; USA)
IBM(R) MarketScan(R) Multi-State Medicaid Database (MDCD (Claims, EHR ; USA)
Icahn School of Medicine at Mount Sinai (Claims; USA)
IKNL (Claims; Netherlands)
Incheon Sejong Hospital (Claims; South Korea)
Indiana University School of Medicine / Regenstrief Institute (Claims; USA)
INFOBANCO12 (EHR; Spain)
Information System of Parc de Salut Mar (IMASIS) (CDW; Spain)
Inha University Hospital (EHR; South Korea)
Innovative Medical Research SA (EHR; Greece)
Inova Health System (EHR; USA)
Integrated Primary Care Information (IPCI) (EHR; Netherlands)
IQVIA Australia LPD (EHR; Australia)
IQVIA Belgium LPD (EHR; Belgium)
IQVIA Brazil (EHR; Brazil)
IQVIA France DA (EHR; France)
IQVIA France LPD (Hospital Billing; France)
IQVIA Germany DA (EHR; Germany)
IQVIA Hospital CDM (EHR; USA)
IQVIA HTI (EHR; UK)
IQVIA Italy LPD (Claims; Italy)
IQVIA Japan HIS (EHR; Japan)
IQVIA Japanese Claims (EHR; Japan)
IQVIA LPD Australia (EHR; Australia)
IQVIA OncoEMR (EHR; USA)
IQVIA Spain LPD (EHR; Spain)
IQVIA US Ambulatory EMR (EHR; USA)
IQVIA US Hospital Charge Data Master (CDM) (Claims; USA)
IQVIA US Oncology EMR (Claims; USA)
IQVIA US Open Claims (EHR; USA)
IQVIA US Pharmetrics Plus (PMTX+) (EHR; USA)
IRCCS Policlinico San Donato (EHR; Italy)
Istanbul University Istanbul Faculty of Medicine (Claims; Turkey)
IUC Cerrahpaşa TIP Fakültesi (EHR; Turkey)
Japan Medical Data Center (JMDC) (EHR; Japan)
Jeonbuk National University Hospital (EHR; South Korea)
Jiangsu Province People's Hospital (EHR; China)
Johns Hopkins University (EHR; USA)
Kangbuk Samsung Hospital (EHR; South Korea)
Kangdong Sacred Heart Hospital (EHR; South Korea)
Kangwon National University Hospital (EHR; South Korea)
Keck Medicine of University of Southern California (EHR; USA)
Khoo Teck Puat Hospital - T2DM Cohort (SG_T2DM) (EHR; Singapore)
Khoo Teck Puat Hospital (SG_KTPH) (EHR; Singapore)
Klinično-bolnični center Zvezdara (Clinical-hospital center Zvezdara) (EHR; Serbia)
Klinično-bolnični center Zvezdara (EHR; UK)
Konkuk University Medical Center (EHR; South Korea)
Konyang University Hospital (EHR; South Korea)
Korea University Anam Hospital (EHR; South Korea)
Korea University Ansan Hospital (EHR; Genomics; South Korea)
Korea University Guro Hospital (EHR; South Korea)
KTPH Diabetes Data (EHR; Singapore)
Kyung Hee University Hospital at Gangdong (EHR; South Korea)
Kyung Hee University Medical Center (EHR; South Korea)
Kyungpook National University Chilgok Hospital (EHR; South Korea)
Kyungpook National University Hospital (EHR; South Korea)
Leeds Teaching Hospitals (EHR; UK)
Lille University Hospital (EHR; France)
Loyola University New Orleans (EHR; USA)
LynxCare (EHR; Belgium)
Maine Medical Center (EHR; USA)
Marina Salud S.A. (Claims; Spain)
Mayo Clinic (National Dataset; USA)
MDV (Medical Data Vision) (EHR; Japan)
MEB KI (EHR; Sweden)
Medaman (EHR; Belgium)
Medical University of South Carolina (Claims; USA)
Medical University of Vienna (EHR, Registry; Austria)
Medicare Research Identifiable Files (EHR; USA)
Memorial Sloan Kettering Cancer Center (EHR; USA)
Modena Oncology Center - Azienda Ospedaliera Modena (EHR; Italy)
Momentum AD (EHR; USA)
Montefiore Medical Center (Albert Einstein College of Medicine) (EHR; USA)
MS Forschungs- und Projektentwicklungs-gGmbH (EHR; Germany)
Myongji Hospital (EHR; South Korea)
Nanfang Hospital COVID-19 Research Database (NFHCRD) (EHR; China)
National Cancer Center (Registry; South Korea)
National Health Insurance Service Ilsan Hospital (Registry; South Korea)
National Intensive Care Evaluation foundation (EHR; Netherlands)
National Scientific Programme "E-Health in Bulgaria" (EHR; Bulgaria)
National University of Hospital (SG_NUH) (Claims; Singapore)
Nemours Children's Health System (EHR; USA)
NHIRD (EHR; Taiwan)
NorthShore University HealthSystem (EHR; USA)
Northwestern Medicine Enterprise Data Warehouse (NMEDW) (EHR; USA)
NYC-CDRN (EHR; USA)
NYU Langone (EHR; USA)
OCHIN (Oregon Community Health Information Network) (EHR; USA)
Ochsner Medical Center (EHR; USA)
Oklahoma University (EHR; USA)
Optimum Patient Care Limited (EHR; UK)
Optum® De-Identified Clinformatics(R) Data Mart Database (Claims; USA)
Optum® De-Identified Clinformatics(R) Data Mart Database - SES & DOD (EHR; USA)
Optum® de-identified Electronic Health Record Dataset (PANTHER) (EHR; USA)
Oregon Health & Science University (; USA)
Parc Sanitari Sant Joan de Deu (EHR; Spain)
Pareto Intelligence (EHR; USA)
Pedianet (EHR; Italy)
PEDSnet (Claims; USA)
Penn State (EHR; USA)
Pharmaceutical Benefits Scheme 10% extract (Hospital Billing; Australia)
Pharmo (EHR; Netherlands)
Premier Healthcare Database (PHD) (EHR; USA)
Primary Care GP data (Patron) (Registry; Australia)
Pusan National University Hospital (EHR; South Korea)
Queen Mary University of London (Registry; UK)
QueensCare - Los Angeles (EHR; USA)
Registre National du Cancer du Luxembourg (EHR; Luxembourg)
Reliant Medical Group (EHR; USA)
Rioja Salud (EHR; Spain)
Royal College of General Practitioners Research and Surveillance Centre (EHR; UK)
Rush University Medical Center (EHR; USA)
Rutgers (EHR; USA)
SAIL Databank (Claims, EHR ; UK)
Samsung Medical Center (EHR; South Korea)
Saudi FDA (EHR; Saudi Arabia)
Saudi Pharmacoepidemiology Database (EHR; Saudi Arabia)
Semmelweis University (EHR; Hungary)
Seoul National University Bundang Hospital (EHR; South Korea)
Seoul National University Hospital (CDW; South Korea)
Servicio Cántabro de Salud and IDIVAL (EHR; Spain)
Servicio Madrileño de Salud (EHR; Spain)
Severance Hospital (EHR; South Korea)
SIMG, Società Italiana di Medicina Generale e delle cure Primarie (Italian College of General Practice (EHR; Italy)
Società Italiana di Medicina Generale e delle cure Primarie (EHR; Taiwan)
Soon Chun Hyang University Hospital Bucheon (EHR; South Korea)
Soon Chun Hyang University Hospital Cheonan (EHR; South Korea)
Soon Chun Hyang University Hospital Gumi (EHR; South Korea)
Soon Chun Hyang University Hospital Seoul (EHR; South Korea)
STAnford medicine Research data Repository (STARR) OMOP (EHR; USA)
Stony Brook (EHR; USA)
Surveillance, Epidemiology, and End Results Program (SEER) (Claims, Registry; Netherlands)
Surveillance, Epidemiology, and End Results Program (SEER): B-Cell (EHR; USA)
Sydney Local Health District (LHD) (; Australia)
Taipei Medical University Hospital (EHR; Taiwan)
TCC - Los Angeles (EHR; USA)
The Catholic University of Korea Seoul ST. Mary's Hospital (EHR; South Korea)
The Catholic University of Korea Yeouido ST. Mary's Hospital (EHR; South Korea)
The Directorate of Government Medical Centers at the Israeli Ministry Of Health (EHR; Israel)
The Healthcare Cost and Utilization Project (HCUP): Nationwide Inpatient Sample (NIS) (EHR; USA)
The Information System for Research in Primary Care – Hospitalization Linked Data (SIDIAP-H) (Registry; Spain)
The Information System for Research in Primary Care (EHR; Spain)
The Information System for Research in Primary Care (SIDIAP) (EHR; Spain)
The Information System for Research in Primary Care-Hospitalization (SIDIAP-H) (EHR; USA)
The National Health and Nutrition Examination Survey (NHANES) (EHR; USA)
THIN BE (EHR; Belgium)
THIN FR (Survey Data; France)
THIN RO (EHR; Romania)
THIN UK (EHR; UK)
Tianjin Anding Psychiatry Hospital (EHR; China)
Tufts MC Research Data Warehouse (TRDW) (EHR; USA)
Tulane (EHR; USA)
UCL (EHR; UK)
UK Biobank (EHR; UK)
UK Integrated Medical Record Database (IMRD) (EHR; UK)
UK National Neonatal Research Database (EHR; UK)
UKCRIS (EHR, Survey; UK)
UKER (EHR; Germany)
Ulsan University Hospital (EHR; South Korea)
ULSM (EHR; Portugal)
UMass Memorial Medical Center (EHR; USA)
UNC Chapel Hill (EHR; USA)
University College London Hospitals NHS Foundation Trust (EHR; UK)
University Medical Center New Orleans (EHR; USA)
University Medicine Dresden (EHR; Germany)
University MS Center (EHR; Belgium)
University of Alabama Birmingham (EHR; USA)
University of Arkansas (EHR; USA)
University of Buffalo (EHR; USA)
University of California, Davis (EHR; USA)
University of California, Irvine (EHR; USA)
University of California, Los Angeles (EHR; USA)
University of California, Riverside (EHR; USA)
University of California, San Diego (EHR; USA)
University of California, San Francisco (EHR; USA)
University of Chicago (EHR; USA)
University of Cincinnati (EHR; USA)
University of Colorado (EHR; USA)
University of Colorado Anschutz (EHR; USA)
University of Edinburgh (EHR; UK)
University of Illinois Chicago (EHR; USA)
University of Iowa (EHR; USA)
University of Kentucky (EHR; USA)
University of Miami (EHR; USA)
University of Michigan (EHR; USA)
University of Minnesota (EHR; USA)
University of Mississippi Medical Center (EHR; USA)
University of Nebraska Medical Center (EHR; USA)
University of Oslo PharmaSafe (National Dataset; Hungary)
University of Oslo, Department of Pharmacy, Pharmacoepidemiology and Drug Safety Research Group (EHR; Norway)
University of Pittsburgh - Banner (EHR; USA)
University of Pittsburgh (EHR; USA)
University of Rochester (EHR; USA)
University of Tartu (EHR; Estonia)
University of Texas Houston (EHR; USA)
University of Texas Medical Branch (EHR; USA)
University of Utah (EHR; USA)
University of Virginia (EHR; USA)
University of Washington Medicine COVID Research Dataset (EHR; USA)
University of Washington Medicine COVID Research Dataset (UWM-CRD) (EHR; USA)
US Department of Defense OMOP (EHR; USA)
US Department of Veterans Affairs (EHR; USA)
Vall d'Hebron Hospital Campus (EHR; Spain)
Vanderbilt University (Claims, EHR ; USA)
Verisign Health Insights Data - Practice Fusion (EHR; USA)
Virginia Commonwealth University (EHR; USA)
Wake Forest University (EHR; USA)
Wanfang Hospital (EHR; Taiwan)
WashU St Louis (EHR; USA)
Weill Cornell Medical Center - Epic (EHR; USA)
Weill Cornell Medicine/NewYork-Presbyterian Hospital (East Campus) (EHR; USA)
West Virginia University (EHR; USA)
Winship Cancer Institute of Emory University (EHR; USA)
Wonju Severance Christian Hospital (EHR; South Korea)
Wonkwang University Hospital (EHR; South Korea)
Yongin Severance Hospital (EHR, Claims, Clinical Trials; South Korea)
Ziekenhuis Oost-Limburg (EHR; Belgium)

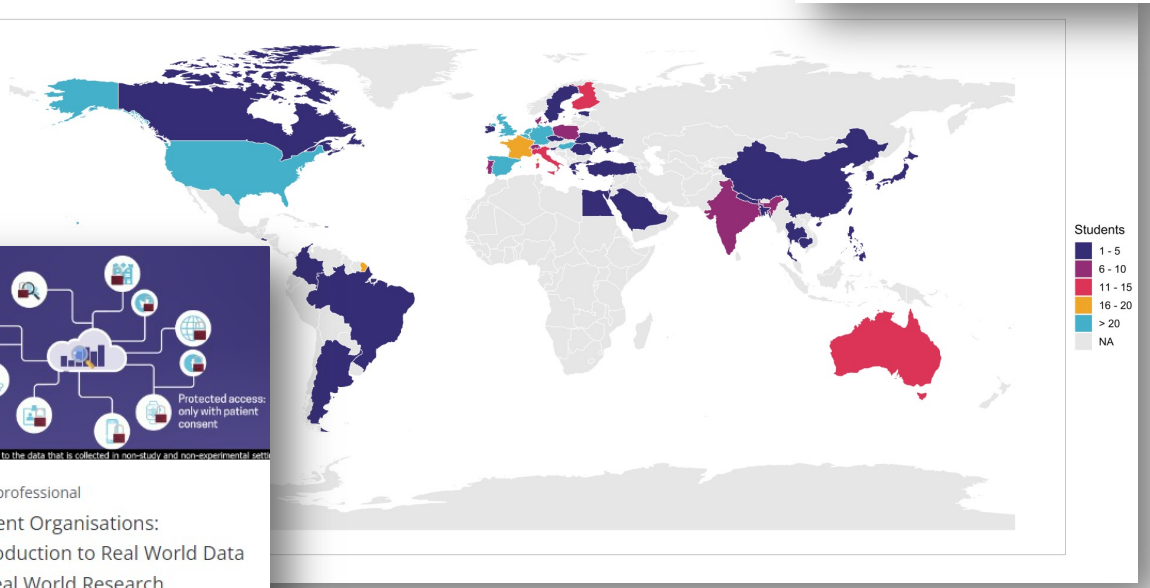
?

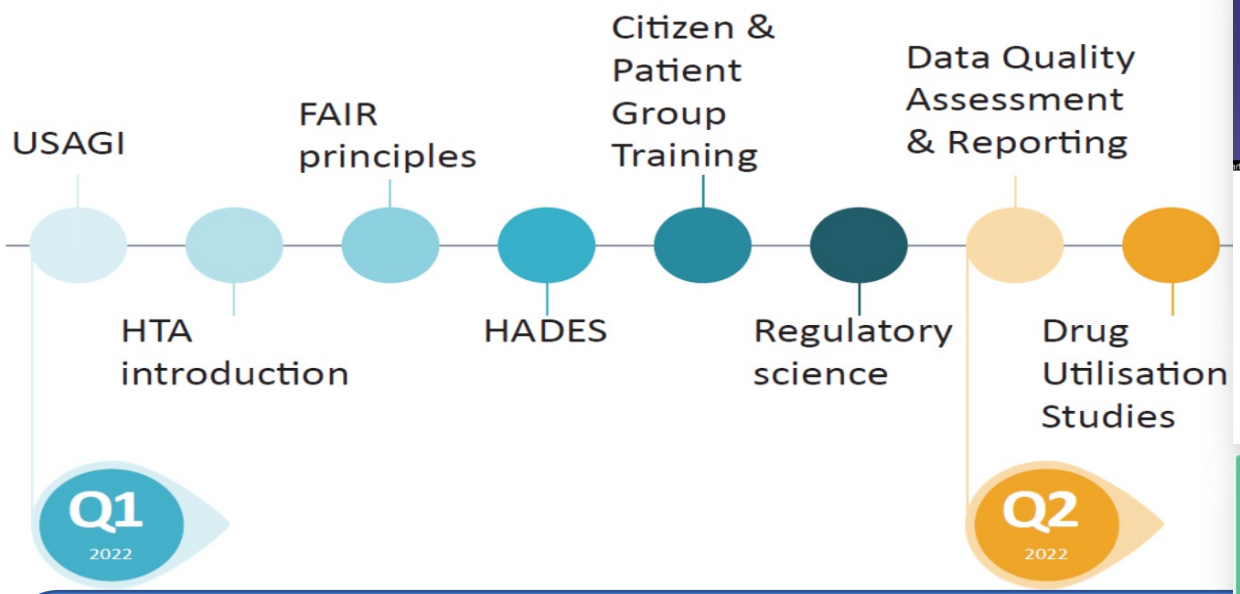
The EHDEN-led initiative to certify small-and-medium enterprises to assist in mapping data across Europe has helped bring 98 partners into the OHDSI data network.

EHDEN ACADEMY HAS MADE A SOLID START



- As of 7th December, >1830 participants/1467 enrolled with ~33% active in the last 14 days
  - 1822 badges (courses completed)
  - Major concentration in US, UK and Spain
  - Focus driven by EHDEN SME Learning Pathway in Europe

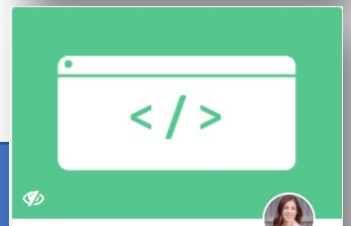




Non-professional

Patient Organisations: Introduction to Real World Data & Real World Research

A basic modular course on real world health data & research for the public.



Skill

Introduction to Data Quality

Introductory course on data quality and data quality dashboards.

- 14 current courses available: ETL, tools & methods
- Curriculum roadmap developed to follow the research operation model with WP1, WP2, and WP4
- Non-expert course led by European Patients Forum
- Introduction to Data Quality launched prior to GAM#6

We are now leading the OHDSI Education WG:

- Strategy development
- Collaborating with educational initiatives worldwide
- Audit and inventory of OHSI resources
- Development of Learning Pathways

OHDSI Publications

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6155732 [pii] 10.1093/jamia/ocab015. PubMed PMID: 33674830; PubMed Central PMCID: PMC798930
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Falconer T, Spotnitz M, Ostropolets A, Blacketer C, Alshammari TM, Alghoul H, Alser O, Lane JCE, Daw
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2012 18
2013 35
2014 14
2015 16
2016 22
2017 28
2018 36
2019 42
2020 72
Thru July '21 67

NIH National Library of Medicine
National Center for Biotechnology Information

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- Associated data

ARTICLE TYPE
- Books and Documents
- Clinical Trial
- Meta-Analysis
- Randomized Controlled Trial
- Review
- Systematic Review

PUBLICATION DATE

27 results Page 1 of 3

1 Cite Share
90-Day all-cause mortality can be predicted following a total knee replacement: an international, network study to develop and validate a prediction model.
Williams RD, Reps JM; OHDSI/EHDEN Knee Arthroplasty Group, Rijnbeek PR, Ryan PB, Prieto-Alhambra D.
Knee Surg Sports Traumatol Arthrosc. 2021 Dec 6. doi: 10.1007/s00167-021-06799-y. Online ahead of print.
PMID: 34870731

2 Cite Share
Making EHRs Reusable: A Common Framework of Data Operations.
Pedrera M, Garcia N, Rubio P, Cruz JL, Bernal JL, Serrano P.
Stud Health Technol Inform. 2021 Nov 18;287:129-133. doi: 10.3233/SHTI210831.
PMID: 34795096

3 Cite Share
Transfer of Clinical Drug Data to a Research Infrastructure on **OMOP** - A FAIR Concept.
Reinecke I, Zoch M, Wilhelm M, Sedlmayr M, Bathelt F.
Stud Health Technol Inform. 2021 Nov 18;287:63-67. doi: 10.3233/SHTI210815.
PMID: 34795082
The Common Data Model of Observational Medical Outcomes Partnership (**OMOP**) is a research infrastructure that implements FAIR principles. ...The concept not only ensures FAIR principles for

OHDSI Working Groups

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 27 Working Groups 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.

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

ATLAS
Current Participants: 56
Lead: Anthony Sena

Clinical Trials
Current Participants: 111
Leads: Mike Hamidi, Lin Zhen

Common Data Model
Current Participants: 261
Lead: Clair Blacketer

Data Quality Dashboard Development
Current Participants: 90
Lead: Clair Blacketer

Early-Stage Researchers
Current Participants: 44
Leads: Faaizah Arshad, Ross Williams

Education
Current Participants: 31
Lead: Nigel Hughes

Electronic Health Record (EHR) ETL
Current Participants: 168
Lead: Melanie Philofsky

Geographic Information System (GIS)
Current Participants: 58
Leads: Robert Miller, Andrew Williams

HADES (Health Analytics Data-to-Evidence Suite)
Current Participants: 120
Lead: Martijn Schuemie

Health Equity
Current Participants: 87
Lead: Jake Gillberg

Latin America
Current Participants: 15
Lead: Jose Posada

Medical Devices
Current Participants: 52
Leads: Vojtech Huser, Asiyah Lin

Natural Language Processing
Current Participants: 228
Lead: Hua Xu

OHDSI Asia-Pacific (APAC)
Current Participants: 46
Lead: Mui Van Zandt

OHDSI APAC Steering Committee
Current Participants: 29
Lead: Mui Van Zandt

Our workgroups hold meetings, share files, chat asynchronously and more in the OHDSI Microsoft Teams environment. Collaborators can request access to any workgroup through an online form available on both OHDSI.org and our main OHDSI Microsoft Teams environment.

OHDSI Steering Committee
Current Participants: 26
Lead: Patrick Ryan

Oncology
Current Participants: 129
Lead: Shilpa Ratwani

Patient-Generated Health Data
Current Participants: 76
Lead: Seng Chan You

Pharmacovigilance Evidence Investigation
Current Participants: 48
Leads: Rich Boyce, Erica Voss

Phenotype Development & Evaluation
Current Participants: 96
Leads: Gowtham Rao

Population-Level Effect Estimation
Current Participants: 164
Lead: Martijn Schuemie, Marc Suchard

Patient-Level Prediction
Current Participants: 164
Lead: Jenna Reps, Peter Rijnbeek

Psychiatry
Current Participants: 66
Lead: Shilpa Ratwani

Registry (formerly UK Biobank)
Current Participants: 57
Lead: Maxim Moinat

Vaccine Safety
Current Participants: 28
Lead: Patrick Ryan

Vaccine Vocabulary
Current Participants: 36
Lead: Adam Black

Women of OHDSI
Current Participants: 97
Lead: Maura Beaton

OHDSI Regional Chapters

An OHDSI regional chapter represents a group of OHDSI collaborators located in a geographic area who wish to hold local networking events and meetings to address problems specific to their geographic location.

Africa
Current Participants: 17
Lead: Nega Gebreyesus

Australia
Current Participants: 36
Lead: Nicole Pratt

China
Current Participants: 163
Lead: Hua Xu

Europe
Current Participants: 135
Lead: Peter Rijnbeek

Japan
Current Participants: 19
Lead: Tatsuo Hiramatsu

Korea
Current Participants: 26
Lead: Seng Chan You

Singapore
Current Participants: 30
Lead: Mengling Feng

Taiwan
Current Participants: 48
Lead: Jason Hsu

Common Data Model workgroup

Develop and Promote Community Adoption of a New CDM Version

- KR1: Collate a list of all additions and/or changes to be made to a new CDM Version by Q1 — 10
- KR: 100% agreement on new CDM Version from all affected workgroups by Q2 — 10
- KR: Release DDLs for new CDM Version by Q3 — 10

Thanks Clair Blacketer!

Population-level Estimation / Patient-level Prediction workgroup

Perform the methods research required to generate reliable evidence on the effects of COVID vaccines from observational data

- Establish 1 research agenda that specifies knowledge gaps of interest to focus on with input from internal and external collaborators.
- Perform methods research, resulting in at least 5 submitted papers.
- Observe impact of this research in the design decisions of at least 1 internal study, 1 external study, and 1 study by a regulator.

10

10

8

Thanks Martijn Schuemie!

Clinical trials workgroup

Objective:

- Our use case is converting clinical trial data in CDISC SDTM format to OMOP CDM to optimize trial planning and reusability. Our proposal covers eight main topics with insufficient support in the OMOP CDM and Standardized Vocabularies. They include introducing new concepts and modifiers but no new CDM tables. Furthermore, we guide ETL developers when dealing with some data that is more complicated or specific scenarios that may be present in clinical trial submitted datasets (e.g., non-unique subject ids). Finally, it aligns with OMOP CDM v6 and the Oncology extension, with v5.3.1 backward compatibility.

Key Results:

- Drafted initial recommendations and best practices using limited synthetic SDTM datasets **(8)**
- Obtained agreement with Vivli and C-Path to get access to additional real world SDTM studies **(8)**
- Expanded the team with varying expertise and interest **(7)**

8

8

7

Thanks Mike Hamidi!

2.1	**Health Equity Workgroup - All Goals**
1.4	**Generate and disseminate real-world evidence about the substantial public health issue of health inequities**
1.5	3 fully-reproducible study packages executed across at least 20 OHDSI data partners
1.0	10 publications accepted in peer-reviewed journals
3.0	10 instances of presentations of our work
0.0	10 uses of OHDSI results by internal or external stakeholders that demonstrate influence in policy or clinical decision-making
0.7	**Standards for studying patient-level Social Determinants of health, Risk factors, and Needs (SDRN)**
1.0	Identify 5 priority use cases for patient-level SDRN, providing recommendations for storing, collecting, and mapping the relevant common data elements
1.0	Provide a recommendation (to data collectors like health systems) for screening tools useful for Health Equity research
1.5	Identify standard concepts for the data collected in recommended and commonly used screening tools
0.0	Engage with NLP team to release tools/methods for extracting SDRN from notes
0.0	Validate NLP tool for extracting SDoH in the context of a study
1.6	**Standards for studying community-level SDRN**
3.0	Identify 3 external datasets useful for incorporation in health equity studies
3.0	Identify a priority use case for linking place-based SDoH datasets to OMOP data
0.0	Identify a priority use case for rolling up patient-level OMOP data to describe spatial-population-level properties
0.5	Release a study package using GIS tools to gain a better understanding of health inequities
0.7	**Extend OHDSI tools to make a health equity perspective the default and/or an option**
2.0	Augment Patient Level Prediction (PLP) to expose the differences of predictions, predictive power, and other fairness metrics of the predictive models it creates.
0.0	Release tools to assess data quality / gaps for SDoH
0.0	Develop a framework for best practices in health equity across study design
4.3	**Engage the broader community on issues related to health equity**
7.0	Release directories of accessible educational resources and research relevant to health equity
0.0	Engage early-stage researchers group for researcher diversity and inclusion in our work
0.0	Engage education workgroup for health equity educational content
10.0	Organize health equity reading group / journal club
10.0	**Support the work of the group**
10.0	Apply, as a group, for a grant

Thanks Jake Gillberg!

HADES workgroup

Enable the OHDSI community to perform observational research following OHDSI best practices for characterization, population-level estimation, and patient-level prediction by providing a cohesive set of open-source analytic software

- To reduce dependency on a small number of developers, reduce the maximum number of packages per maintainer to 5 (5)
- Increase the unit test coverage to > 80% for all packages, require 2 QA to review test cases (10)
- Release 4 study package skeletons, and make sure they are directly available to users (3)

5

10

3

Thanks Martijn Schuemie!

OHDSI Vaccine Vocabulary Workgroup
2021 OKR Review

Objective:

A clear and complete standard vaccine hierarchy and accurate vaccine mappings in the OMOP Vocabulary

Key results:

- Define use cases and problems with current standard vaccine vocabulary — 9
- Develop a solution and solicit feedback from the OHDSI community — 4
- Implement the solution (new vocabulary, new relationships, improved mappings) — 4

Thanks Adam Black!

1. **Objective :** Build a casual environment for younger community members to collaborate.

   Key Result :
   - Monthly bi-hemisphere meetings to accommodate for younger community members in various time zones - 9
     - Scoring this as 9 because we've definitely generated a casual environment for junior researchers through meetings and through a group chat to feel comfortable bouncing ideas and asking questions. However, it's not a 10 because I think we can find a better time for both hemispheres to increase attendance.

2. **Objective**: Encourage junior researchers to gain experience in running OHDSI projects.

   Key Result:
   - Draft our own study protocol - 1
     - Scoring this as 1 because we didn't quite make any progress on it. We have discussed research that various members are doing, but have not proposed or come to a consensus on potential study topics.

3. **Objective**: Invite community members to discuss and present research

   Key Result:
   - Organize demos on how to use all the tools in OHDSI (e.g. HADES packages, Atlas, etc.)
   - Invite researchers to present on various topics (e.g. standard ETL process) - 7
     - Scoring this as 7 because we've had 2 scheduled tutorials (Patient Level Prediction & Cohort Building) by request.

4. **Objective:** Provide educational resources and a space to learn interactively and collaboratively

   Key Result:
   - Work with Roux Institute to advance OHDSI education (e.g. create a condensed version of the Book of OHDSI for beginners)
   - Create a centralized repository to store code that newcomers can use when they are just getting started - 2
     - Scoring this a 2 because we've made progress by meeting with individuals at the Roux Institute (Kristin Kostka and Brianne Mui) to brainstorm several ways of advancing OHDSI education, but we have not executed those ideas yet. We need to have follow up meetings with Roux

Thanks Faaizah Arshad!

Lots more community enablement

- OHDSI2021 Symposium
  - 1368 registered, 500-700 attending each session
- OHDSI weekly community calls
  - ~150-200 collaborators/week
- OHDSI communication channels
  - MSTeams: 2,774 registered users in OHDSI team
  - LinkedIn: 2,815 followers, 5-20k impressions/month
  - Twitter: 2,251 followers,
  - YouTube: 80 hrs created, 7,260 hrs watched

When poll is active, respond at **PollEv.com/patrickryan800**

Text **PATRICKRYAN800** to **22333** once to join

Which community meeting format did you prefer?

Network Sessions in Teams
Network Sessions in Gathertown
Workgroup Updates
Multiple Presentations Under Single Topic
Welcome To The Journey (for newcomers)
Focus Sessions (FDA Best/EHDEN/EUMAEUS/etc)
10-Minute Tutorials
Open Studies
OHDSI Fun
OKR Start, Mid-Year, Final Review
Visualization Challenge
Debates
Meet-And-Greet
Back To School
Meet The Titans
History of OHDSI
Community Brainstorm (Health Equity)

Engine of Impact (Dec Status)

Education

- Youtube
- Ehden

Engagement

- Github
- MS Teams

Impact

- Pubmed

On deck | In Progress | Done

Thanks Paul Nagy!

Youtube Data API (Public)
OHDSI Channel as of 2014 to 2021-12-01

Stat	Stats
Total number of videos submitted on OHDSI channel	450
Total number of hours created (2014-)	304
Total number of person years viewed (2000 hr/yr)	80.11
2021 number of videos	169
2021 videos hours created	78
2021 videos hours viewed	7,260

Thanks Paul Nagy!

Additional resources about OKRs

- Google page: https://rework.withgoogle.com/guides/set-goals-with-okrs/steps/set-objectives-and-develop-key-results/
- Measure What Matters, John Doerr: https://www.whatmatters.com/