OHDSI2020 State of the Community

George Hripcsak MD MS

Director, Columbia University OHDSI Coordinating Center
Professor and Chair of Biomedical Informatics
Columbia University Irving Medical Center
NewYork-Presbyterian Hospital

Thank you to our sponsors!

We thank the FDA for their generous support of the 2020 OHDSI symposium through the FDA SCIENTIFIC CONFERENCE GRANT PROGRAM (R13FD006972)

Thanks to OHDSI2020 Scientific Committee

Thanks to OHDSI2020 Tutorial faculty

- OHDSI2020 offered 5 tutorials, offered in different timezones and languages to expand the reach of our efforts
  - OMOP CDM/Vocab, Data quality, OHDSI Tool Ecosystem, Oncology, Phenotype development
- **>550** collaborators registered for these open science tutorials
- Thanks to community faculty!

- Rimma Belenkaya
- Bonzu Bi
- Clair Blacketer
- Conor Callahan
- Frank Dimartini
- Asieh Golozar
- Michael Gurley
- Vojtech Huser
- Suho Jin
- Greg Klebanov
- Kristin Kostka
- Jing Li
- Xin Li
- Yunpeng Li
- Ajit Londhe
- Xiaojun Ma
- Robert Miller
- Karthik Natarajan
- Songheui Oh
- Masafuni Okada
- Anna Ostropolets
- Chui Hyoung Park
- Jimyung Park
- Youjin Park
- Meghan Pettine
- Melanie Philofsky
- Hanieh Razzaghi
- Anthony Reckard
- Christian Reich
- Patrick Ryan
- Selva Muthu Kumaran Sathappan
- Anthony Sena
- Lingyi Tang
- Don Torok
- Mui Van Zandt
- Changran Wang
- Xialin Wang
- James Wiggins
- Andrew Williams
- Xinwei Zhang
- Ying Zhang

Thanks to OHDSI2020 Study-a-thon

- The next two days, we'll be having OHDSI2020 Symposium Study-a-thon: PROTEUS
  - Externally validating and re-calibrating two prediction models used in common clinical practice
    - Pooled cohort equation (PCE) – 10-yr risk of ASCVD for persons without pre-existing heart disease
    - Revised cardiac risk index (RCRI) – 30-day CVD risk following non-emergent, non-cardiac surgery
- Thanks to Tufts PACE team and friends for their leadership
  - Andrew Williams, David Kent, Ben Wessler
  - Jenna Reps, Peter Rijnbeek
  - Evan Minty, Alison Callahan

OHDSI2020

18 straight hours of open science, international collaboration, and community fun

Eastern Time	OHDSI2020 Symposium Calendar of Events
12:00am-01:00am	State of the community
01:00am-03:00am	Plenary session: Large-scale network phenotype development, evaluation and characterization
03:00am-04:00am	Community network breakouts #1
04:00am-05:00am	Collaborator Showcase Lightning Talks
05:00am-06:00am	Collaborator Showcase Posters and Demos #1
06:00am-07:00am	Family Feud: Battle of the Titans Episode #1
07:00am-08:00am	State of the community
08:00am-10:00am	Plenary session: Large-scale network phenotype development, evaluation and characterization
10:00am-11:00am	Community network breakouts #2
11:00am-12:00pm	Collaborator Showcase Posters and Demos #2
12:00pm-01:00pm	Family Feud: Battle of the Titans Episode #2
01:00pm-02:00pm	Panel – Building Trust: Evidence and its Communication
02:00pm-03:00pm	Collaborator Showcase Lightning Talks
03:00pm-04:00pm	Collaborator Showcase Posters and Demos #3
04:00pm-05:30pm	Women of OHDSI Leadership Forum
05:30pm-06:00pm	Closing ceremony

OHDSI2020 Starts

One virtual event bringing together our entire community from all around the world

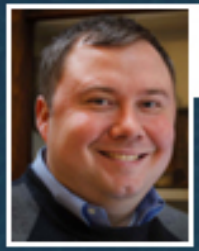
Global Start/End Times

Los Angeles, CA, USA	Sun, Oct 18, 2020	9:00 pm	3:00 pm
Denver, CO, USA	Sun, Oct 18, 2020	10:00 pm	4:00 pm
Houston, TX, USA	Sun, Oct 18, 2020	11:00 pm	5:00 pm
New York, NY, USA	Mon, Oct 19, 2020	12:00 midn	6:00 pm
Oxford, United Kingdom	Mon, Oct 19, 2020	5:00 am	11:00 pm
Rotterdam, Netherlands	Mon, Oct 19, 2020	6:00 am	12:00 midn
Riyadh, Saudi Arabia	Mon, Oct 19, 2020	7:00 am	1:00 am
New Delhi, India	Mon, Oct 19, 2020	9:30 am	3:30 am
Beijing, China	Mon, Oct 19, 2020	12:00 noon	6:00 am
Seoul, South Korea	Mon, Oct 19, 2020	1:00 pm	7:00 am
Adelaide, Australia	Mon, Oct 19, 2020	2:30 pm	8:30 am

OHDSI2020 Ends

OHDSI 2020 Plenary Session:

Large-Scale Network Phenotype Development, Evaluation and Characterization



Patrick Ryan, PhD

A Framework for Phenotype Development and Evaluation

Anna Ostropolets, MD

Concept Prevalence — a OHDSI Network Study
Design Diagnostics — PHOEBE

Gowtham Rao, MD, PhD

Data Diagnostics
OHDSI Phenotype Library

This session will be shown twice (1 am ET, 8 am ET) during the OHDSI Global Symposium so collaborators around the world have an opportunity to see these exciting presentations.

Anthony Sena

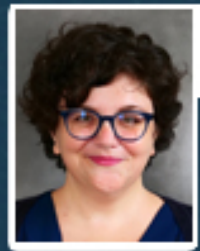
A Framework for Large-Scale Characterization

Talita Duarte-Salles, PhD

CHARYBDIS — Large-Scale Characterization of COVID-19 Disease Natural History

Dani Prieto-Alhambra, MD, PhD

SCYLLA — Large-Scale Characterization of COVID-19 Treatment Utilization



Noémie Elhadad, PhD

HERA — Large-Scale Characterization of Health Equity

OHDSI 2020 Symposium Panel:

Building Trust: Evidence and its Communication

Amy Abernethy, MD, PhD

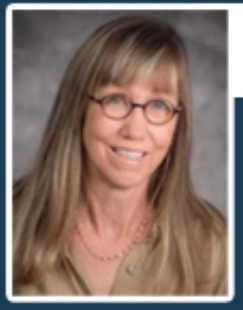
Principal Deputy Commissioner
US FDA

Patti Brennan, RN, PhD

Director
National Library of Medicine, NIH

Magdalena Skipper, PhD

Editor in chief
Nature

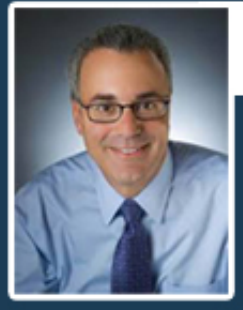


Deborah Nelson, JD

Associate Professor of
Investigative Journalism
University of Maryland

Roni Caryn Rabin, MS

Science Reporter
New York Times



George Hripcsak, MD, MS

Chair and Professor of
Biomedical Informatics
Columbia University

Register for the OHDSI Symposium at www.OHDSI.org

#OHDSI2020 Lightning Talks

Session I: Data Standards and Methods Research

- Lessons Learned Converting Patient Level Data to the OMOP Common Data Model to Support the COVID-19 Crisis (Erica Voss, Janssen R&D)
- TiDE: Open Source Text de-identification Pipeline for Clinical Notes in the OMOP-CDM (Jose Posada, Stanford)
- Developing a Benchmark for Empirically Evaluating the Performance of Phenotype Evaluation Tools (Joel Swerdel, Janssen R&D)
- Covariate Balance of Potential Unmeasured Confounding Using Large-scale Propensity Score Modeling (RuiJun Chen, Geisinger)
- OMOP Cancer Model – Making the OMOP Common Data Model fit for Cancer Research (Rimma Belenkaya, Memorial Sloan Kettering)
- Detailed Cancer Specific Analytics in the Remote OHDSI Network Settings (Asieh Golozar, Regeneron)

Register for the OHDSI Symposium at www.OHDSI.org

#OHDSI2020 Lightning Talks

Session II: Clinical Application and Evidence Dissemination

- Towards Clinical Data-Driven Eligibility Criteria Optimization for Interventional COVID-19 Clinical Trials (Jaehyun Kim, Columbia University)
- Depicting the diagnostic and treatment experiences of bladder cancer patients in U.S. claims data using OHDSI tools (Rupa Makadia, Janssen R&D)
- Predictors of diagnostic transition from major depression disorder to bipolar disorder (Christophe Lambert, University of New Mexico)
- Renin-Angiotensin System Blockers and Susceptibility to COVID-19: a Multinational Open Science Cohort Study (Daniel Morales, University of Dundee)
- OHDSI Alexa Skill for a Personalized COVID-19 Outcomes Risk Calculator (Lisa Evans, Baldwin School)
- EHDEN Academy - a global educational collaboration with OHDSI (Henrik John, Erasmus MC)

Register for the OHDSI Symposium at www.OHDSI.org

OHDSI 2020 Symposium Panel:

2nd Annual Women of OHDSI Leadership Forum

Vivian Lee, MD, PhD, MBA

President of Health Platforms
Verily Life Sciences

Rear Admiral Deborah Hopson, PhD

Senior Vice President
Public Health Systems Innovation
MayaTech Corporation

Robyn Jones, MD

Senior Medical Director
Women's Health
Johnson & Johnson

Subha Madhavan, PhD

Chief Data Scientist, Associate Dean/
Professor of Oncology and Biomedical
Informatics, Georgetown University

Ru-fong Cheng, MD

Senior Medical Director
Women's Health
Johnson & Johnson

moderator

Maura Beaton, MS

Women of OHDSI
Workgroup Leader
Columbia University

moderator

Register for the OHDSI Symposium at www.OHDSI.org

Congratulations to OHDSI 2020 Titan Award Nominees

Recognizing Contributions Towards Advancing OHDSI's Mission

Categories

- Data Standards
- Methodological Research
- Open-Source Development
- Clinical Application
- Community Collaboration
- Community Leadership
- Community Support

2020 Nominees

Barcelona RA Study-A-Thon (Ed Burn, Jamie Weaver, Meghna Jani) • Clair Blacketer • Clinical Trial CDM Team (Sonia Araujo, Maxim Moinat, Emma Vos, Gregory Kebanov, Michael Kallfelz, Philip Solovyev, Joshua Ransom) • Ru Cheng • Department of Medical Informatics, Erasmus Medical Center • Talita Duarte-Salles • EMA CDM Validation Team (Gianmario Candore, Karin Hedenmalm, Jim Slattery) • Peter Hoffmann • Vojtech Huser • ICARIUS Team (Daniel Morales, Mitch Conover, Marc Suchard et al) • Jennifer Lane/COVID HcQ Team • Kristin Kostka • Robert Miller • Maxim Moinat • Karthik Natarajan • Aki Nishimura • Oxford NDORMS Team • Daniel Prieto-Alhambra • Gowtham Rao • Craig Sachson • Paola Saroufim • Anthony Sena • Cynthia Sung • Nicolas Thurin • Seng Chan You

Find out who wins the Titan Awards during the OHDSI 2020 Closing Ceremony!

And a little fun along the way….

- OHDSI Meme-a-thon - Check out channel in the OHDSI2020 Symposium MSTeams, tell us your favorites and create your own!

- Family Feud – Our OHDSI Titans have squared off in two different epic battles to see how well they know our community.

- OHDSI Bingo – capture live action shots from the Symposium from our community members and special guests as they happen, first to Tweet @OHDSI a card with a completed row/column/diagonal wins a prize!

- OHDSI Energy Breaks – collaborators will keep you on your toes as you power through 18 hours of community activity!

George Hripcsak (Columbia)	Seng Chan You (Ajou)	Dani Prieto-Alhambra (Oxford)	Amy Abernathy (FDA)	Chuck Norris (Walker Texas Ranger)
Colin Mochrie (Whose Line is it Anyway?)	Asieh Golozar (Regeneron)	Kristin Kostka (Iqvia)	Daniel Morales (Dundee)	Anna Ostropolets (Columbia)
Gowtham Rao (Janssen)	Lola the Sloth (Dallas Zoo)	OHDSI	Lisa Evans (Baldwin School)	Henrik John (Erasmus MC)
Vivian Lee (Verily)	Talita Duarte-Salles (IDIAP)	Penn Jillette (Penn & Teller)	Marc Suchard (UCLA)	Rimma Belenkaya (Memorial Slone Kettering)
Andrew Williams (Tufts)	Roni Caryn Rabin (NY Times)	Jose Posada (Stanford)	Lisa Leslie (WNBA HOFer)	Patti Brennan (National Library of Medicine)

OHDSI is

an open science community

OHDSI's mission

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

OHDSI's values

- **Innovation**: Observational research is a field which will benefit greatly from disruptive thinking. We actively seek and encourage fresh methodological approaches in our work.
- **Reproducibility**: Accurate, reproducible, and well-calibrated evidence is necessary for health improvement.
- **Community**: Everyone is welcome to actively participate in OHDSI, whether you are a patient, a health professional, a researcher, or someone who simply believes in our cause.
- **Collaboration**: We work collectively to prioritize and address the real world needs of our community's participants.
- **Openness**: We strive to make all our community's proceeds open and publicly accessible, including the methods, tools and the evidence that we generate.
- **Beneficence**: We seek to protect the rights of individuals and organizations within our community at all times.

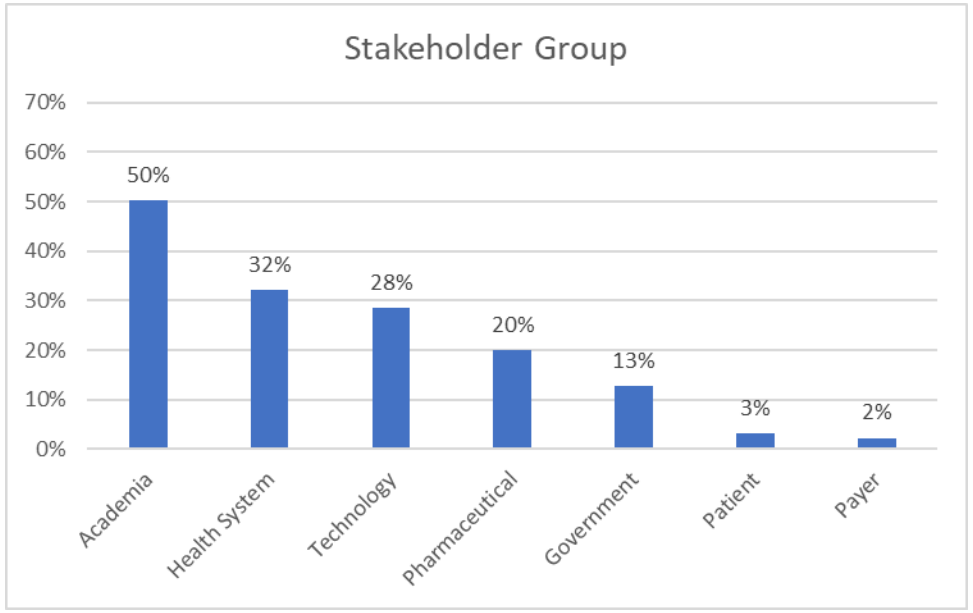
OHDSI community

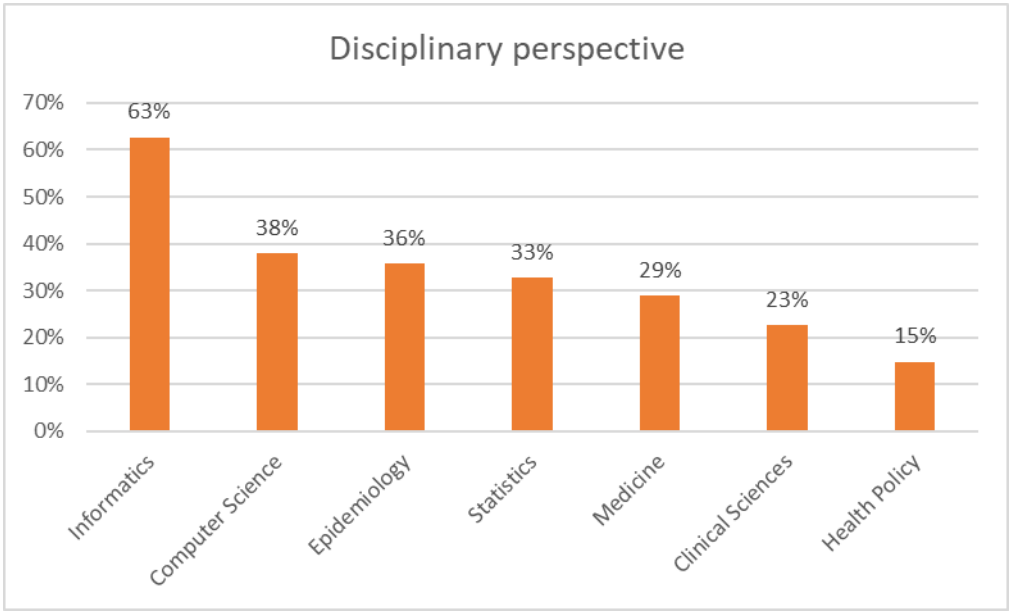
We're all in this journey together…

OHDSI's community engagement

- Active community online discussion: forums.ohdsi.org
  - **3,997** distinct users have made **25,117** posts with **4,705,098** pageviews
  - Implementers, Developers, Researchers, CDM Builders, Vocabulary users, OHDSI in Korea, OHDSI in China, OHDSI in Europe
- Weekly community meetings for all collaborators to share their research ideas and progress
- 10 workgroups for solving shared problems of interest
- 5 regional chapters fostering local collaborations: Korea, Japan, China, Europe, Australia
- Tutorials in OHDSI tools and best practices, taught by OHDSI collaborators for OHDSI collaborators, 'live' and through EHDEN Academy
- OHDSI Symposiums held annually in North America, Europe and Asia to provide the community 'face-to-face' opportunities to showcase research collaborations
- Follow us on Twitter @OHDSI and LinkedIn
- ***New:*** OHDSI Microsoft Teams environment created to further enable collaboration

Diversity of the OHDSI community represented today at the OHDSI2020 Symposium





Relationship with OHDSI community	Persons
I am new to OHDSI and curious to learn more	1016
I use OHDSI tools and methods to support my research	492
I am in the process of converting my data into the OMOP CDM	378
I have an OMOP CDM instance	376
I actively participate in OHDSI meetings and work groups	371
I actively participate in discussions on the OHDSI forum	161
I am participating in an OHDSI network research study	161
I contribute code to the OHDSI GitHub	95

OHDSI is

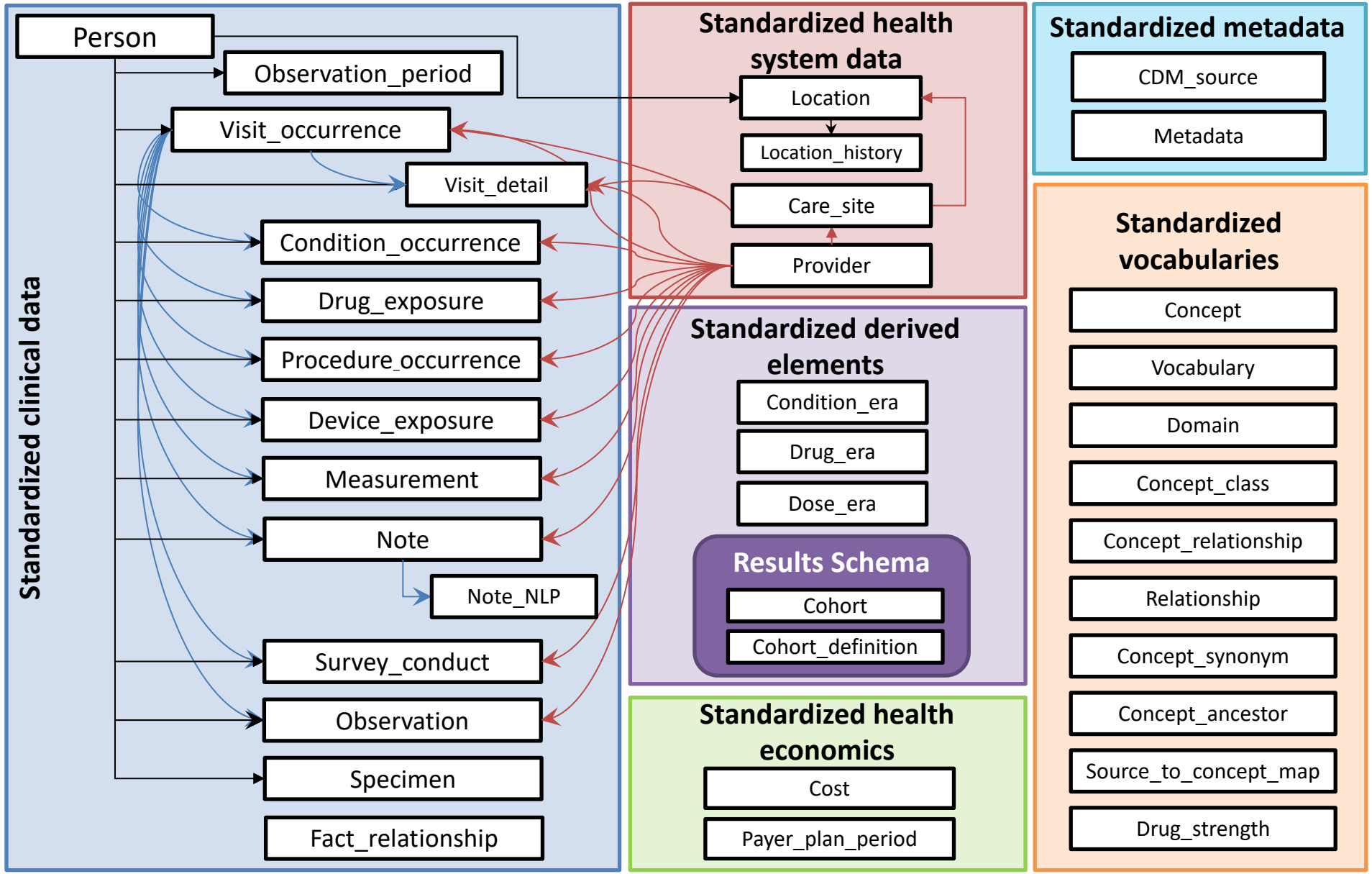
an international data network

Data across the OHDSI community

- 205 self-reported entries on 2020 OHDSI Data Network inventory
- **166** different databases with patient-level data from various perspectives:
  - Electronic health records, administrative claims, hospital systems, clinical registries, health surveys, biobanks
- **23** different countries with at least one database in the community
- **>578 million** distinct patients (as determined by max per country)
  - >250m in US, >100m in Europe, >100m in South America, >50m in Asia
- **>2.7 billion** patient records across all databases who reported to be part of the network

All using one open community data standard:
OMOP Common Data Model

Open community data standard: OMOP CDM



OHDSI's standardized vocabularies

- 153 Vocabularies across 41 domains
  - MU3 standards: SNOMED, RxNorm, LOINC
  - Disparate sources: ICD9CM, ICD10(CM), Read, NDC, Gemscript, CPT4, HCPCS…
- >9 million concepts
  - >3.3 million standard concepts
  - >5.1 million source codes
  - >629,000 classification concepts
- >55 million concept relationships
- >84 million ancestral relationships

OHDSI is
collaborating through workgroups

Workgroups

- Common Data Model
- Population-level Estimation / Patient-level Prediction
- Phenotype development
- Natural Language Processing (NLP)
- Electronic Health Records (EHR) ETL best practices
- Geographic Information Systems (GIS)
- Oncology
- Psychiatry
- Medical Devices
- HADES – Health Analytics Data-to-Evidence System
- Women of OHDSI

Highlights

- CDM – Clair Blacketer
- Vocabulary / China – Christian Reich
- Methods – Martijn Schuemie

OHDSI is
engaged in international initiatives

Initiatives

- FDA
- eMERGE
- AllOfUs
- National COVID-19 Cohort Collaborative (N3C)
- EHDEN
- HIRA

OHDSI-based FDA BEST

Community Engagement and Development Coordination Center

- FDA's Center for Biologics Evaluation and Research (CBER)
  - Biologics Effectiveness and Safety (BEST)

- OHDSI serves as a convener organization
  - Columbia University, Northeastern University, UCLA
  - Convener of meetings, training, and research
  - Facilitate for broad collaboration

Highlighted Initiatives from others

- AllOfUs – Karthik (done)
- National COVID-19 Cohort Collaborative (N3C) (requested)
- EHDEN – Peter (scheduled)
- HIRA – Seng Chan You (scheduled)

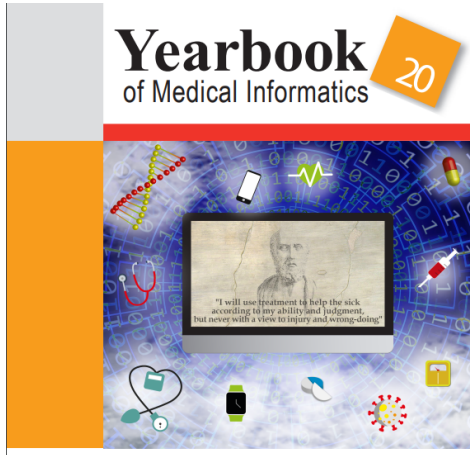
OHDSI is
making a recognized impact

OHDSI Events

OHDSI Korea International Symposium (12/2019)

OHDSI Barcelona Study-a-Thon on Rheumatoid Arthritis (1/2020)

OHDSI Oxford Study-a-Thon on COVID-19 (3/2020)



Clinical Research Informatics

Christel Daniel[1,2], Dipak Kalra[3], Section Editors for the IMIA Yearbook Section on Clinical Research Informatics

[1] Information Technology Department, AP-HP, Paris, France
[2] Sorbonne University, University Paris 13, Sorbonne Paris Cité, INSERM UMR_S 1142, LIMICS, Paris, France
[3] The University of Gent, Gent, Belgium

Table 1 Best paper selection of articles for the IMIA Yearbook of Medical Informatics 2020 in the section 'Clinical Research Informatics'. The articles are listed in alphabetical order of the first author's surname.

Section
Clinical Research Informatics
▪ Paddock S, Abedtash H, Zummo J, Thomas S. Proof-of-concept study: Homomorphically encrypted data can support real-time learning in personalized cancer medicine. BMC Med Inform Decis Mak 2019 Dec 4;19(1):255.
▪ Suchard MA, Schuemie MJ, Krumholz HM, You SC, Chen R, Pratt N, Reich CG, Duke J, Madigan D, Hripcsak G, Ryan PB. Comprehensive comparative effectiveness and safety of first-line antihypertensive drug classes: a systematic, multinational, large-scale analysis. Lancet 2019 Nov 16;394(10211):1816-26.
▪ Yu Y, Ruddy KJ, Hong N, Tsuji S, Wen A, Shah ND, Jiang G. ADEpedia-on-OHDSI: A next generation pharmacovigilance signal detection platform using the OHDSI common data model. J Biomed Inform 2019 Mar;91:103119.

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Volume 62 May 18, 2020

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ISSUE No. 1598

IN THIS ISSUE

Drugs for Hypertension

TABLES

Drugs available for treatment of chronic hypertension and their dosages, adverse effects, and costs are listed in the tables that begin on page 74. Treatment of hypertensive urgencies and emergencies is not discussed here.

NONPHARMACOLOGIC INTERVENTIONS — Adoption of a heart-healthy diet such as the Dietary Approaches to Stop Hypertension (DASH) diet,[1] limiting intake of sodium (ideally <1500 mg/day)[2] and alcohol (≤2 drinks/day for men and ≤1 drink/day for women),[3] and participation in a structured exercise program[4,5] are recommended for all adults with elevated blood pressure. Weight loss is recommended for adults who are overweight.[6] Potassium supplementation (target intake 3500-5000 mg/day), preferably through diet, is recommended for patients whose potassium intake is not restricted because of chronic kidney disease or use of a drug that decreases potassium excretion.[7]

PHARMACOLOGIC THERAPY — The goal of antihypertensive drug therapy recommended by the American College of Cardiology and American Heart Association is a blood pressure of <130/80 mm Hg.[8] All patients with a systolic blood pressure of ≥140 mm Hg or a diastolic pressure of ≥90 mm Hg should be treated with one or more antihypertensive drugs. Starting treatment with two drugs from different classes is recommended when baseline

Summary: Drugs for Hypertension

- The goal of antihypertensive drug therapy is a blood pressure of <130/80 mm Hg.
- Beginning treatment with two antihypertensive drugs from different classes is recommended when baseline blood pressure is ≥20/10 mm Hg above goal and should be considered when baseline blood pressure is ≥140/90 mm Hg.
- A thiazide-like diuretic, a calcium channel blocker, an angiotensin-converting enzyme (ACE) inhibitor, or an angiotensin receptor blocker (ARB) is recommended as initial therapy in the general population of hypertensive patients.
- A thiazide-like diuretic or calcium channel blocker is recommended for initial treatment of black patients, except for those with chronic kidney disease or heart failure, who should receive an ACE inhibitor or an ARB.
- An ACE inhibitor or an ARB is recommended for initial treatment of hypertension in non-black patients with diabetes. In the absence of albuminuria, a thiazide-like diuretic or calcium channel blocker would also be a reasonable choice.
- Beta blockers are recommended as initial therapy only for patients with another indication for a beta blocker, such as myocardial infarction or heart failure.
- Many patients with hypertension, especially black patients, need >1 drug to control their blood pressure. If the first drug does not achieve blood pressure goals, adding a second drug with a different mechanism of action is generally more effective than increasing the dose of the first drug and often allows for use of lower, better tolerated doses of both drugs.
- If an ACE inhibitor or an ARB was used initially, it is reasonable to add a thiazide-like diuretic or calcium channel blocker. Two or more renin-angiotensin system inhibitors should not be used concurrently.

Table 1. Initial Monotherapy for Hypertension

General Population	
Non-black	THZD, ACE inhibitor, ARB, or CCB
Black	THZD or CCB
Chronic Kidney Disease (CKD)	
Non-black	ACE inhibitor or ARB
Black	ACE inhibitor or ARB
Diabetes	
Non-black	ACE inhibitor or ARB[1]
Black	THZD or CCB[2]

ACE = angiotensin-converting enzyme; ARB = angiotensin receptor blocker; CCB = calcium channel blocker; THZD = thiazide or thiazide-like diuretic

1. In the absence of albuminuria, a THZD or a CCB would also be a reasonable choice.
2. Black patients with both diabetes and CKD should receive an ACE inhibitor or an ARB.

EUROPEAN MEDICINES AGENCY
SCIENCE MEDICINES HEALTH

European Network of Centres for Pharmacoepidemiology and Pharmacovigilance

EMA/95098/2010 Rev.8

The European Network of Centres for Pharmacoepidemiology and Pharmacovigilance (ENCePP) Guide on Methodological Standards in Pharmacoepidemiology

(Revision 8)

As stated by Watson et al.in relation to one of the published studies, lack of transparency and uncertainties about research standards applied raise doubts about published results. Morales et al. supported the reproducibility of their study by publishing the study protocol in the EU PAS Register ahead of time, providing a start-to-finish executable code, facilitating the sharing and exploration of the complete result set with an interactive web application and asking clinicians and epidemiologists to perform a blinded evaluation of propensity score diagnostics for the treatment comparisons.

Year-in-review:
OHDSI literature Sept2019-Sept2020