

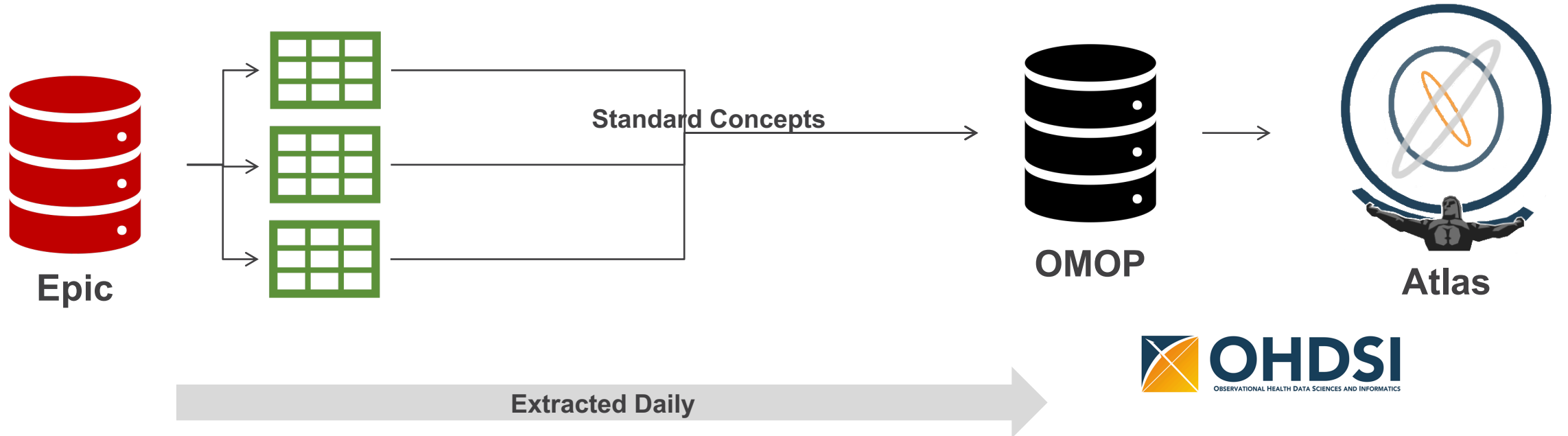
CHDI OHDSI – ATLAS

DEMONSTRATION OF FOUNDATIONAL CONCEPTS

Overview of Demonstration

1. Quick overview of OMOP & Atlas
2. What is a Cohort?
3. Review of our Research Question
- 4. Guided Demonstrations**
 - A. Construct our cohort
 - Build **concept set**
 - Use concept set to construct cohort
 - B. Feature Analysis
 - C. Treatment Pathways
 - D. Incidence Analysis

OMOP Common Data Model & Atlas



High Level OHDSI Concepts

Clinical Characterization:

Who are they?
What happened to them?

Observation



Patient-level Prediction:

What will happen to them?

Prediction

Population-level Effect Estimation:

What is causing it?

Causal Inference



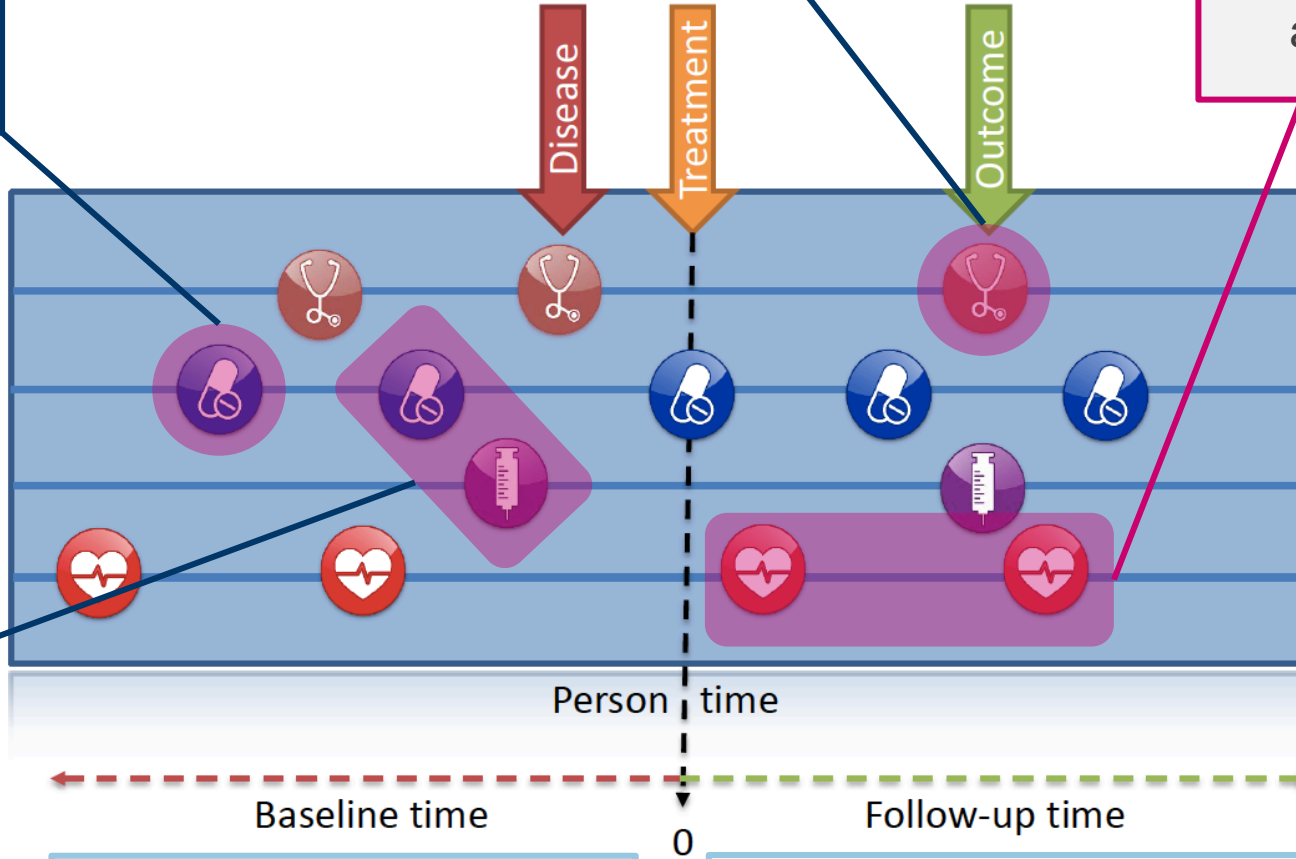
Cohort Paradigm

Which medication is related to the outcomes?

How many patients experienced the outcome after treatment?

1. Does treatment cause outcome?
2. Does one treatment cause the outcome more than an alternative outcome?

Conditions
Drugs
Procedures
Measurements



What was the comorbidities at the baseline?

What is the probability to develop the condition?

What is the probability to experience the outcome

Clinical Characterization

Population-level Effect Estimation

Patient-level Prediction

How Standard Vocabularies Work

Common Use Case for Patient Queries:

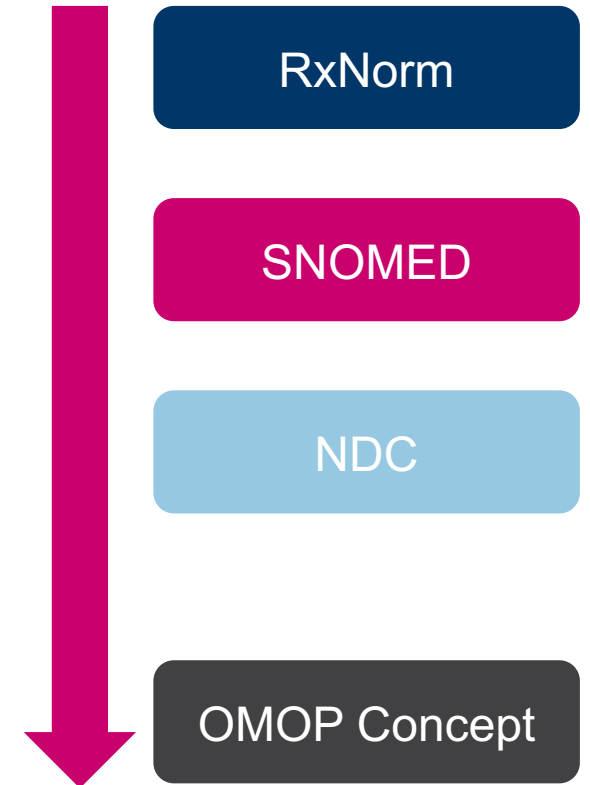
- Ever received Drug A

Source	Description	ID	Code Type
Epic	Acetaminophen 325 mg	101	Internal
Allscripts	Tylenol 325 mg	209387	RxNorm
Meditech	Acet – 325 mg	50580049660	NDC

Column visibility Copy CSV Show 15 entries Filter:

Showing 1 to 15 of 21,871 entries

Id	Code	Name	Class	RC	DRC	Domain	Vocabulary
1125315	161	Acetaminophen	Ingredient	1,332,360	1,332,360	Drug	RxNorm
43187714	OMOP507213	0.52 ML Acetaminophen 160 MG/ML Oral Powder	Quant Clinical Drug	0	0	Drug	RxNorm Extension



Building Block's of Analysis in Atlas



Concept Sets

- Used to group concepts (cardiovascular disease, Antibiotics)
- Can create multiple groups (comorbidity)

Cohorts

- Population that meet a definition or have a phenotype
- **All analysis is based on cohorts**

Characterizations

- Top-level summary statistics used to describe the cohort
- Can compare baseline characteristics across cohorts

Pathways

- Describes the sequence of interventions patients received for a duration of time, within a cohort

Incidence Rates

- Measures the occurrence rate of an outcome or event in a cohort for a time at risk

Initial Questions to Ask Before Building a Cohort

1. What initial event defines the patient's entry into cohort
2. What inclusion criteria are additionally considered to the patient's entry into the cohort?
3. What defines a patient's exit from a cohort?



Diagnosis of _____
Exposed to Drug _____



Drug _____ as 1st Line
Age above _____

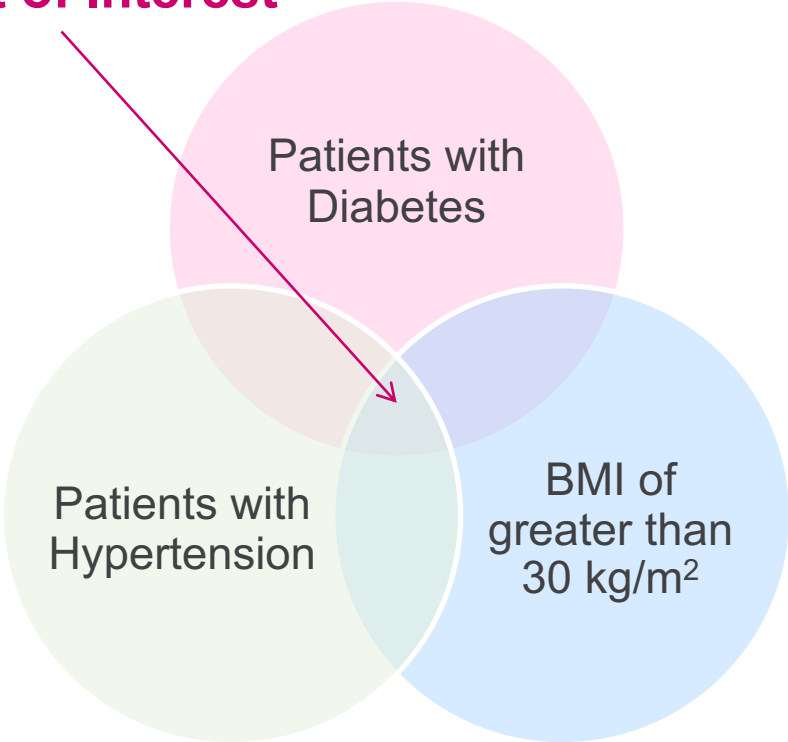


_____ Days after Drug

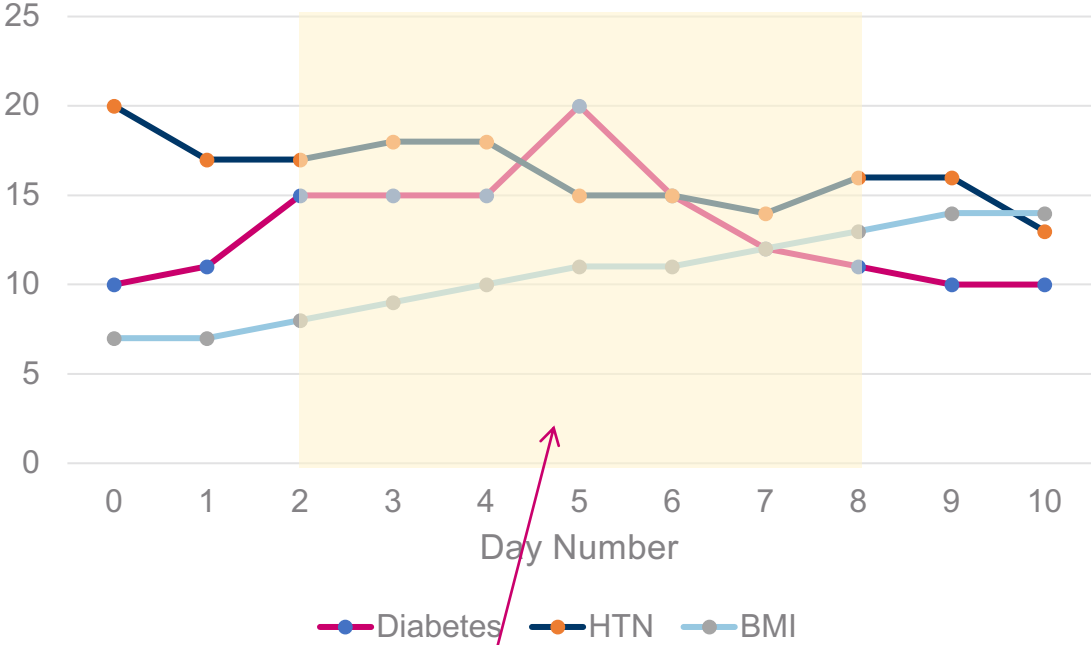
Cohorts in Atlas

Evaluate list of patients who have a BMI > 30, who developed HTN 6 months after diagnosis of Diabetes.

Cohort of Interest



Number of Patients in Cohort Over-time



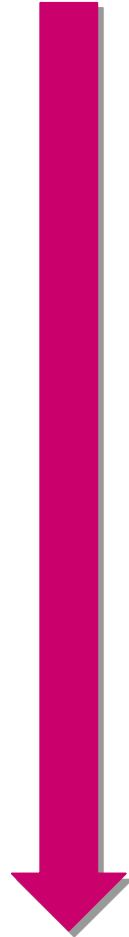
Time Period of Interest

Demonstration Context: COVID-19

Explain important aspects of pandemic

- Who are the patients?
- What do we know about their baseline characteristics?
 - Age
 - Ethnicity
 - Comorbidities
 - Clinical experiences
- Are there any differences between different communities of COVID-19 patients in terms of their baseline characteristics?
 - Ex. Females vs. Males
 - Ex. Race / Ethnicity
 - Ex. Patients with comorbidities vs. without comorbidities
 - Ex. Treatment A vs. Treatment B
- What were the treatment pathways for patients at our institution
- What is the incidence rate of certain outcomes in different COVID-19 subpopulations

Atlas Graphical User Interface



ATLAS

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Home

Welcome to ATLAS.

ATLAS is an open source application developed as a part of [OHDSI](#) intended to provide a unified interface to patient level data and analytics.

Documentation

[The ATLAS user guide can be found here.](#)

Getting Started

[Define a New Cohort](#) Begin performing research by defining the group of people you intend to study

[Search the Vocabulary](#) Search the different ontologies used to describe patient level data around the world

Release Notes

[ATLAS Version 2.7.6 Release Notes](#)

[WebAPI Version 2.7.6 Release Notes](#)

This latest release contains 5 feature enhancements and issue resolutions:

- [There is no support for AD/LDAP referrals.](#)
- [Create a v2.7.6 release of Atlas](#)
- [Maven dependencies are failing with a 501 error](#)
- [Cohort Pathway fails to execute on PostgreSQL](#)
- [outdated Hydra](#)

For Additional Information



- OMOP Data Model
- Introductory Atlas Tutorials
- The Book of OHDSI

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