

evidentli

Healthier
Data

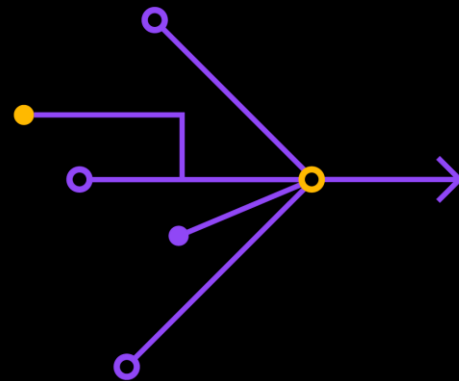


Technical Masterclasses for hands on learning

Guy Tsafnat, PhD

Patrick Ryan, PhD

8 July 2023





OHDSI Community in Action

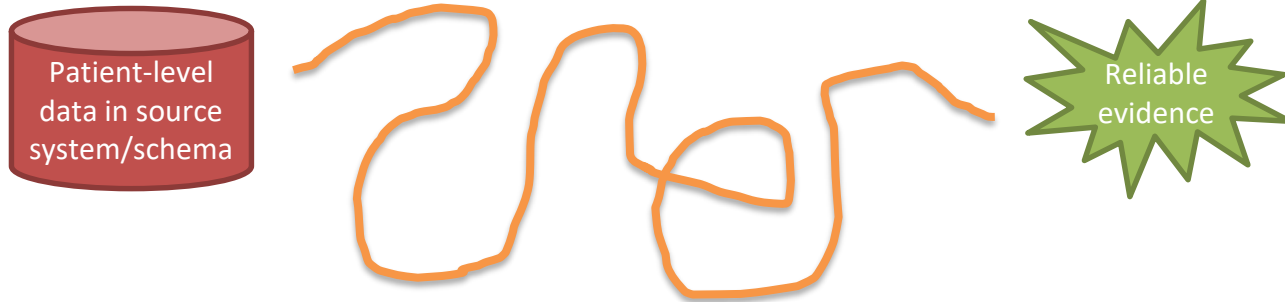
Patrick Ryan, PhD

Vice President, Observational Health Data Analytics, Janssen
Research and Development

Assistant Professor, Adjunct, Department of Biomedical
Informatics, Columbia University Medical Center

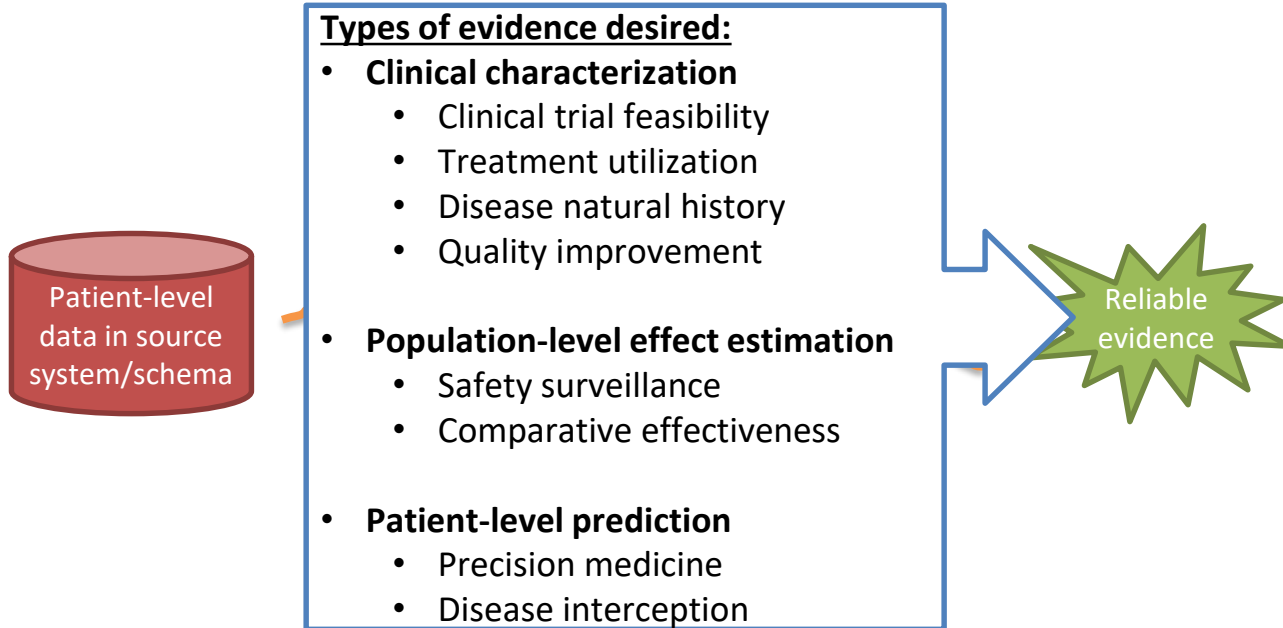


The journey to real-world evidence



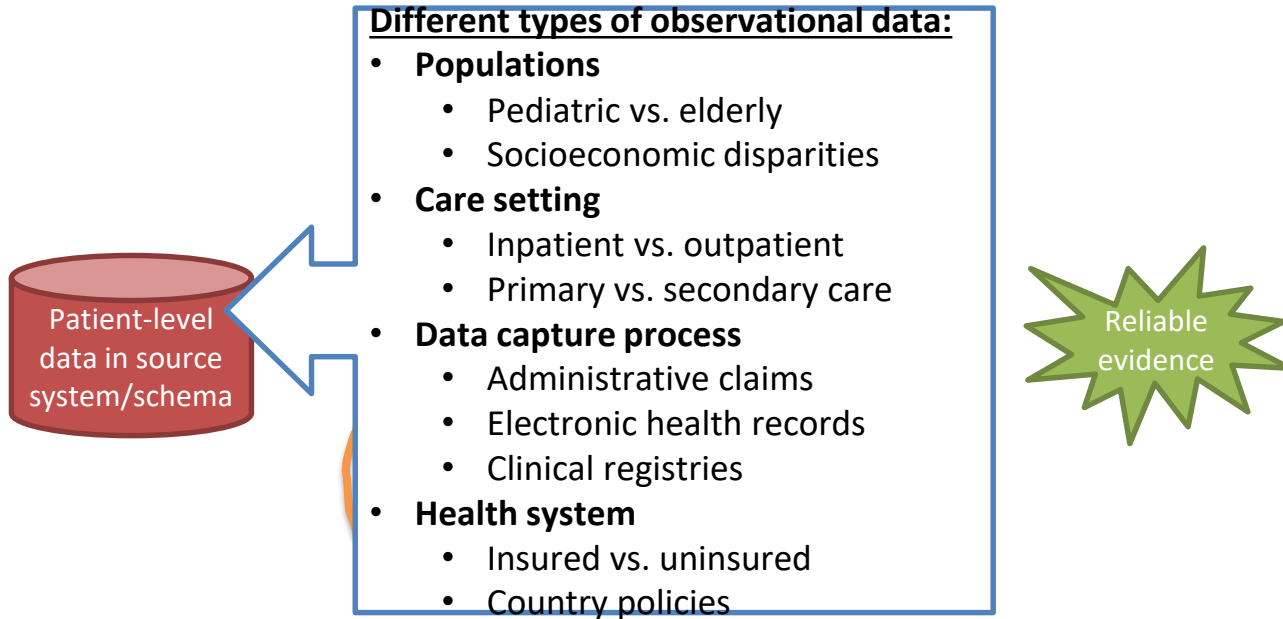


The journey to real-world evidence





The journey to real-world evidence





Desired attributes for reliable evidence

Desired attribute	Question	Researcher	Data	Analysis	Result
Repeatable	Identical	Identical	Identical	Identical	= Identical
Reproducible	Identical	Different	Identical	Identical	= Identical
Replicable	Identical	Same or different	Similar	Identical	= Similar
Generalizable	Identical	Same or different	Different	Identical	= Similar
Robust	Identical	Same or different	Same or different	Different	= Similar
Calibrated	Similar (controls)	Identical	Identical	Identical	= Statistically consistent

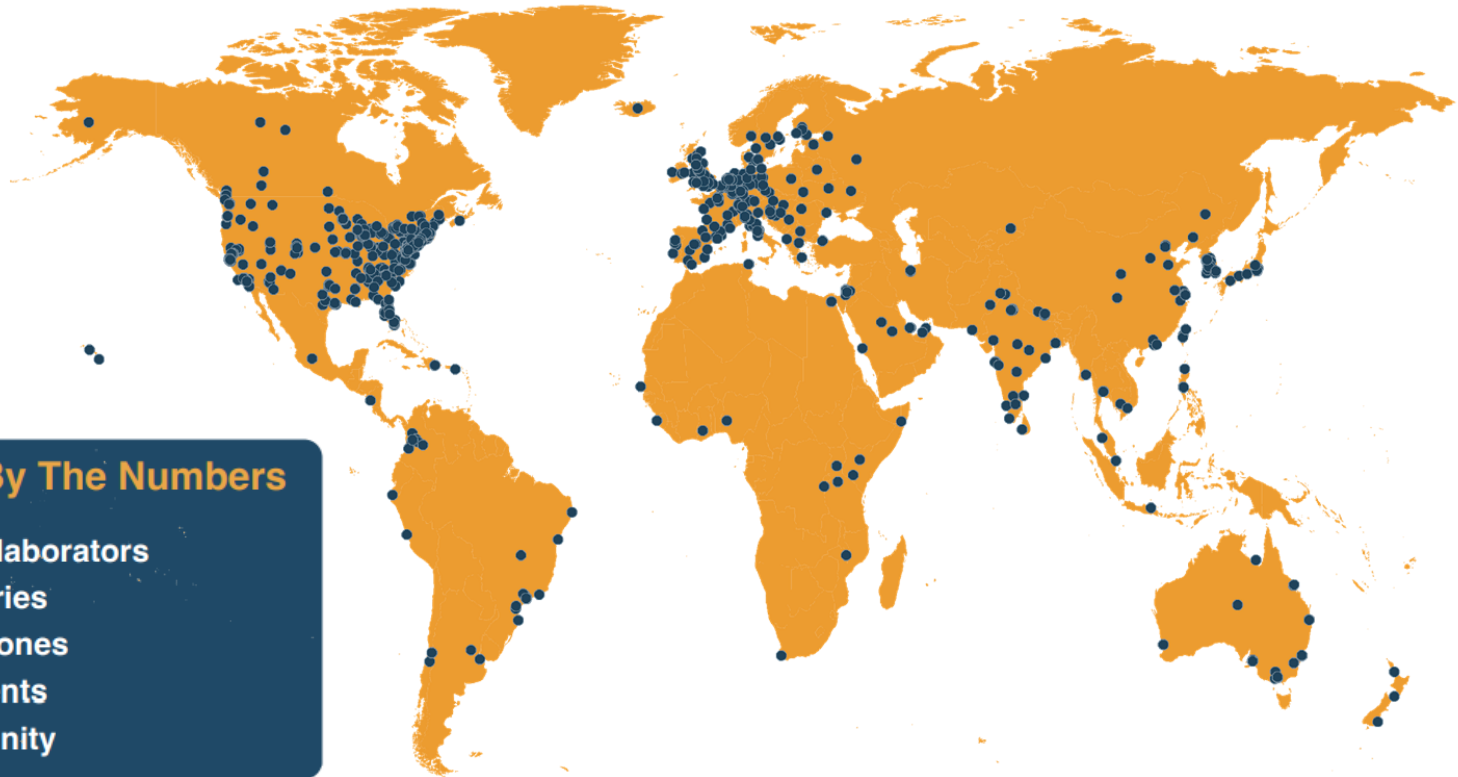


OHDSI's mission

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



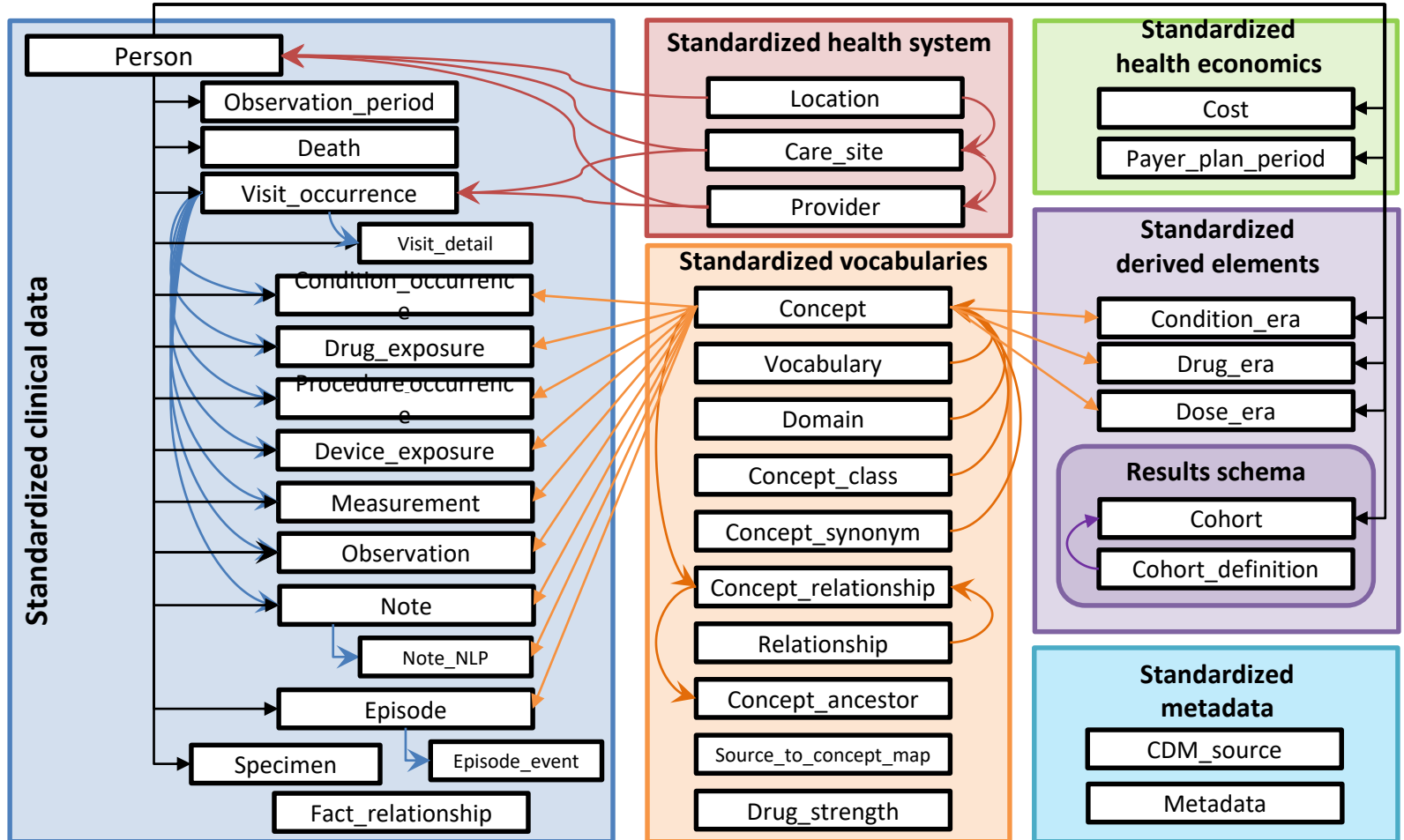
Map of collaborators



OHDSI By The Numbers

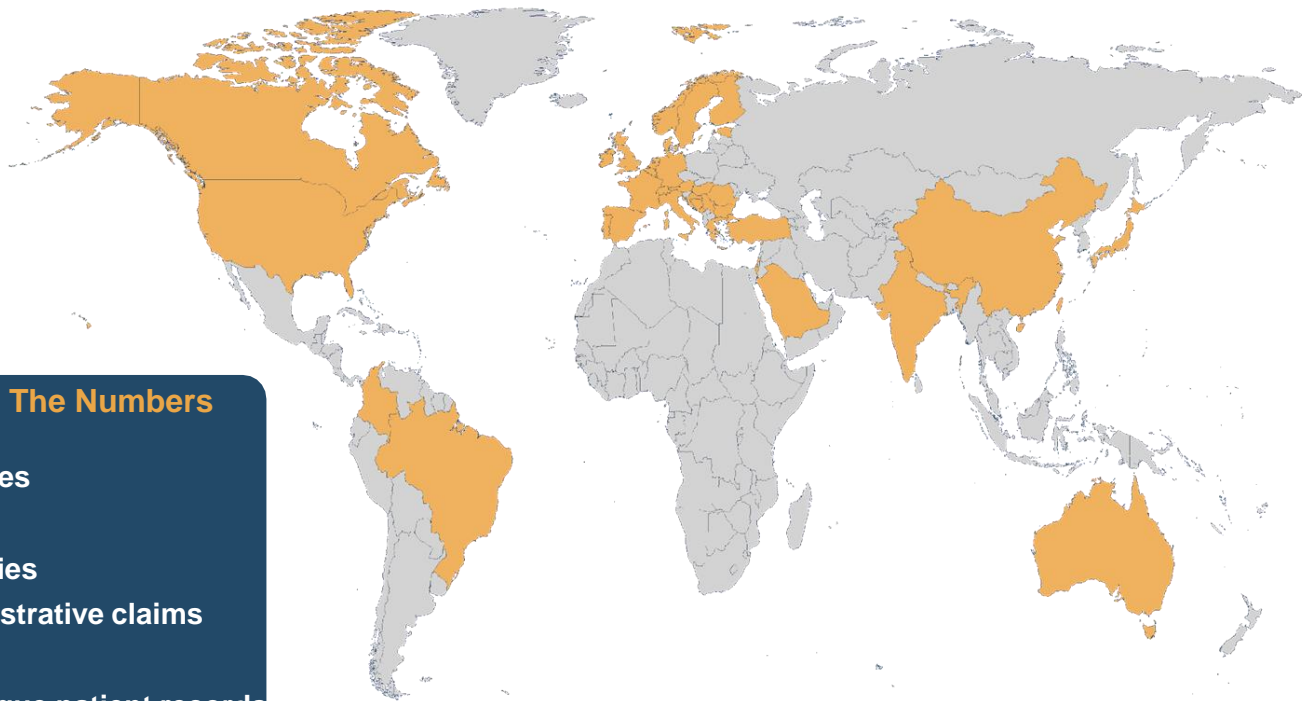
- 3,266 collaborators
- 80 countries
- 21 time zones
- 6 continents
- 1 community

OMOP Common Data Model v5.4





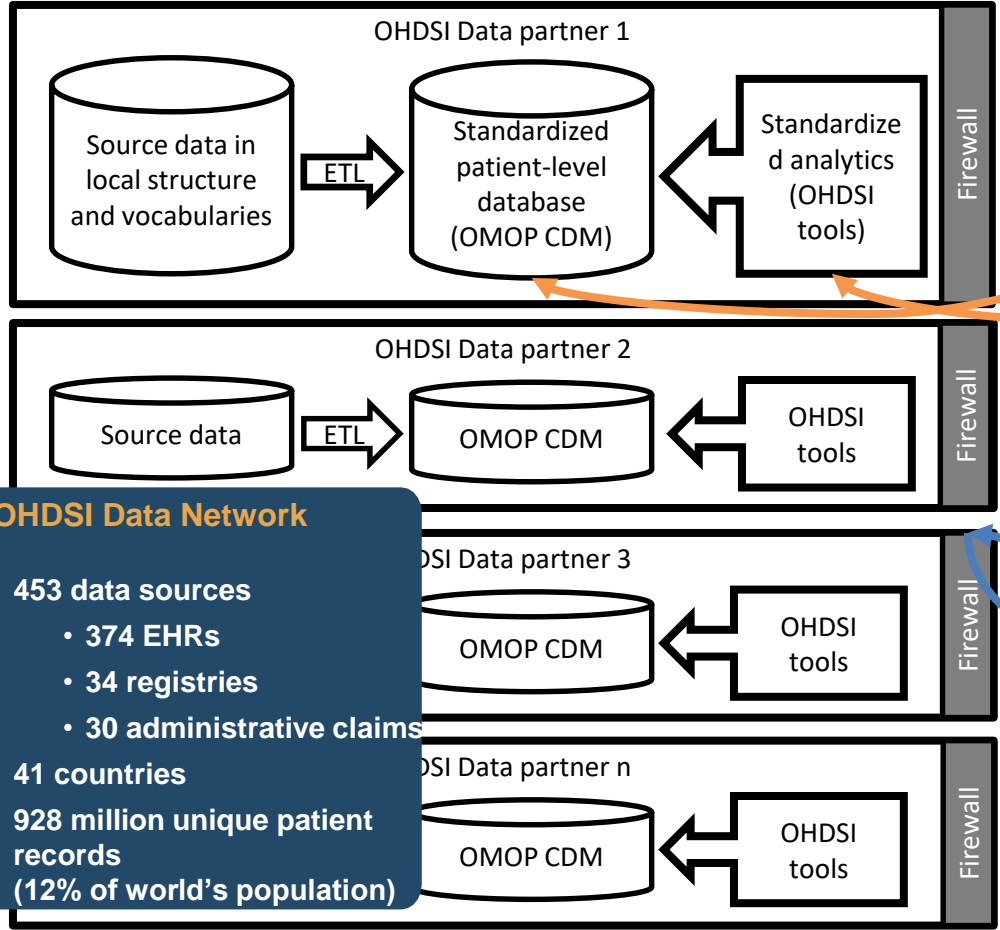
OHDSI data partners



OHDSI Data By The Numbers

- 453 data sources
 - 374 EHRs
 - 34 registries
 - 30 administrative claims
- 41 countries
- 928 million unique patient records (12% of world's population)

OHDSI data network



OHDSI Data Network

- 453 data sources
 - 374 EHRs
 - 34 registries
 - 30 administrative claims
- 41 countries
- 928 million unique patient records (12% of world's population)

OHDSI collaborations

Open community data standards (OMOP CDM)

Open source development (OHDSI tools)

Methodological research

Clinical evidence generation

OHDSI Network studies

Pre-specified protocol with analysis

OHDSI Evidence

- >500 publications
- Clinical: JAMA, BMJ, Lancet
- Methods: JAMIA, JBI, PNAS
- Results cited by EMA, UpToDate to inform

Evidence dissemination

OHDSI Collaborators

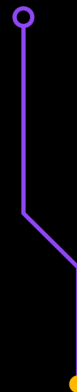
- 3266 collaborators
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Making real world data actionable with OMOP

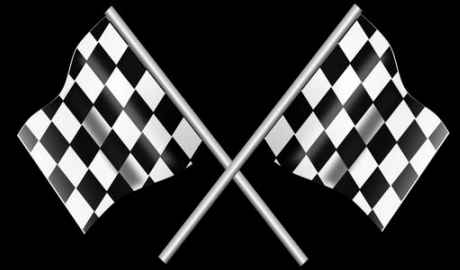
Technical Masterclasses for hands on learning
guyt@evidentli.com

8 July 2023





OMOP lets us get insights from data. But getting there ...



Ingestion

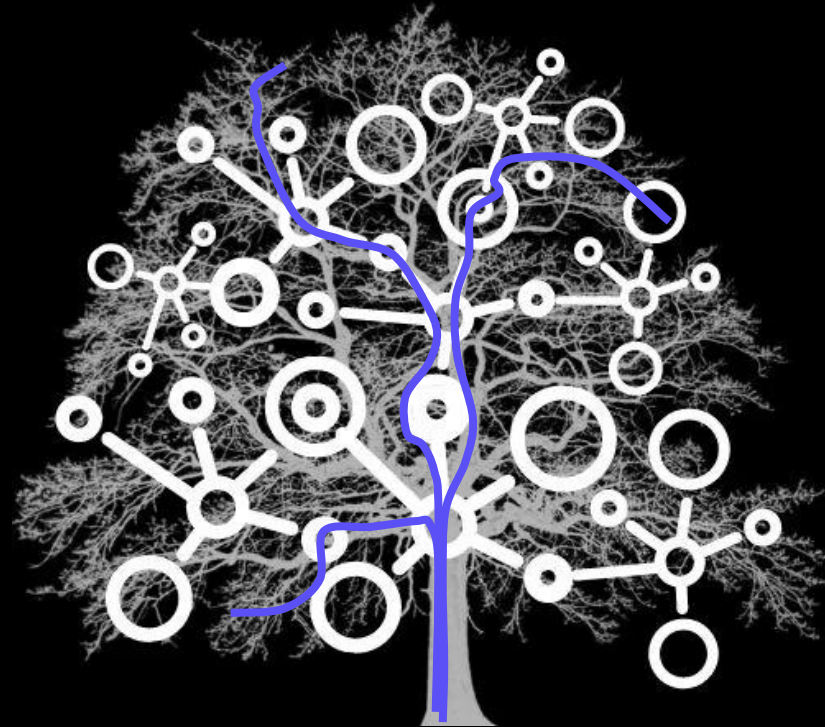
Time to
Value

Data
Quality

Scarce
Skills



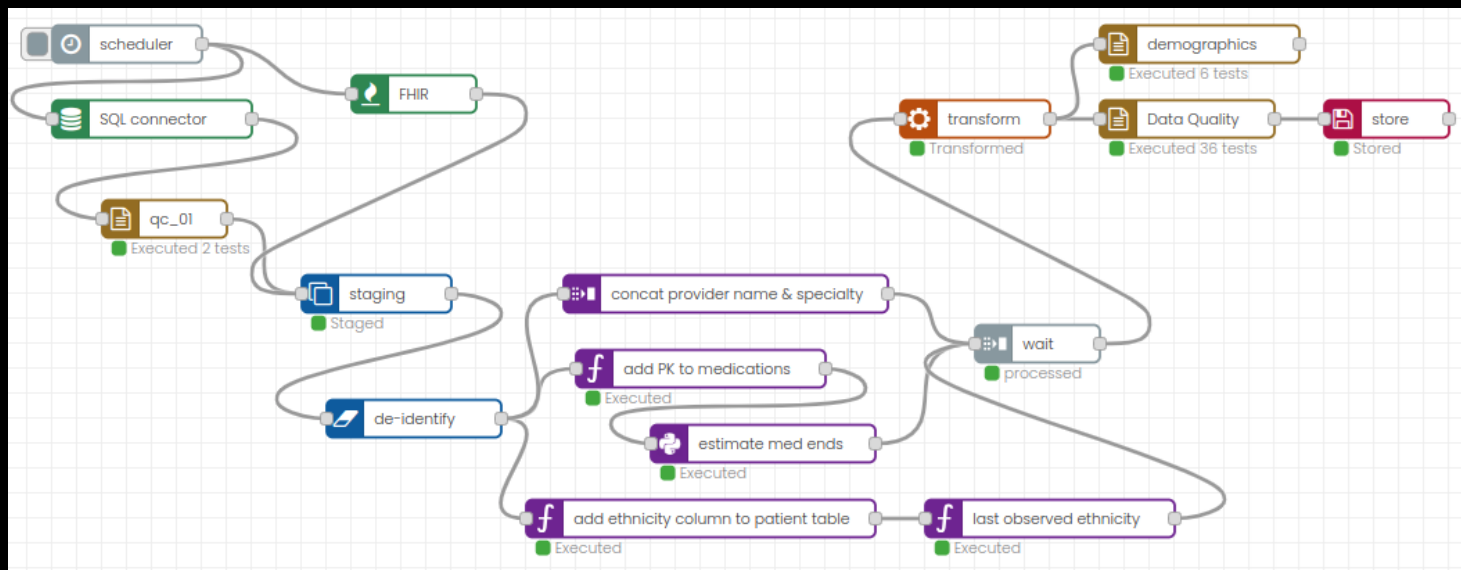
- Multiple facilities
- 8-30 databases per hospital
- Many vendors
- Hyper customized
- Variation in training
- Variation in population
- Variation in settings
- Cultural variation



From sources to OMOP



Ingestion



From sources to OMOP



Ingestion

Person Visit Occurrence Procedure Occurrence Condition Occurrence Drug Exposure Observation Measurement Care Site Condition Era Cost Device Exposure

Successfully transformed

Status	Column Name	Mapping	Options	Source
✓	person_id	123 Sequence		SQL_connector_patients.id
○	care_site_id	123 Select mapping type ▾		
○	location_id	123 Select mapping type ▾		
○	provider_id	123 Select mapping type ▾		
✓	ethnicity_concept_id	123 Concept Coding ▾		Description: SQL_connector_patients.race
✓	gender_concept_id	123 Concept Coding ▾		Code: SQL_connector_patients.gender (Gender)
✓	race_concept_id	123 Concept Coding ▾		Code: SQL_connector_patients.ethnicity (Ethnicity)
✓	birth_datetime	Copy from Source ▾	T	SQL_connector_patients.birthdate

Provenance, data quality and demographics



Ingestion

piano Help Logout

SQL_connector_procedures.date	procedure_datetime	Copy from Source
	modifier_source_value	Skip
	procedure_source_concept_id	Skip
SQL_connector_procedures.description	procedure_source_value	Copy from Source

Condition Occurrence

#	Transformed From	Transformed To	Transform Type
1		condition_occurrence_id	Sequence
2			

SQL_connector_conditions.patient

SQL_connector_allergies.patient

SQL_connector_conditions.encounter

SQL_connector_allergies.encounter

SQL_connector_conditions.code
SQL_connector_conditions.description

SQL_connector_allergies.code
SQL_connector_allergies.description

Primary Condition (Type Concept)
Condition Type: OMOP482217

Derived from condition_occurrence.condition_end_datetime

piano

Projects / Complete Data Import

Workflow transform qc_01 **Data Quality** demographics

Quality Control Report

Last Run: 2023-06-21 16:35:30, taking 4.64 seconds

Summary

Total	36
	24
	12

Help Logo

aged Test condition met: 16,218 > 0

apped Test condition met: 16,218 > 0

pped Test condition met: 16,218 = 16,218

patients are mapped Test condition met: 15,893.64 <= 16,218

patient records include sex Test condition met: 1 >= 0.8

records were mapped where they Test condition met: 16,218 = 16,218

s mapped where it exists Test condition met: 16,218 = 16,218

records includes DOB Test condition met: 1 = 1

patient records includes DOB Test condition met: 1 >= 0.8

piano

Number of patients by sex Distribution calculated

Number of patients by age at first visit Distribution calculated

Type Run on Transformed Data

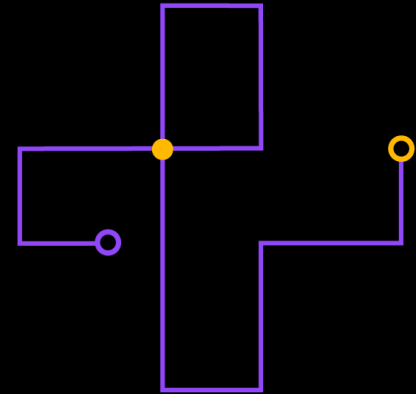
Description A characterisation of the patient population as a breakdown of age at first visit in the mapped data.

Result

Precision is speed, speed is critical.



- Bespoke AI developed since 2010
- 6 to 20 X more precise than data analysts
- Hundreds of AI's generated on the fly,
 - Each specific to a specific data segment
 - No pre-training
 - Active learning
- Faster time to insight → more value

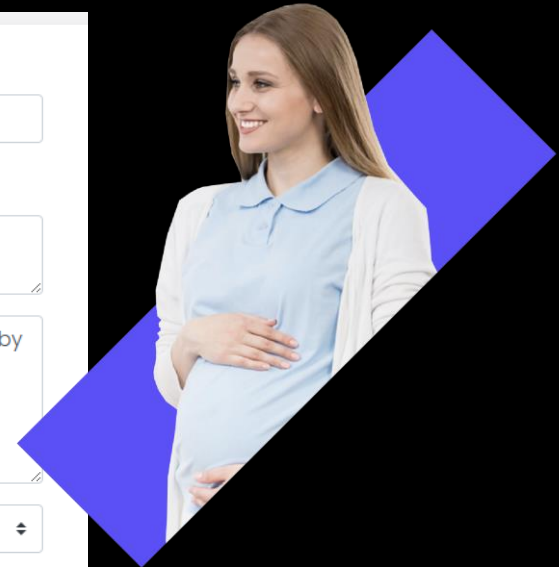


Act quickly,
before FCAMV becomes a pandemic!

Data governance - purpose



General	
Data Sets	Name <input type="text" value="FCAMV prevalence"/>
Members	Owner Guy Tsafnat
Log	Abstract (optional) <input type="text"/>
	Description (optional) <input type="text" value="An analysis of the prevalence of FCAMV cases broken down by hospital department and patient demographics. Statistics calculated in this analysis are fed directly to the emergency FCAMV dashboard."/>
	API Access <input type="text" value="Access aggregate data only"/>



Governance

Data governance - restrictions



Data Set 1

Ethics Agent	Macquarie HREC
Ethics Approval No.	N-002846/H
Data Set Name	M
Data Set Version	<input type="text"/> <input checked="" type="checkbox"/> Always use latest Database Version
Access Expiry Date	08/07/2025
Re-Identification Permissions	<input type="checkbox"/> Re-Identify Everything <input type="checkbox"/> Re-Identify Dates
Table Permissions	No tables found
Person Minimum	10



Governance

Data governance - selection



Table Permissions

select all

Clinical Data Tables

- Person
- Visit Detail
- Procedure Occurrence
- Observation
- Specimen
- Observation Period
- Condition Occurrence
- Device Exposure
- Note
- Fact Relationship
- Visit Occurrence
- Drug Exposure
- Measurement
- Note Nlp
- Survey Conduct

Health System Data Tables

- Location
- Provider
- Location History
- Care Site

Health Economics Data Tables

- Payer Plan Period
- Cost

Standardized Derived Elements

- Drug Era
- Dose Era
- Condition Era

Vocabulary Tables

- Concept
- Concept Class
- Concept Synonym
- Drug Strength
- Vocabulary
- Concept Relationship
- Concept Ancestor
- Cohort
- Domain
- Relationship
- Source To Concept Map
- Cohort Definition



Data governance - roles and memberships



Governance

User Information

[Reset Password](#) [Disable User](#) Guy Tsafnat is currently **enabled**

Email:

Full Name:

Roles: Transformer x Governor x Researcher x x

Projects:

Logs: [Download User Logs](#)



- Who asked the question
 - Did the analyst understand the question?
 - Did the analyst translate the question correctly into code?
 - Did the analyst interpret the results correctly?
 - Can you verify the analyst's work?
 - **Can you trust the results?**
- How long did this take?



Patient

Age at visit between and

Sex

Ethnicity

Visit / Admission

Visit occurred between and

Length of visit ranged from to

Type

Only consider completed visits

Condition(s)

the following conditions



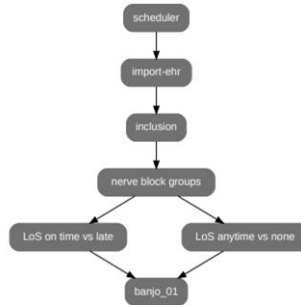


Compliance with ED hip fracture guidelines and downstream effects - an automated audit

Introduction

Elderly patients presenting with unilateral or bilateral hip fractures should receive a local anaesthetic with an hour of their visit. The primary purpose of this audit is to measure compliance with this guidelines. We further measure the effect of not providing analgesic treatment within the first hour on patient satisfaction, patient reported pain scores throughout their stay, as well as the length of stay.

Methods



Data Set inserted patient information from the vDEM0_b3933010-1c3b-4593-b2a-fb8410e40ct_00 data set into the workflow. The Solo node "inclusion" assigned to the cohort "inclusion" all persons who are aged 65 and over, and with visit(s) with visit type emergency room visit or emergency room and inpatient visit, and with the condition hip fractures. For more information see [Appendix 1](#). The Concerto node "nerve block groups" assigned patients to the cohorts "nerve block anytime", "no nerve block", "nerve block more than 1 hr" and "nerve block within 1 hr". The cohort "no nerve block" includes all persons who were involved in 2 events, with Event 1 occurring before Event 2. Event 1 matches all persons with completed visit(s), and Event 2 matches all persons who did not undergo the procedure hip nerve blocks. The cohort "nerve block anytime" includes all persons who were involved in 2 events, with Event 1 occurring before Event 2. Event 1 matches all persons with completed visit(s), and Event 2 matches all persons who underwent the procedure hip nerve blocks. The cohort "nerve block more than 1 hr" includes all persons who were involved in 2 events, with Event 1 occurring more than 1 hour before Event 2. Event 1 matches all persons with completed visit(s), and Event 2 matches all persons who underwent the procedure hip nerve blocks. The cohort "nerve block within 1 hr" includes all persons who were involved in 2 events, with Event 1 occurring less than 1 hour before Event 2. Event 1 matches all persons with completed visit(s), and with the condition hip fractures, and Event 2 matches all persons who underwent the procedure hip nerve blocks. For more information see [Appendix 2](#).

The Kimono node "LoS anytime vs none" calculated the Difference of Means of "visit_occurrence.length_of_stay" for cohorts "nerve block anytime" and "no nerve block".

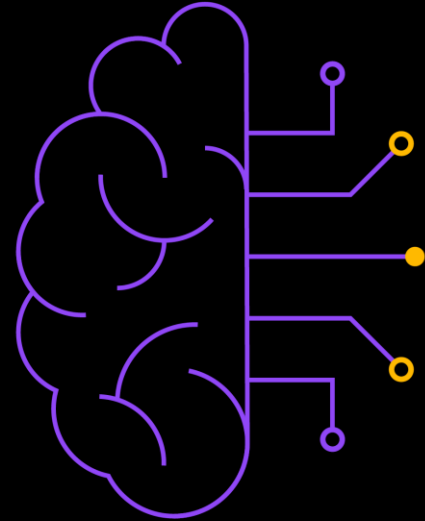
The Kimono node "LoS on time vs late" calculated the Difference of Means of "visit_occurrence.length_of_stay" for cohorts "nerve block within 1 hr" and "nerve block after more than 1 hr".

This report was generated at 10:37 AM on Thursday 29 Jun 2023. See [Appendix 3](#) for more information.

The project workflow was started manually.

Results

Providing a nerve block more than an hour after admission, shortens the length of stay of patients with neck of femur fractures. None days on average. Not providing



Collaboration - reproducibility



The screenshot shows the EvidenceHub interface for a project titled "Effect of Prenatal Iron Infusion on Newborn Risk of Anaemia". The page includes a search bar, navigation tabs for "Project", "Discussions", and "Code", and a green "Open In Piano" button. The main content area displays the project title, subtitle, authors, and abstract. The right sidebar provides metadata such as "Reviewed" status, version information, and contributor statistics.

evidencehub Search EvidenceHub Explore My objects My submissions

guyt490/analytics/Neonatal Anaemia Share Watch 0 Star 0

Project Discussions Code

Open In Piano

Effect of Prenatal Iron Infusion on Newborn Risk of Anaemia

subtitle
A study of Australian aboriginal communities

Authors
Guy Tsafnat, PhD. Evidentli Pty Ltd.

Abstract
Neonatal Anaemia disproportionately affects aboriginal babies in remote communities, and puts babies at risk. Routine prenatal monitoring is often not feasible in such communities. It is commonly hypothesized that a maternal iron-enriched diet can reduce the risk of anaemia but there is insufficient evidence to demonstrate this in aboriginal community settings. This study examines the efficacy of in iron infusion of aboriginal mothers during second and third trimesters in terms of the risk of anaemia in their babies.

About
Relative risk analysis of anaemia diagnosis in infants of mothers infused with iron supplement compared to babies of mothers who were not.

Reviewed

Version 3

0 downloads
6 contributors
1 discussions
0 watching
0 stars
0 branches

Contributors 6
Rosie Sadsad



Collaboration



evidencehub Explore My objects My submissions

guyt490/analytics/Neonatal Anaemia Share Watch 0 Star 0

Project Discussions Code

Open In Piano

Effect of Prenatal Iron Infusion on Newborn Risk of Anaemia

subtitle
A study of Au

Authors
Guy Tsafnat,

Abstract
Neonatal Anaemia
Routine prenatal
iron-enriched
community se
third trimesters in terms of the risk of anaemia in their babies.

Duplicate Project

Are you sure you want to duplicate 'Neonatal Anaemia' project?

Duplicating Cancel

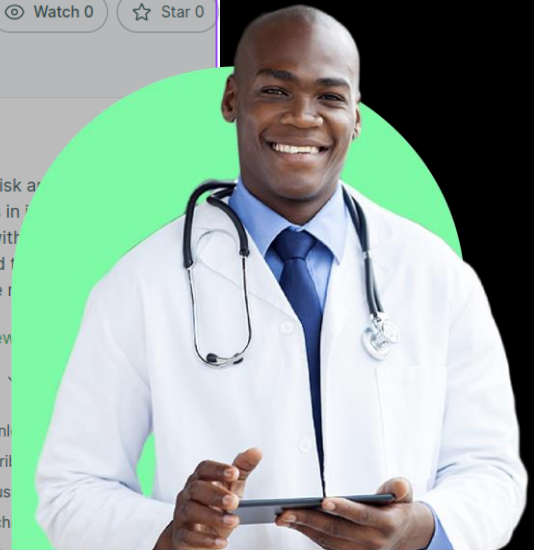
About
Relative risk and
diagnosis in
infused with
compared to
who were r

Review

Version 3

0 downloads
6 contributions
1 discussion
0 watches
0 stars
0 branches

Contributors 6
Rosie Sardar



Collaboration - federation



Meta-analysis Odds ratio | ▾

-
- 1 <https://api.site1.evidentli.com/Neonat Study>
- 2 <https://api.site2.evidentli.com/Neonat Study>
- 3 https://api.site_3.evidentli.com/Neonatal Study
- 4 <https://api.site4.evidentli.com/Neonat Study 2>

+ Add Study

Weighting method Inverse variance | ▾

Number of studies

property.meta-analysis_of_odds_ratio.studies

copy: [value](#)

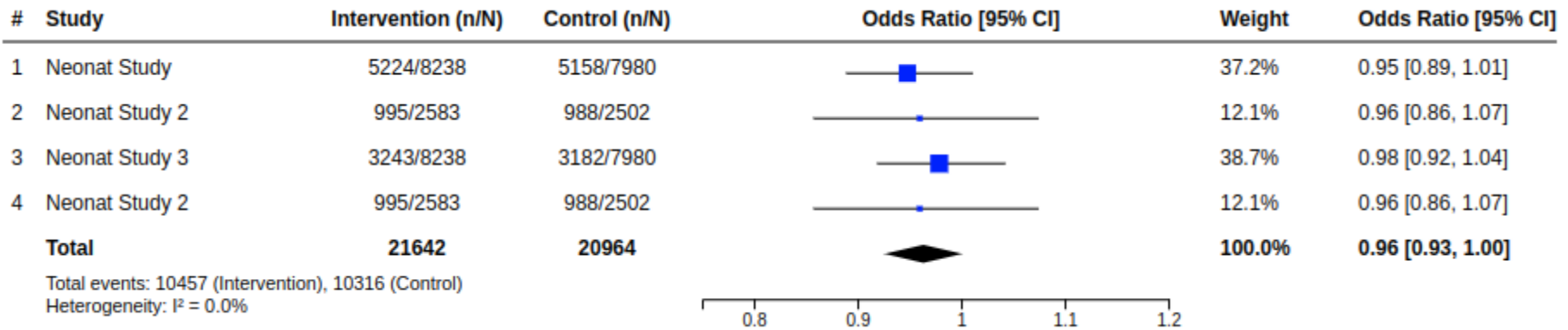
Meta-analysis

property.meta-analysis_of_odds_ratio.meta-analysis

copy: [value](#) [plot](#) [table](#)

Intervention arm		Comparison arm	
positive (n)	participants (N)	positive (n)	participants (N)
anaemic infan	infants of iron-infu	anaemic infan	infants of non-infu
anaemic infan	infants of iron-infu	anaemic infan	infants of non-infu
anaemic infan	infants of iron-infu	anaemic infan	infants of non-infu
anaemic infan	infants of iron-infu	anaemic infan	infants of non-infu

Collaboration - federation



Get involved with OMOP + FHIR

- **OHDSI APAC Symposium:** July 13-14, University of New South Wales
 - OMOP/FHIR: challenges of each model and how the collaboration can resolve those challenges. Grahame Grieve, FHIR Product Director
 - www.ohdsi.org/2023apacsymposium/
- **OHDSI Weekly Community Call:** each Tuesday, 11 am EASTERN, US
 - July 18, Vulcan: An HL7 FHIR Accelerator Transforming Clinical & Translational Research
 - <https://ohdsi.org/community-calls/>
- **OHDSI Global Symposium:** Oct. 20-22, East Brunswick, New Jersey,
 - OMOP + FHIR Connectathon: 8a-5p, Sunday, October 22
 - <https://ohdsi.org/ohdsi2023/>
- **OHDSI OMOP + FHIR Working Group Main Calls**
 - Mondays (weekly) 6-7 pm EASTERN US (via MS Teams)
 - <https://www.ohdsi.org/upcoming-working-group-calls/>



Contact: tsafnat@ohdsi.org



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Get in touch

Exhibition hall, booth #77

guyt@evidentli.com

Follow us on  @evidentli

