How to Run an OHDSI Network Study

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IQVIA

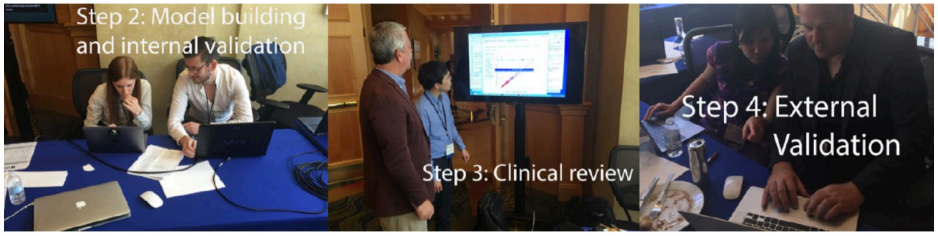
Confession: I'm hooked on network research.

F2F 2018 Study-a-thon – Recreating a Rheumatoid Arthritis RCT (May '18)

2018 US Symposium Live Study – Predicting HT after Ischemic Stroke(Oct '18)

OHDSI
OBSERVATIONAL HEALTH DATA SCIENCES AND INFORMATICS

Patient-Level Prediction Team Work



Fudan Bootcamp – Endometrial Cancer Study (Aug '19)

Women of OHDSI Breast Cancer Study (Sep '19)

Why conduct OHDSI research?

World's Largest Multi-center Studies

Corroborating single-center research with a diverse, global network of more than 152 databases in 18 countries

Established Reproducibility

Framework for large scale validation of results and reproducibility of hypothesis cross a variety of healthcare settings

Preeminent Scientific Network

Expertise from Columbia, Stanford, Oxford, UPenn, Vanderbilt, Yale, Cornell, Northwestern, UCLA, Uni of South Australia, Erasmus MC and more

Robust Methodologies

Empirical validation of the design and implementation of OHDSI statistical methods library and open source tools/packages

Potential to Impact Practice Patterns

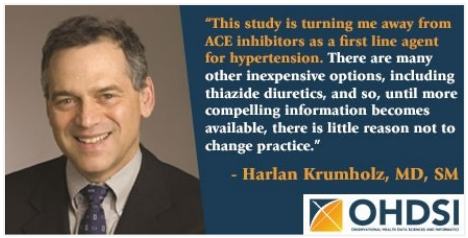

THE LANCET

ARTICLES | VOLUME 394, ISSUE 10211, P1816-1826, NOVEMBER 16, 2019

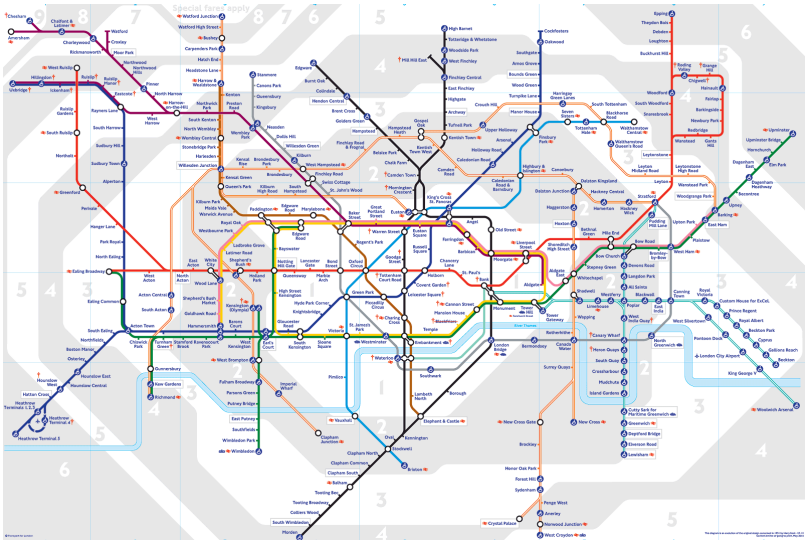
Comprehensive comparative effectiveness and safety of first-line antihypertensive drug classes: a systematic, multinational, large-scale analysis

Prof Marc A Suchard, MD · Martijn J Schuemie, PhD · Prof Harlan M Krumholz, MD · Seng Chan You, MD · RuiJun Chen, MD · Nicole Pratt, PhD · Christian G Reich, MD · Jon Duke, MD · Prof David Madigan, PhD · Prof George Hripcsak, MD · Patrick B Ryan, PhD · Show less

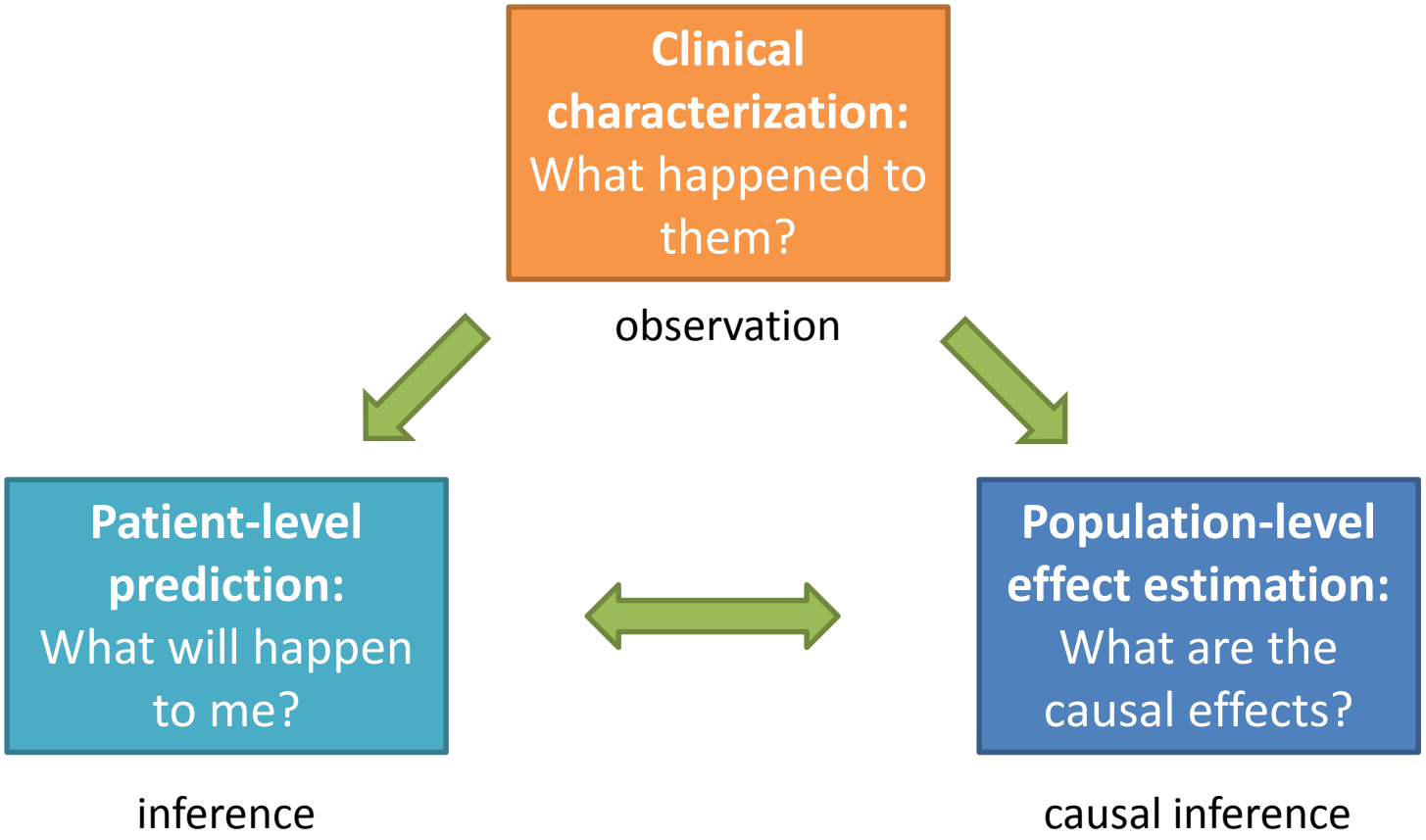
Published: October 24, 2019 · DOI: https://doi.org/10.1016/S0140-6736(19)32317-7 · Check for updates



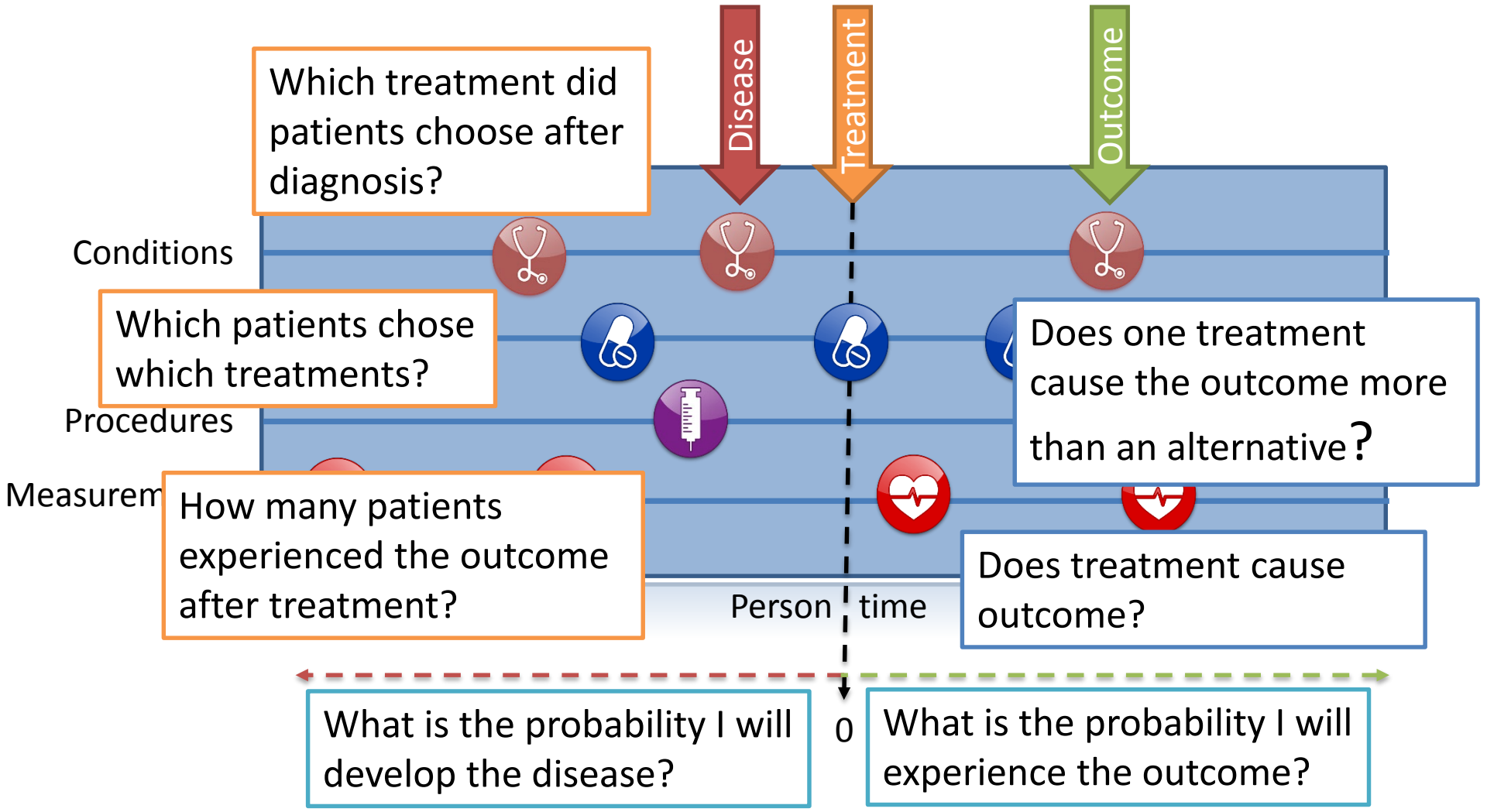
Starting the journey…



OHDSI has maps for your journey…



Questions asked across the patient journey



The common building block of all observational analysis: cohorts

Required inputs:

Target cohort:
- Person
- cohort start date
- cohort end date

Comparator cohort:
- Person
- cohort start date
- cohort end date

Outcome cohort:
- Person
- cohort start date
- cohort end date

Desired outputs:

Clinical characterization
- Baseline summary of exposures (treatment utilization)

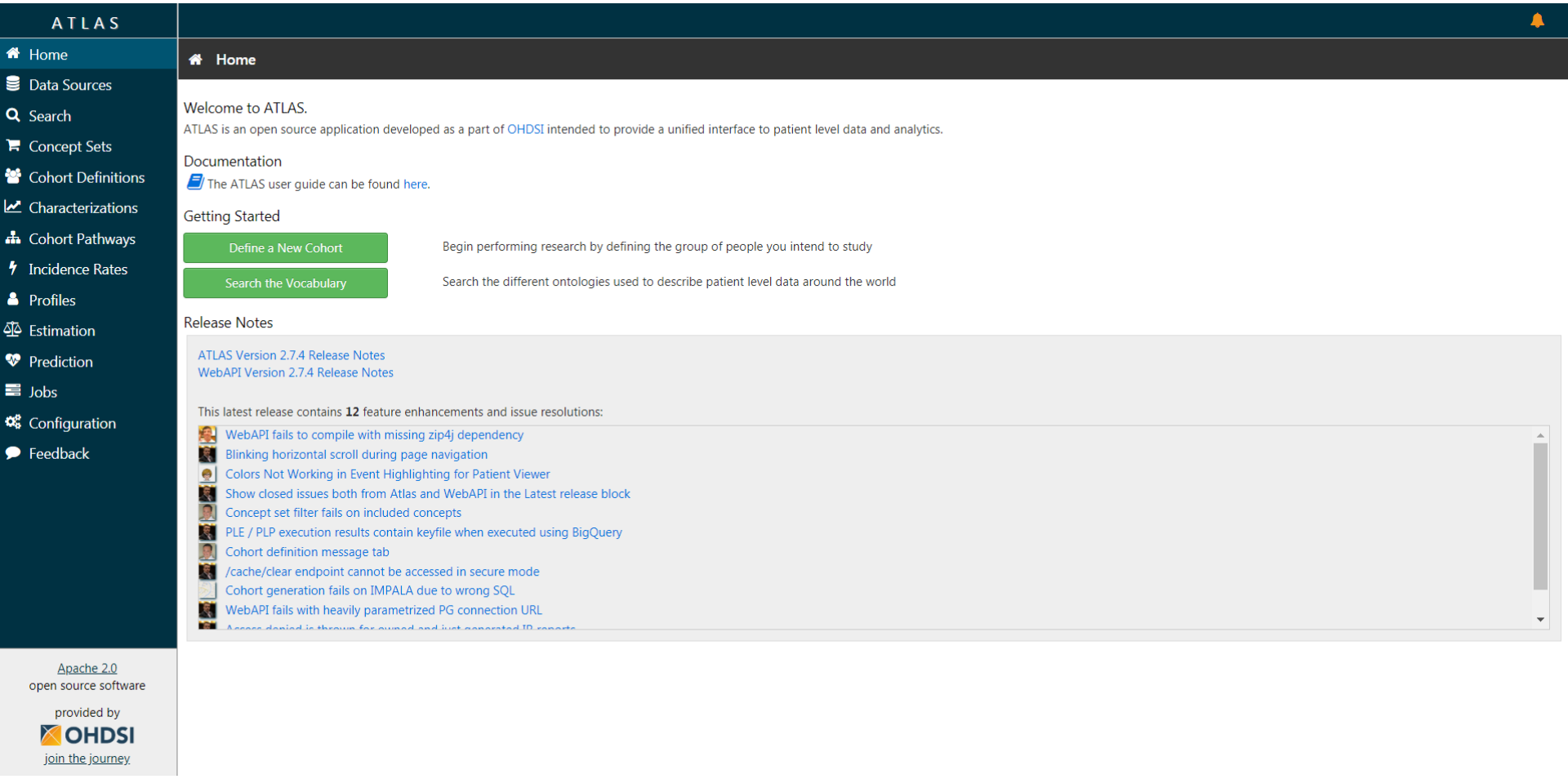
Clinical characterization
- Baseline summary of outcome (disease natural history)

Incidence summary
- Proportion/rate of outcome occurring during time-at-risk for exposure

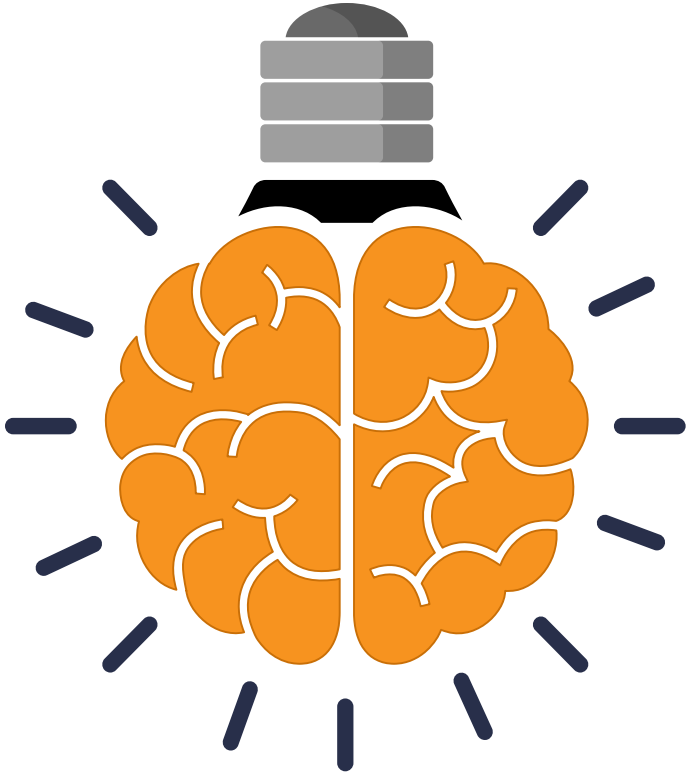
Population-level effect estimation
- Relative risk (HR, OR, IRR) of outcome occurring during time-at-risk for exposure

Patient-level prediction
- Probability of outcome occurring during time-at-risk for each patient in population

Our common toolkit



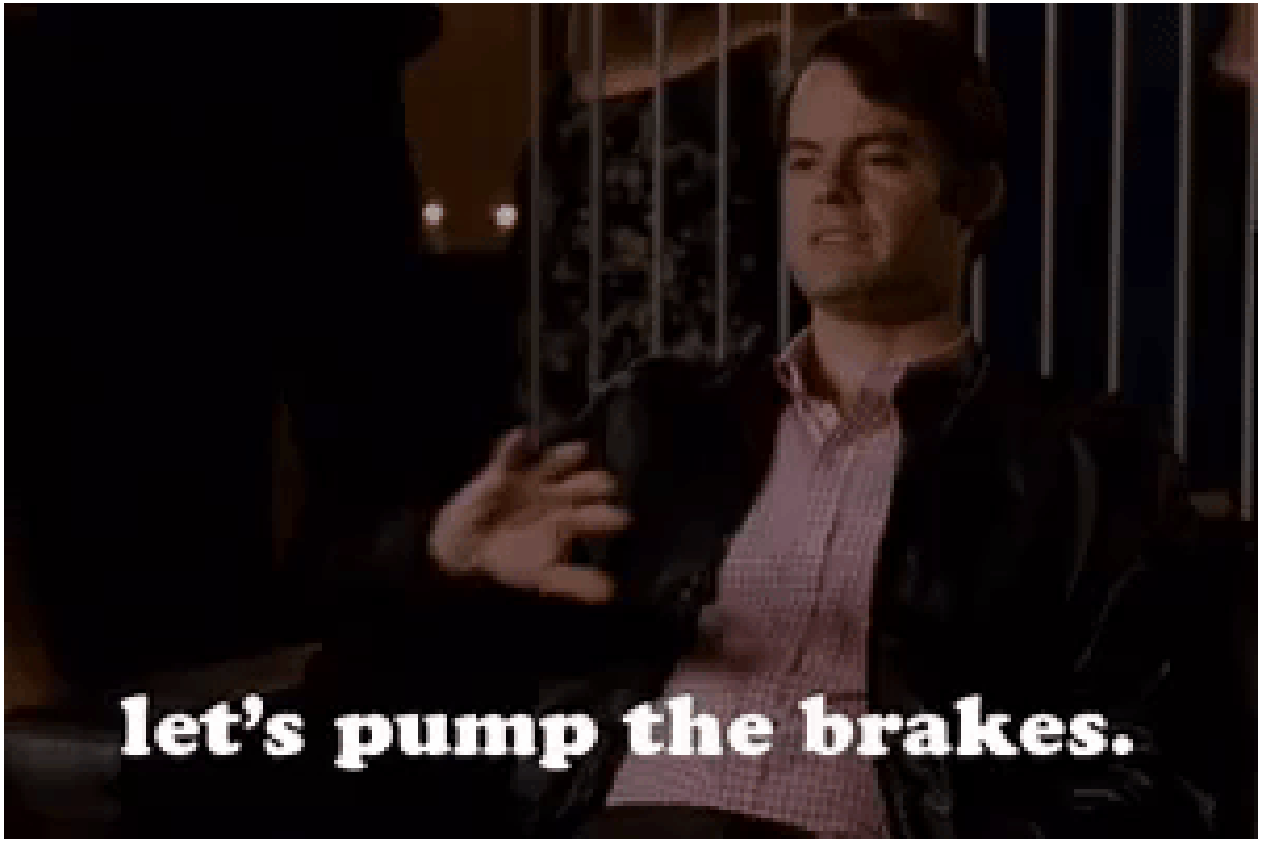
You have one of those genius moments…



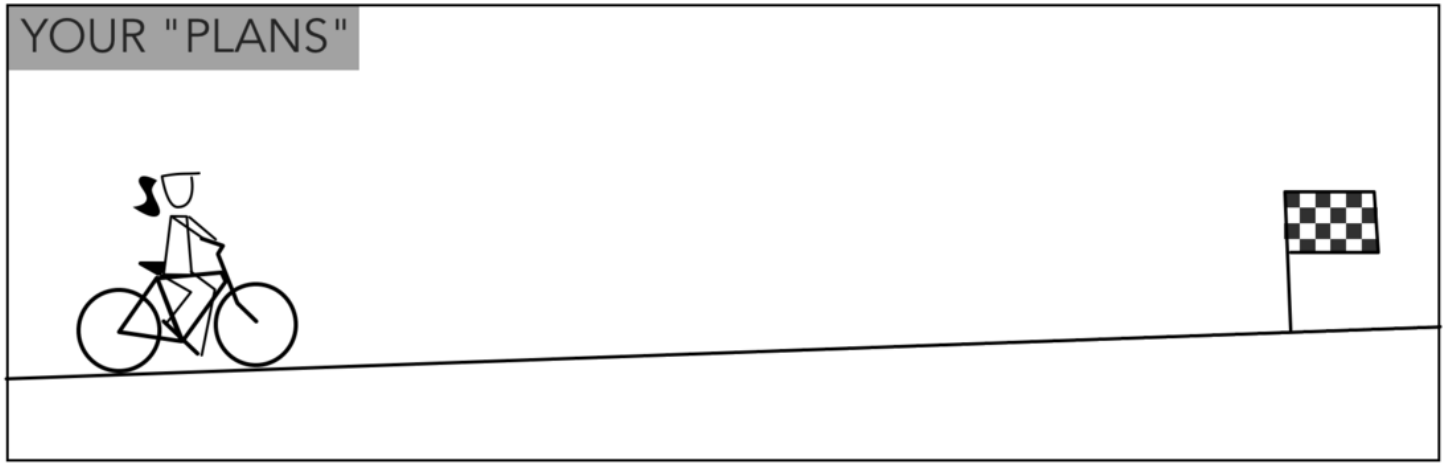
I have a brilliant idea for a network study!

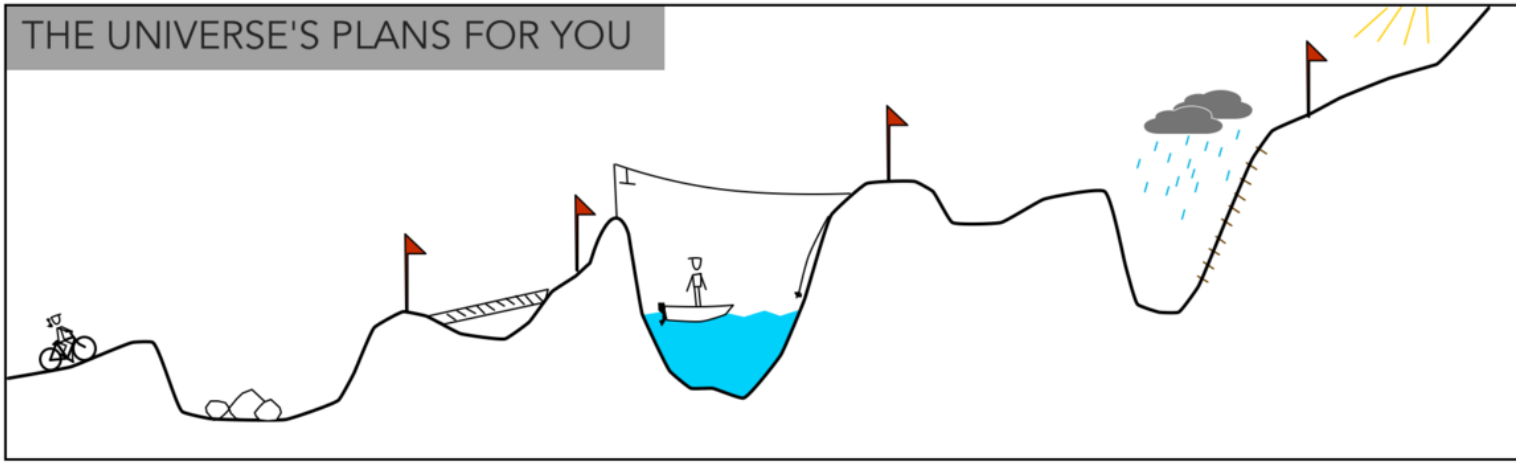
And you think to yourself…

Not so fast…



Scenario 1: You don’t attend this community call…





Scenario 2: You showed up here today and get a cheat sheet for success!

The essentials of network research

Access to a Bench of Experts
Possess cross-cutting expertise in epidemiology, statistics and clinical care

A Novel Idea
Develop a study question to execute in the OHDSI research network

Time / Bandwidth
Ability to iterate on a regular basis with research team

Capabilities
Skill to install tools, debug code, synthesize results and disseminate evidence

Embarking on your network study journey

Started

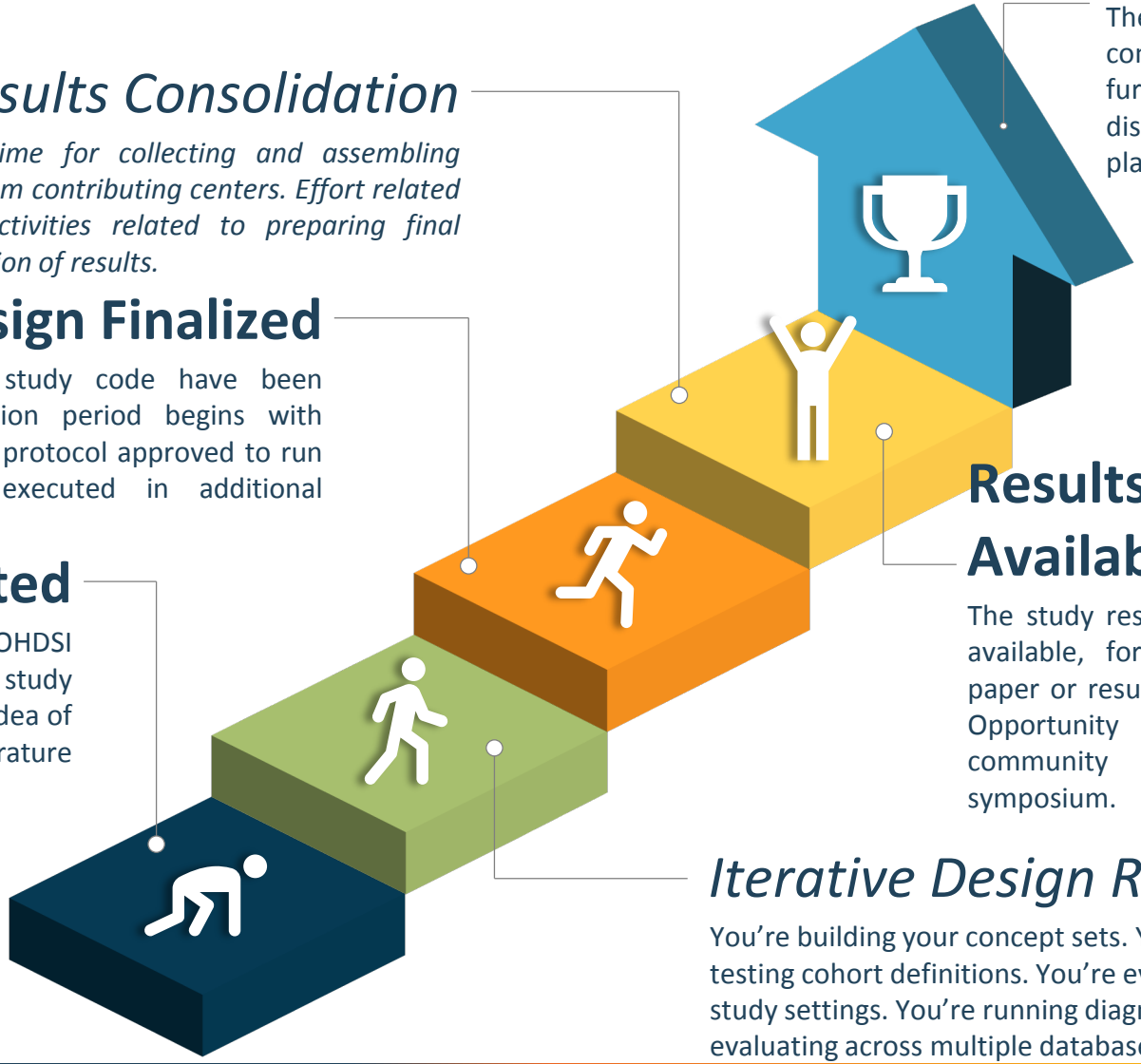
You've worked with the OHDSI community to open a GitHub study repo. You're starting to get an idea of your study question via literature review and clinical input.

Design Finalized

The protocol and study code have been finalized. Collaboration period begins with network sites to get protocol approved to run and study code executed in additional environments.

Results Consolidation

Process time for collecting and assembling results from contributing centers. Effort related to the activities related to preparing final presentation of results.



Iterative Design Review

You're building your concept sets. You're testing cohort definitions. You're evaluating study settings. You're running diagnostics and evaluating across multiple databases.

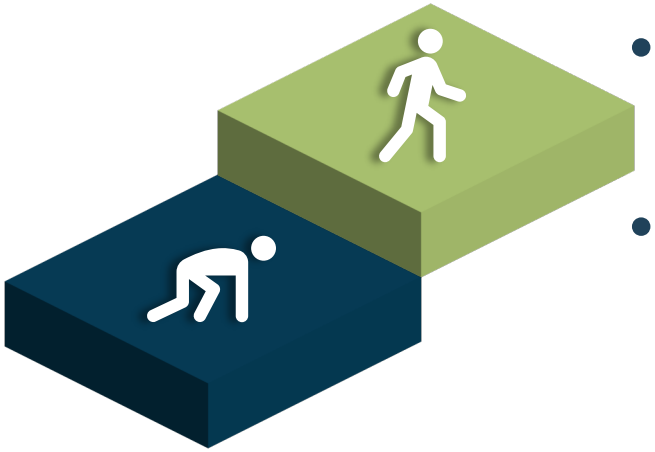
Results Available

The study results are publicly available, for example in a paper or results explorer app. Opportunity to present on community call or at a symposium.

Complete

The study is complete, no further dissemination planned.

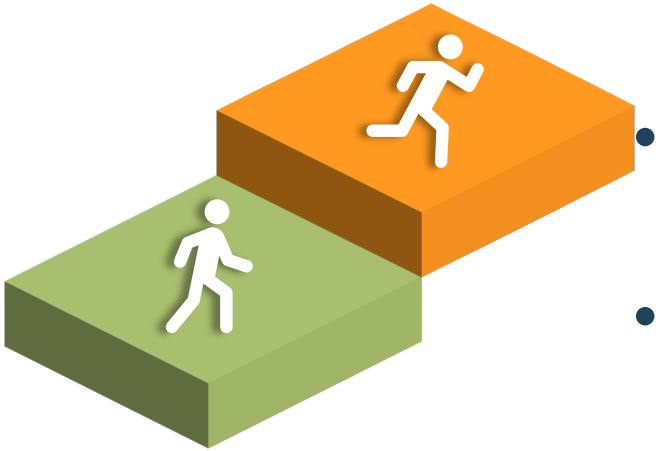
Making the transition…



To go from crawling to walking:

- Engage with clinical experts
- Build cohorts
- Run diagnostics on your ideal design
- Test out your study package on your data (if you have it) **and** solicit input from other centers
- **NO** peeking at the good stuff (aka unblinded results)!

Making the transition…



To go from walking to running:

- Fully specified design including a written protocol and complete study package
- Set limits on how long you'll be collecting results
- Be ready to triage bumps in the road

Making the transition…

To go from running to done:

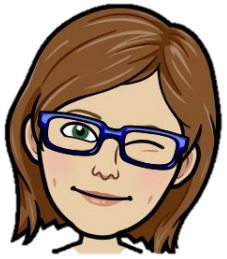
- Identify target journal and documenting journal submission guidelines
- Draft manuscript and review with research team
- Go through publication approvals
- Finalize of manuscript – including responses to reviewers

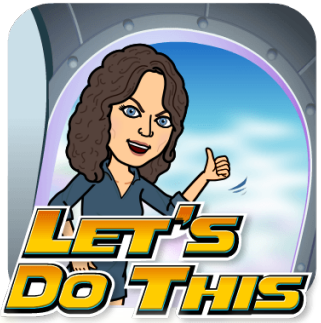
Complete

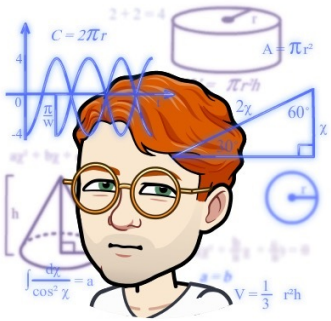
Don’t forget to submit abstracts for OHDSI Symposiums across the globe or volunteer to speak on a community call!

"You'll never walk alone on your OHDSI Journey."
– Peter Rijnbeek
(probably)

The community has your back.







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Questions?

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Join the Journey

http://ohdsi.org