

OHDSI ATLAS 简介

翁春华

哥伦比亚大学医疗信息学系副教授
美国医学信息学院当选成员

Chunhua Weng, PhD, FACMI

Associate Professor of Biomedical
Informatics
Columbia University, New York City

August 21, 2017, Hangzhou, China, OHDSI-China Meeting

讲座结束后，希望您能够

1. 熟悉ATLAS 的适用和功能
2. 使用ATLAS 选择有特定临床特征的病人组并对他们进行分析

Why OHDSI?

- 观察性研究 (Observational Studies) 是任何随机临床测试试验 (RCT) 的必要先导 (Precursor); 前者发现问题, 提出假设, 积累证据; 后者用最严格的实验设计验证假设。
- 利用OHDSI 的大数据和工具, 研究人员可以
 - 刻画临床特征 (what happened to the patients?)
 - 糖尿病人吃什么药? 那些有并发症? 他们对治疗的响应如何?
 - 基于人群的估计 (what are the causal effect?)
 - 哪种糖尿病治疗方案最佳?
 - 基于病人个体的预测 (what will happen to patient X?)
 - 哪个病人更适合哪种治疗方案?

用观察型研究指导临床测试设计

- 设计应用符合研究的病人条件 (inclusion and exclusion criteria)
- 进行观察性研究来指导RCT 设计和目标制定
- 展示药物在临床的使用及其安全性

ATLAS 是什么？

- 一个免费网络开源软件工具
- 定义查询病人的条件（比如，近五年内有二型糖尿病但没有高血压）
- 运用查询条件找到符合条件的病人
- 分析病人的特征
- 对病人特征的描述可分享，重用，可自动在不同系统间转换 JSON, SQL, etc.





Atlas workflow

设计一个研究
(定义目标人
群, 比较人群,
结果评估, 统
计分析, 等等)



创建病人组和
必须的概念集

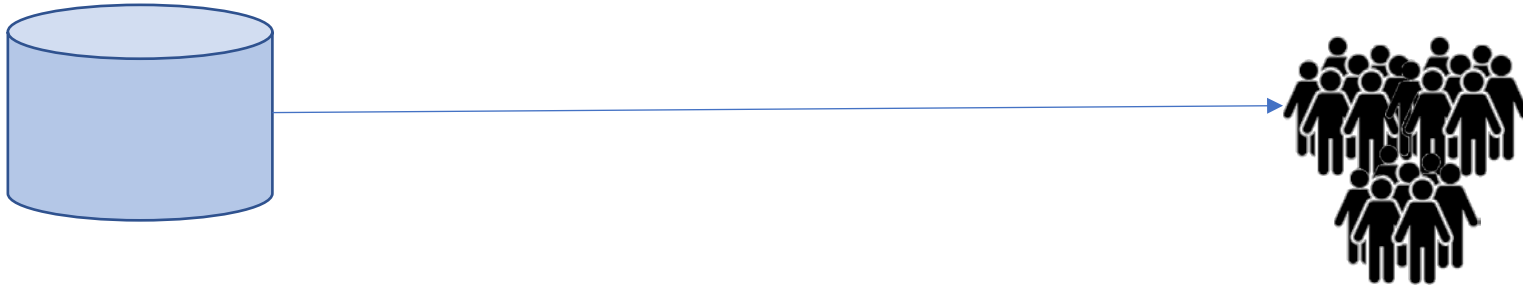


建立统计分析
流程



输出临床协议
和分析代码

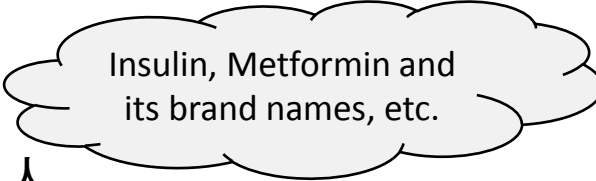
ATLAS 病人定义的抽象模型： Everything is a concept



对应变量和规则：

有糖尿病
的人群

- ✓ 有不正常血糖的病人
- ✓ 有在服用糖尿病相关药物的病人
- ✓ 有病历里含有二型糖尿病诊断码 (ICD 9, ICD 10, READ, SNOMED) 的病人
- ✓ 有病历里含有相关文字描述(二型糖尿病, DMII, Type 2 Diabetes)的病人等等

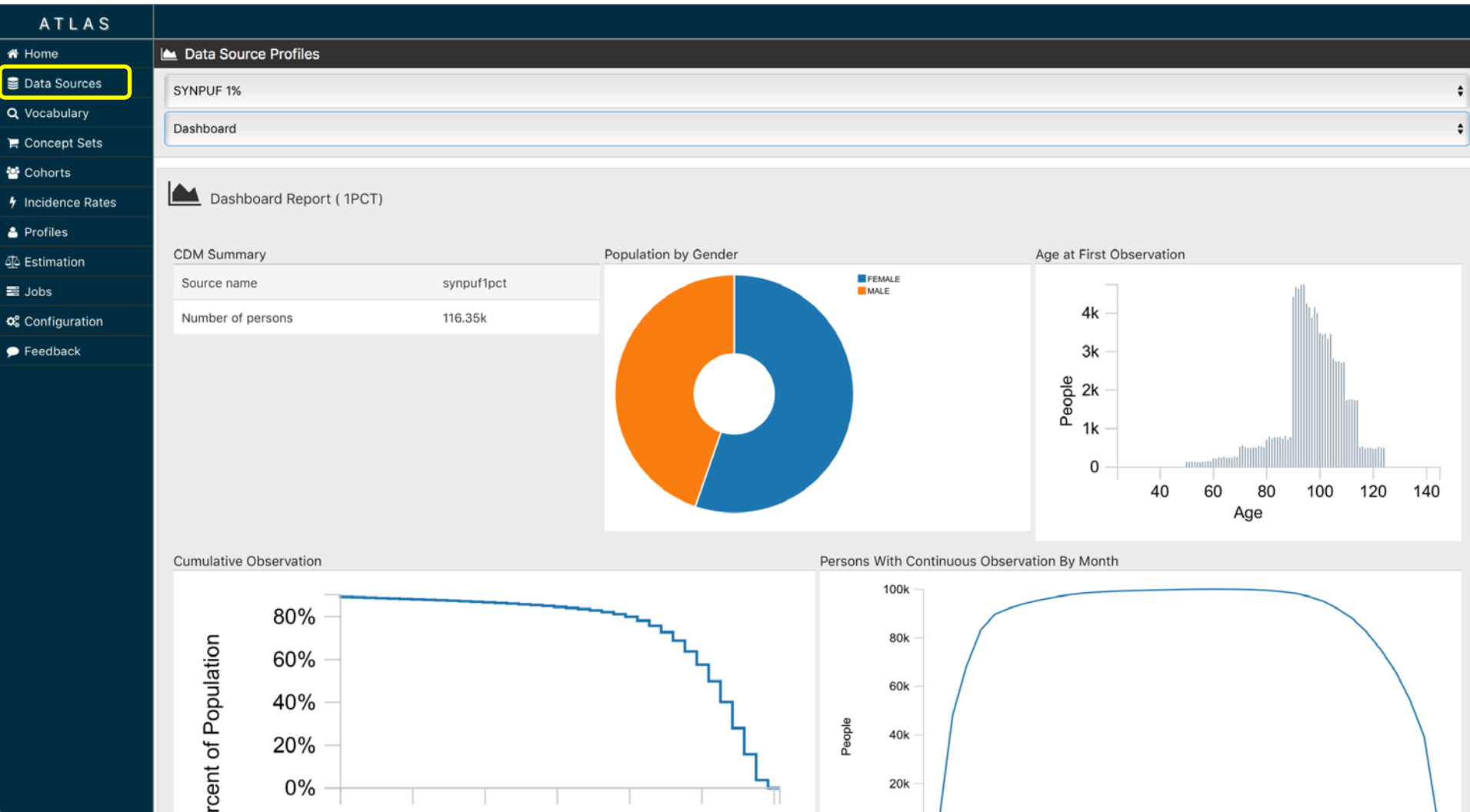


Insulin, Metformin and
its brand names, etc.

ATLAS 能干什么？

1. 浏览数据源
2. 检索术语 Vocabulary
3. 定义术语集 Concept Set
4. 定义病人组和他们的临床特征
5. 查询数据库找到符合条件的病人组
6. 可视化单独病人的情况
7. 做人群的效果估计

1. 浏览数据源



1. 浏览数据源

ATLAS

Home

Data Sources

Vocabulary

Concept Sets

Cohorts

Incidence Rates

Profiles

Estimation

Jobs

Configuration

Feedback

Data Source Profiles

SYNPUF 1%

Condition

Condition Report (1PCT)

Prevalence

TreemapTable

Concept Id	Name	Person Count	Prevalence	Records per person
432830	Zygomycosis	969	0.83%	1.00
433706	Yaws gummata and ulcers	13	0.01%	1.00
432829	Yaws	15	0.01%	1.00
444032	Yabapox	69	0.06%	1.00
132321	Xeroderma of eyelid	113	0.10%	1.00

Showing 1 to 5 of 7,845 entries

Previous12345...1569Next

Go to #table-panel on this page

2. 检索术语 Vocabulary

ATLAS

Home

Data Sources

Vocabulary

Concept Sets

Cohorts

Incidence Rates

Profiles

Estimation

Jobs

Configuration

Feedback

← T2D Children > Type II Diabetes

Vocabulary

Search

Import

Type 2 Diabetes Mellitus

Search

Column visibilityCopyCSVShow 15 entries

Filter:

Advanced Options

Showing 1 to 15 of 232 entries

Previous

1

2

3

4

5

...

16

Next

Vocabulary

SNOMED (116)

ICD10CM (57)

Read (48)

ICD10 (11)

Class

Clinical Finding (114)

Read (48)

6-char billing code (21)

5-char billing code (18)

ICD10 code (10)

Domain

Condition (225)

Measurement (5)

Observation (1)

Procedure (1)

Standard Concept

Non-Standard (131)

Standard (101)

Invalid Reason

Valid (216)

Invalid (16)

Has Records

false (224)

true (8)

Has Descendant Records

false (223)

true (9)

Id	Code	Name	Class	RC	DRC	Domain	Vocabulary
201826	44054006	Type 2 diabetes mellitus	Clinical Finding	612,861	616,150	Condition	SNOMED
443732	422014003	Disorder due to type 2 diabetes mellitus	Clinical Finding	26,203	40,864	Condition	SNOMED
376065	421326000	Neurologic disorder associated with type 2 diabetes mellitus	Clinical Finding	34,024	34,024	Condition	SNOMED
443729	422166005	Peripheral circulatory disorder associated with type 2 diabetes mellitus	Clinical Finding	19,553	19,553	Condition	SNOMED
443731	420279001	Renal disorder due to type 2 diabetes mellitus	Clinical Finding	7,031	7,031	Condition	SNOMED
36717156	721284006	Acidosis due to type 2 diabetes mellitus	Clinical Finding	0	4,631	Condition	SNOMED
443734	421750000	Ketoacidosis in type 2 diabetes mellitus	Clinical Finding	4,631	4,631	Condition	SNOMED
201530	190331003	Type 2 diabetes mellitus with hyperosmolar coma	Clinical Finding	3,289	3,289	Condition	SNOMED
443733	422099009	Diabetic oculopathy associated with type 2 diabetes mellitus	Clinical Finding	2,999	2,999	Condition	SNOMED
4140466	427027005	Amyotrophy due to type 2 diabetes mellitus	Clinical Finding	0	0	Condition	SNOMED
43531588	791000119109	Angina associated with type 2 diabetes mellitus	Clinical Finding	0	0	Condition	SNOMED
45769888	87441000119104	Ankle ulcer due to type 2 diabetes mellitus	Clinical Finding	0	0	Condition	SNOMED
45763582	60951000119105	Blindness due to type 2 diabetes mellitus	Clinical Finding	0	0	Condition	SNOMED
40483315	445353002	Brittle type 2 diabetes mellitus	Clinical Finding	0	0	Measurement	SNOMED
37018912	368591000119109	Cheiropathy due to type 2 diabetes mellitus	Clinical Finding	0	0	Condition	SNOMED

Showing 1 to 15 of 232 entries

Previous

1

2

3

4

5

...

16

Next

Classification

Non-Standard

Standard

2. 检索术语 Vocabulary

- **ID**: a unique concept ID in OHDSI OMOP CDM
- **Concept Code**: concept identifier in the source vocabulary
- **Class**: categories defined by the source vocabulary
- **RC**: The record count. This will show the number of records that are coded with this concept in the
- **DRC**: The descendant record count. The DRC column will show the sum of all descendant concepts that are coded in the CDM.
- **Domain**: categories defined by the OMOP CDM (e.g., Condition, Person, Observation, Specimen, etc)

3. 定义术语集 Concept Set

- 什么是 concept set?

They are lists of concepts from the standardized vocabulary that taken together describe a topic of interest for a study.

- 为什么要 concept set?

便于随意选择组合概念集以适用于不同场景

3. 定义术语集 Concept Set

ATLAS

Home

Data Sources

Vocabulary

Concept Sets

Cohorts

Incidence Rates

Profiles

Estimation

Jobs

Configuration

Feedback

Concept Set

Test concept set

Save

Close

Copy

Optimize

Delete

Concept Set Expression

Included Concepts 7599

Included Source Codes

Explore Evidence

Export

Compare

Show 25 entries

Showing 1 to 3 of 3 entries

Search:

Previous 1 Next

	Concept Id	Concept Code	Concept Name	Domain	Standard Concept Caption	<input type="checkbox"/> Exclude	<input checked="" type="checkbox"/> Descendants	<input checked="" type="checkbox"/> Mapped
	201826	44054006	Type 2 diabetes mellitus	Condition	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	201254	46635009	Type 1 diabetes mellitus	Condition	Standard	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	1503297	6809	Metformin	Drug	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Classification

Non-Standard

Standard

- **Exclude**: Selecting this checkbox will prevent that concept from being used in the concept set.
- **Descendants**: Selecting this check box will use the vocabulary relationships to automatically select all descendants. If this option is used in conjunction with the exclude option, it will exclude the current concept and all descendants.
- **Mapped**: Selecting this check box will use the vocabulary relationships to automatically select all concepts mapped to the selected concept.

3. 定义术语集 Concept Set

ATLAS

Home

Data Sources

Vocabulary

Concept Sets

Cohorts

Incidence Rates

Profiles

Estimation

Jobs

Configuration

Feedback

Definition

Concept Sets

Generation

Reporting

Explore

Export

New Concept Set

Export All Concept Sets To CSV

Show 10 entries

Filter Repository Concept Sets:

Id	Title
1	Glucose or HBA1C Measurement or Procedure
4	PCOS
2	Type 2 Drugs non-insulin
3	Type I Diabetes
0	Type II Diabetes

Showing 1 to 5 of 5 entries

Previous1Next

Concept Set Expression

Included Concepts 266

Included Source Codes

Export

Name:

Type II Diabetes

Show 25 entries

Search:

Showing 1 to 9 of 9 entries

Previous1Next

	Concept Id	Concept Code	Concept Name	Domain	Standard Concept Caption	Exclude	Descendants	Mapped
	40482801	443694000	Type II diabetes mellitus uncontrolled	Measurement	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	201826	44054006	Type 2 diabetes mellitus	Condition	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	201531	190330002	Type 1 diabetes mellitus with hyperosmolar coma	Condition	Standard	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	200687	421893009	Renal disorder associated with type 1 diabetes mellitus	Condition	Standard	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	4308509	390951007	Impaired fasting glycaemia	Condition	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	443732	422014003	Disorder due to type 2 diabetes mellitus	Condition	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	435216	420868002	Disorder due to type 1 diabetes mellitus	Condition	Standard	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	442793	74627003	Diabetic complication	Condition	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	36314156	10005554	Blood glucose abnormal	Condition	Classification	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

4. 定义病人组和他们的临床特征

ATLAS

Home

Data Sources

Vocabulary

Concept Sets

Cohorts

Incidence Rates

Profiles

Estimation

Jobs

Configuration

Feedback

T2D Children

SaveCloseCopyDelete

DefinitionConcept SetsGenerationReportingExploreExport

Cohort definition: A cohort is defined as the set of persons satisfying one or more inclusion criteria for a duration of time. One person may qualify for one cohort multiple times during non-overlapping time intervals. Cohorts are constructed in ATLAS by specifying cohort entry criteria and cohort exit criteria. Cohort entry criteria involve selecting one or more initial events, which determine the start date for cohort entry, and optionally specifying additional inclusion criteria which filter to the qualifying events. Cohort exit criteria are applied to each cohort entry record to determine the end date when the person's episode no longer qualifies for the cohort.

AllCohort Entry CriteriaCohort Exit Criteria

Initial event cohort: Events are recorded time-stamped observations for the persons, such as drug exposures, conditions, procedures, measurements and visits. All events have a start date and end date, though some events may have a start date and end date with the same value (such as procedures or measurements). The event index date is set to be equal to the event start date.

People having any of the following:

Add Initial Event...

a condition occurrence of

Type II Diabetes

Add

Add criteria attribute...

Delete Criteria

with continuous observation of at least

0

 days before and

0

 days after event index date

Limit initial events to:

earliest event

 per person.

Add initial event inclusion criteria

Additional qualifying inclusion criteria: The qualifying cohort will be defined as all persons who have an initial event, satisfy the initial event inclusion criteria, and fulfill all additional qualifying inclusion criteria. Each qualifying inclusion criteria will be evaluated to determine the impact of the criteria on the attrition of persons from the initial cohort.

New qualifying inclusion criteria

Please select a qualifying inclusion criteria to edit.

1. glucose measurements or t2d drugs

2. T1D codes

3. Polycystic ovaries

Limit qualifying cohort to:

earliest event

 per person.

Cohort Exit Criteria

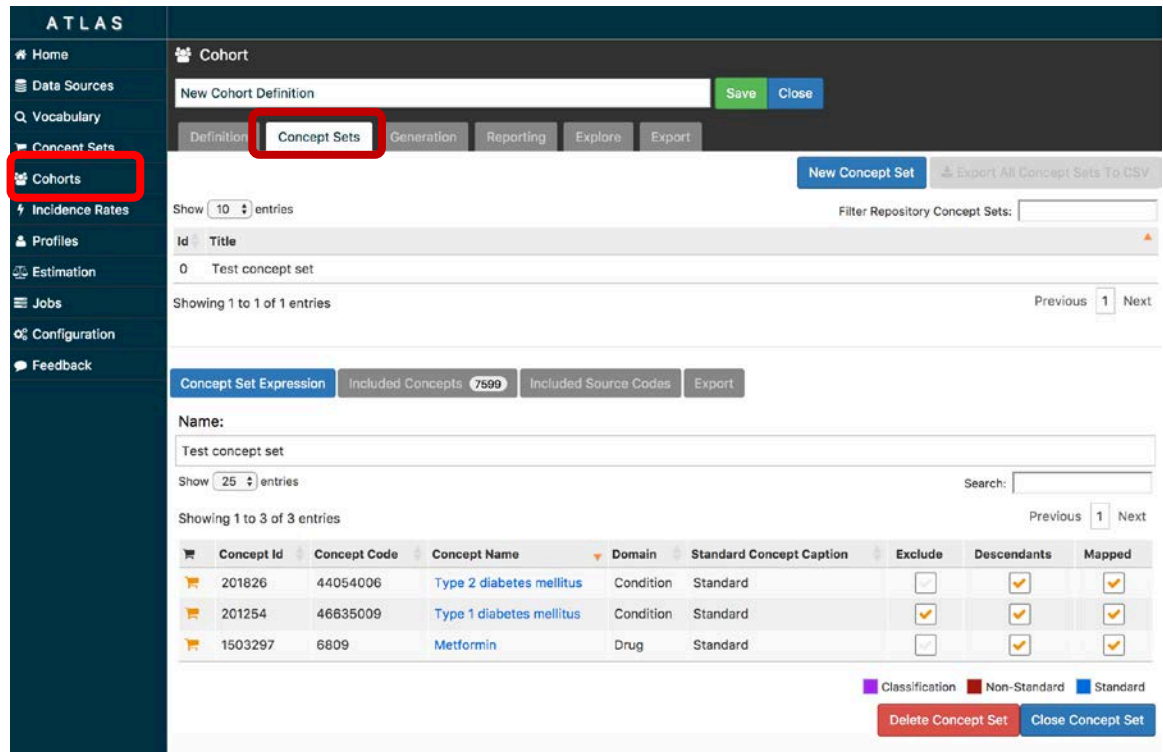
Cohort exit criteria: For all persons who entered the cohort, there must be a specification of when each person exits the cohort. A person must exit the cohort at the end of the observation period spanning the qualifying initial event start date, but additional cohort exit criteria may be also considered.

Add a cohort exit criteria:

- [Based on a fixed time period relative to initial event start or end date](#)
- [Based on the end of an era of persistent exposure to any drug within a defined concept set](#)

Cohorts

- Concept sets which are used in the cohort definition will be listed under the “Concept Sets” tab



The screenshot shows the ATLAS Cohort Definition interface. The left sidebar contains navigation links: Home, Data Sources, Vocabulary, Concept Sets, Cohorts, Incidence Rates, Profiles, Estimation, Jobs, Configuration, and Feedback. The 'Cohorts' link is highlighted with a red box. The main panel is titled 'Cohort' and shows a 'New Cohort Definition' form with 'Save' and 'Close' buttons. Below the form are tabs for Definition, Concept Sets, Generation, Reporting, Explore, and Export. The 'Concept Sets' tab is selected and highlighted with a red box. It displays a table of concept sets used in the cohort definition. The table has columns: Concept Id, Concept Code, Concept Name, Domain, Standard Concept Caption, Exclude, Descendants, and Mapped. Three concept sets are listed: Type 2 diabetes mellitus, Type 1 diabetes mellitus, and Metformin. A legend at the bottom indicates that 'Standard' is represented by a blue square, 'Non-Standard' by a red square, and 'Classification' by a purple square. The 'Delete Concept Set' and 'Close Concept Set' buttons are visible at the bottom right.

Concept Id	Concept Code	Concept Name	Domain	Standard Concept Caption	Exclude	Descendants	Mapped
201826	44054006	Type 2 diabetes mellitus	Condition	Standard	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
201254	46635009	Type 1 diabetes mellitus	Condition	Standard	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
1503297	6809	Metformin	Drug	Standard	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

定义病人组

- 主要事件 Primary Event (Start Date)
 - ❖ Cohort definitions can have lots of rules
 - ❖ But the primary event is the bouncer Have to clear this bar for the rest of the rules to come into play
 - ❖ Besides being the first rule, the primary event is critical because it sets the *index date*
- 符合条件的条件 Qualifying Criteria
 - ❖ All the other criteria you wish you require of your cohort members
- 退出条件 Exit Criteria (End Date)
 - ❖ Defines the end date of the individual in the cohort



Index Date

- The patient's index date (aka cohort start date) is determined by when they satisfy the primary event
- The cohort start date can be limited to just first time a patient meets it or you can count every time they meet it
- Subsequent criteria are very commonly tied relative to the index date

Qualifying Criteria

- All the other criteria you wish you require of your cohort members Noting that it is still the primary event that will mark their point of entry in the cohort
- Can have AND or OR logic
- Can apply the same filters as primary event
- Temporal limitations relative to index



Cohorts 其他工具

- **Reporting** – The reporting tab provides cohort summarization and visualization tools
- **Explore** – 可视化病人信息
- **Export** – 查看源码, XML, JSON, SQL, etc.



可分享的人群组定义

ATLAS

Home

Data Sources

Vocabulary

Concept Sets

Cohorts

Incidence Rates

Profiles

Estimation

Jobs

Configuration

Feedback

Cohort

T2D Children

SaveCloseCopyDelete

DefinitionConcept SetsGenerationReportingExploreExport

Text ViewGraphical ViewJSONSQL

Initial Event Cohort

People having any of the following:

a condition occurrence of Type II Diabetes⁵

with continuous observation of at least 0 days prior and 0 days after event index date, and limit initial events to: **earliest event per person.**

Inclusion Criteria #1: glucose measurements or t2d drugs

Having any of the following criteria:

at least 3 occurrences of a measurement of Glucose or HBA1C Measurement or Procedure¹ starting between all days Before and all days After event index date

or at least 1 occurrences of a drug exposure of Type 2 Drugs non-insulin³ starting between all days Before and all days After event index date

or at least 3 occurrences of a procedure of Glucose or HBA1C Measurement or Procedure¹ starting between all days Before and all days After event index date

Inclusion Criteria #2: T1D codes

Having at most 0 of the following criteria:

at least 2 occurrences of a condition occurrence of Type I Diabetes⁴ starting between all days Before and all days After event index date

Inclusion Criteria #3: Polycystic ovaries

Having at most 0 of the following criteria:

at least 2 occurrences of a condition occurrence of PCOS² starting between all days Before and all days After event index date

Limit qualifying cohort to: **earliest event per person.**

No end date strategy selected. By default, the cohort end date will be the end of the observation period that contains the index event.

Appendix 1: Concept Set Definitions

1. Glucose or HBA1C Measurement or Procedure

Concept Id	Concept Name	Domain	Vocabulary	Excluded	Descendants	Mapped
2212359	Glucose; quantitative, blood (except reagent strip)	Measurement	CPT4	NO	YES	NO

22

可分享的人群组定义

ATLAS

Home

Data Sources

Vocabulary

Concept Sets

Cohorts

Incidence Rates

Profiles

Estimation

Jobs

Configuration

Feedback

Cohort

T2D Children

SaveCloseCopyDelete

DefinitionConcept SetsGenerationReportingExploreExport

Text ViewGraphical ViewJSONSQL

Primary Criteria

Results will be generated for the first single event matching the following primary criterion. Result index date will be the start date of the matching primary criteria event.

First of

condition: Type II Diabetes

No additional criteria

Inclusion Rules

glucose measurements or t2d drugs

Any of

measurement: Glucose or HBA1C Measurement or Procedure

occurrences

or drug: Type 2 Drugs non-insulin

occurrence

or procedure: Glucose or HBA1C Measurement or Procedure

occurrences

Restrict to people having events matching any of the following criteria. Events must start within bracketed period () relative to index date. Lines and arrows represent required duration of these events.

T1D codes

At most 0 of

condition: Type I Diabetes

occurrences

Restrict to people having events matching at_most of the following criteria. Events must start within bracketed period () relative to index date. Lines and arrows represent required duration of these events.

Polycystic ovaries

At most 0 of

condition: PCOS

occurrences

23



可分享的人群组定义

ATLAS

Home

Data Sources

Vocabulary

Concept Sets

Cohorts

Incidence Rates

Profiles

Estimation

Jobs

Configuration

Feedback

Cohort

T2D Children

SaveCloseCopyDelete

DefinitionConcept SetsGenerationReportingExploreExport

Text ViewGraphical ViewJSONSQL

```
{
  "ConceptSets": [
    {
      "id": 0,
      "name": "Type II Diabetes",
      "expression": {
        "items": [
          {
            "concept": {
              "CONCEPT_ID": 201826,
              "CONCEPT_NAME": "Type 2 diabetes mellitus",
              "STANDARD_CONCEPT": "S",
              "INVALID_REASON": "V",
              "CONCEPT_CODE": "44054006",
              "DOMAIN_ID": "Condition",
              "VOCABULARY_ID": "SNOMED",
              "CONCEPT_CLASS_ID": "Clinical Finding",
              "INVALID_REASON_CODE": "V"
            }
          }
        ]
      }
    }
  ]
}
```

Reload

可分享的人群组定义

ATLAS

Home

Data Sources

Vocabulary

Concept Sets

Cohorts

Incidence Rates

Profiles

Estimation

Jobs

Configuration

Feedback

Cohort

T2D Children

SaveCloseCopyDelete

DefinitionConcept SetsGenerationReportingExploreExport

Text ViewGraphical ViewJSONSQL

MSSQL ServerMS APSOraclePostgreSQLAmazon Red ShiftImpala

```
CREATE TABLE #Codesets (  
    codeset_id int NOT NULL,  
    concept_id bigint NOT NULL  
)  
;  
  
INSERT INTO #Codesets (codeset_id, concept_id)  
SELECT 0 as codeset_id, c.concept_id FROM (select distinct I.concept_id FROM  
(  
    select concept_id from @cdm_database_schema.CONCEPT where concept_id in (201826,442793,443732,40482801,36314156,4308509)and invalid_reason is null  
UNION select c.concept_id  
    from @cdm_database_schema.CONCEPT c  
    join @cdm_database_schema.CONCEPT_ANCESTOR ca on c.concept_id = ca.descendant_concept_id  
    and ca.ancestor_concept_id in (201826,442793,443732,40482801,36314156,4308509)  
    and c.invalid_reason is null  
  
) I  
LEFT JOIN  
(  
    select concept_id from @cdm_database_schema.CONCEPT where concept_id in (435216,200687,201531)and invalid_reason is null  
UNION select c.concept_id  
    from @cdm_database_schema.CONCEPT c  
    join @cdm_database_schema.CONCEPT_ANCESTOR ca on c.concept_id = ca.descendant_concept_id  
    and ca.ancestor_concept_id in (435216,200687,201531)  
    and c.invalid_reason is null  
  
) E ON I.concept_id = E.concept_id  
WHERE E.concept_id is null  
) C;  
INSERT INTO #Codesets (codeset_id, concept_id)  
SELECT 1 as codeset_id, c.concept_id FROM (select distinct I.concept_id FROM  
(
```



5. 查询数据库找到符合条件的病人组

ATLAS

Home

Data Sources

Vocabulary

Concept Sets

Cohorts

Incidence Rates

Profiles

Estimation

Jobs

Configuration

Feedback

Cohort

T2D Children

SaveCloseCopyDelete

DefinitionConcept SetsGenerationReportingExploreExport

Available CDM Sources

	Source Name	Generation Status	Distinct People	Generated	Generation Duration	
Generate	SYNPUF 1%	COMPLETE	62023	3/22/2017 11:33:53 AM	173.318s	View Inclusion Report
Generate	SYNPUF 1K	n/a	n/a	n/a	n/a	

Inclusion Report for SYNPUF 1%

Inclusion Rule	Summary Statistics:		Match Rate	Matches	Total	N	% Satisfied	% To-Gain
			76.11%	62,023	81,491			
1. glucose measurements or t2d drugs						70,832	86.92%	12.83%
2. T1D codes						72,483	88.95%	10.80%
3. Polycystic ovaries						81,483	99.99%	0.01%

Population Visualization

62023 people (76.11%), 3 criteria passed, 0 criteria failed.

Switch to attrition view




Profiles, Jobs and Configuration

- Profiles - Patient level information visualization
- Jobs - Jobs those are running in the background
- Configuration - Select the “configuration” menu item to review the data sources that have been configured in the source configuration section. This screen will let you review options. At this time, it cannot be used to edit the configuration - that must be done directly in the database.

Export Your Study – Protocol



ATLAS print friendly – the start of your team's protocol

 Population Level Effect Estimation

OHDSI estimation tutorial: Garbe replication: celecoxib vs. diclofenac for rate of upper gastro

SaveClose

SpecificationExport

Print FriendlyR Code

Research question

To compare the risk of OHDSI estimation tutorial: Garbe replication: outcome cohort - Upper gastrointestinal complication (UGIC) events between OHDSI estimation tutorial: Garbe replication: target cohort - celecoxib new users and OHDSI estimation tutorial: Garbe replication: comparator cohort - diclofenac new users, we will estimate the population-level effect of exposure on the rate of the outcome during the period from 0 days from cohort start date to 0 days from cohort end date.

Study Design:

This study will follow a retrospective, observational, comparative cohort design. We define 'retrospective' to mean the study will be conducted using data already collected prior to the start of the study. We define 'observational' to mean there is no intervention or treatment assignment imposed by the study. We define 'cohort' to mean a set of patients satisfying a one or more inclusion criteria for a duration of time. We define 'comparative cohort design' to mean the formal comparison between two cohorts, a target cohort and comparator cohort, for the risk of an outcome during a defined time period after cohort entry.

In this study, we compare OHDSI estimation tutorial: Garbe replication: target cohort - celecoxib new users with OHDSI estimation tutorial: Garbe replication: comparator cohort - diclofenac new users for the rate of OHDSI estimation tutorial: Garbe replication: outcome cohort - Upper gastrointestinal complication (UGIC) events from 0 days from cohort start date to 0 days from cohort end date.

The overall study population could be considered to be patients who entered either the target cohort or comparator cohort. Patients were excluded from consideration if they qualified for both the target cohort and comparator cohort at any time in their record.

The rate of outcomes among patients in the target and comparator cohorts is determined by counting the number of outcome occurrences of OHDSI estimation tutorial: Garbe replication: outcome cohort - Upper gastrointestinal complication (UGIC) events during the time-at-risk of 0 days from cohort start date to 0 days from cohort end date.

Propensity scores will be used as an analytic strategy to reduce potential confounding due to imbalance between the target and comparator cohorts in baseline covariates. The propensity score is the probability of a patient being classified in the target cohort vs. the comparator cohort, given a set of observed covariates. In this study, the propensity score is estimated for each patient, using the predicted probability from a regularized logistic regression model, fit with a Laplace prior (LASSO) and the regularization hyperparameter selected by optimizing the likelihood in a 10-fold cross validation, using a starting variance of 0.01 and a tolerance of $2e-7$.

The types of baseline covariates used to fit the propensity score model will be:

- Demographics
 - Gender
 - Age group (5-year bands)
 - Index year
- Conditions
 - In prior 365d

Export Your Study – R codes



ATLAS R code – the start of your team's implementation

```
Population Level Effect Estimation
OHDSI estimation tutorial: Garbe replication: celecoxib vs. diclofenac for rate of upper gastro Save Close
Specification Export
Print Friendly R Code

#####
# Study: OHDSI estimation tutorial: Garbe replication: celecoxib vs. diclofenac for rate of upper gastrointestinal complications (UGIC)
#####

#####
# Cohort Method Installation & Load
#####

# Uncomment to install Cohort Method
# install.packages("drat")
# drat::addRepo(c("OHDSI", "cloudyr"))
# install.packages("CohortMethod")

# Load the Cohort Method library
library(CohortMethod)
library(SqlRender)

#####
# Data extraction
#####

# TODO: Insert your connection details here
connectionDetails <- createConnectionDetails(dbms = "postgresql",
                                             server = "localhost/ohdsi",
                                             user = "joe",
                                             password = "supersecret")

cdmDatabaseSchema <- "my_cdm_data"
resultsDatabaseSchema <- "my_results"
exposureTable <- "exposure_table"
outcomeTable <- "outcome_table"
cdmVersion <- "5"
```

感谢您的兴趣和加入！


Safari File Edit View History Bookmarks Develop Window Help

www.ohdsi.org

Room Dividers NY - Closets AnyConnect V... Technology Chi's current... Google Docs worlfe.col...012_06_29.pdf Executive Edu...ideo Library - Partnering For Cures 2016-Abi Imagenestudy | IMAGENE Responsible ... Management

Google Calendar - Month of Aug 2017 UA 87 - Google Search Software - OHDSI OHDSI - Observational Health Data Sciences and Informa...

OHDSI Home | Forums | Wiki | Github



OHDSI

OBSERVATIONAL HEALTH DATA SCIENCES AND INFORMATICS

Who We Are Standards Software Tools Methods Research Resources Join the Journey OHDSI Events Past Events

2017 OHDSI Symposium 2017 Tutorial Workshops 2017 Collaborat

Wiki
Community Forums
Github
Publications
Presentations
Community Meeting Presentations

FAQs Sponsors

Welcome to OHDSI!

The Observational Health Data Sciences and Informatics (or OHDSI, pronounced "Odyssey") program is a multi-stakeholder, interdisciplinary collaborative to bring out the value of health data through large-scale analytics. All our solutions are open-source.

OHDSI has established an international network of researchers and observational health databases with a central coordinating center

OCTOBER 18TH, 2017

THIRD ANNUAL
**OHDSI
SYMPOSIUM**
EXPANDING HORIZONS IN HEALTHCARE EVIDENCE

TUTORIALS:
OCTOBER 19-20TH

<https://www.ohdsi.org/resources/>