

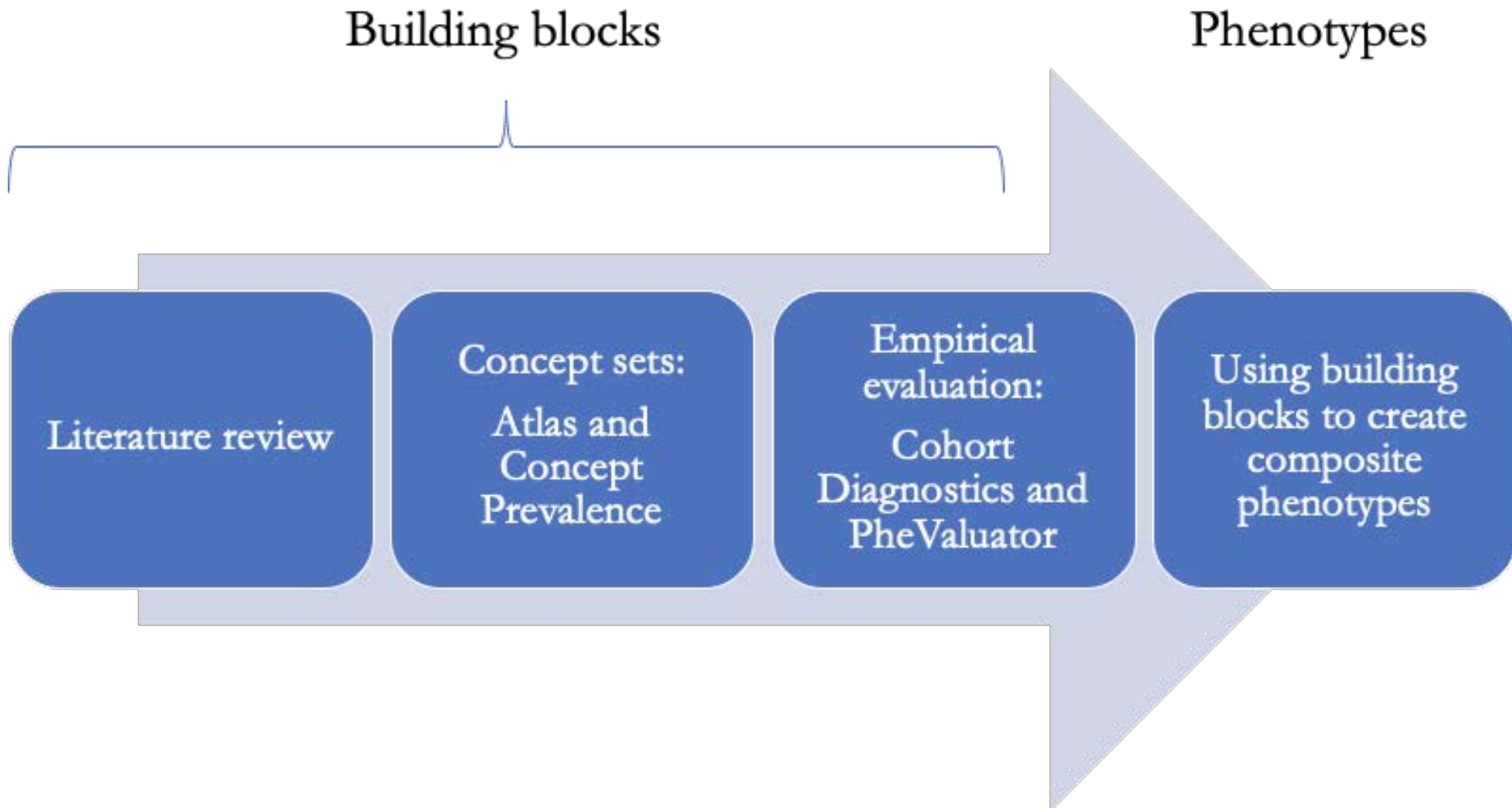


# Phenotype development and evaluation

Anna Ostropolets  
Columbia University



# Systematic process we followed





# Three lesson we learned

**1. To create composite phenotypes we first have to create and validate building blocks.**

Example: pneumonia is used in 29 different phenotypes.

**2. Phenotypes are driven by their intended use.**

Example: how to find influenza?

- Narrow: diagnosis of influenza or test result
- Broad: suspected, confirmed, symptoms (fever AND (cough OR dyspnea OR malaise OR fatigue OR myalgia))

**3. Phenotypes require knowledge of the data: data exploration is a must!**

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# Exploring the data: creating comprehensive concept sets

Sepsis

Concept Set Expression   Included Concepts **208**   Included Source Codes   Explore Evidence   Export   Compare

Show 25 entries

Search:

Showing 1 to 15 of 15 entries

Concept Id	Concept Code	Concept Name	Domain	Standard Concept Caption	Exclude	Descendants
37395517	1048491000000106	Acute kidney injury due to acute tubular necrosis due to sepsis	Condition	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>
36716312	722278006	Acute kidney injury due to sepsis	Condition	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>
132736	5758002	Bacteremia	Condition	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>
40487101	447931005	Clinical sepsis	Condition	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4205449	55528005	Menosepsis	Condition	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4085627	18613002	Miscarriage with septic shock	Condition	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4204036	308887002	Postprocedural intra-abdominal sepsis	Condition	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4066124	200195002	Puerperal septicemia - delivered with postnatal complication	Condition	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>
132797	91302008	Sepsis	Condition	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4029281	238150007	Sepsis syndrome	Condition	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4046106	230361008	Sepsis-associated encephalopathy	Condition	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>

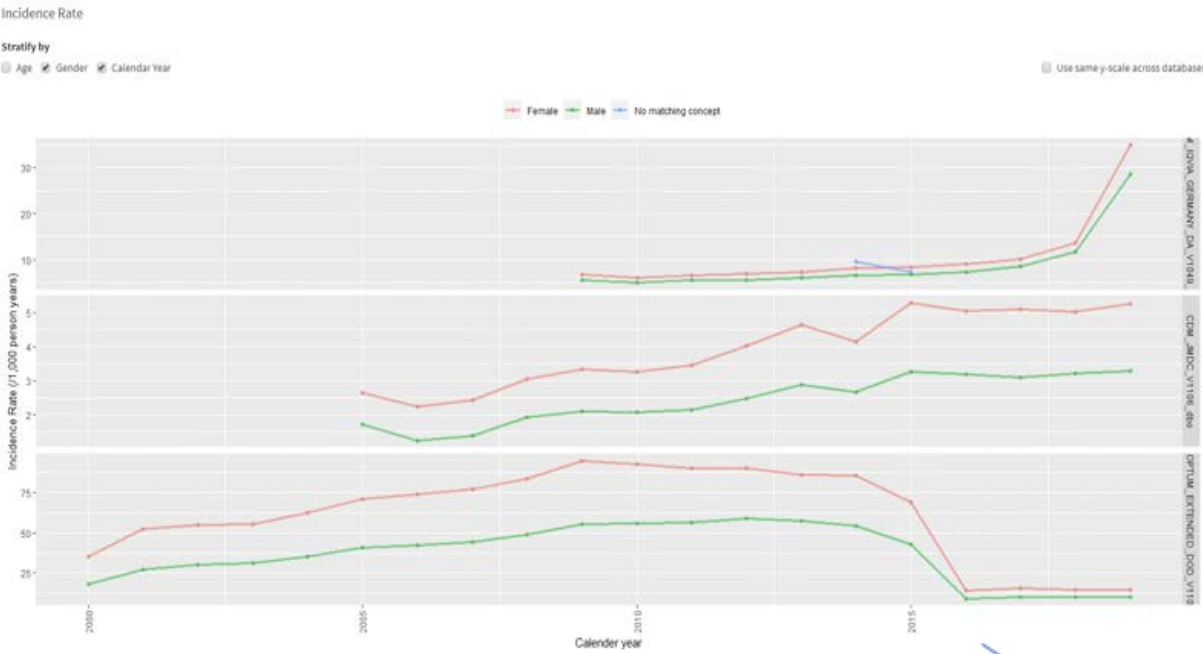
Show 25 entries

Count	Concept ID	Standard	Vocabulary	Code	Name
160,614	36712860	S	SNOMED	139201000119107	Non-infectious systemic inflammatory response syndrome without acute organ failure
160,614	45539355		ICD10CM	R65.10	Systemic inflammatory response syndrome (SIRS) of non-infectious origin without acute organ dysfunction
131,540	434821	S	SNOMED	238149007	Systemic inflammatory response syndrome
110,914	44826026		ICD9CM	995.90	Systemic inflammatory response syndrome, unspecified



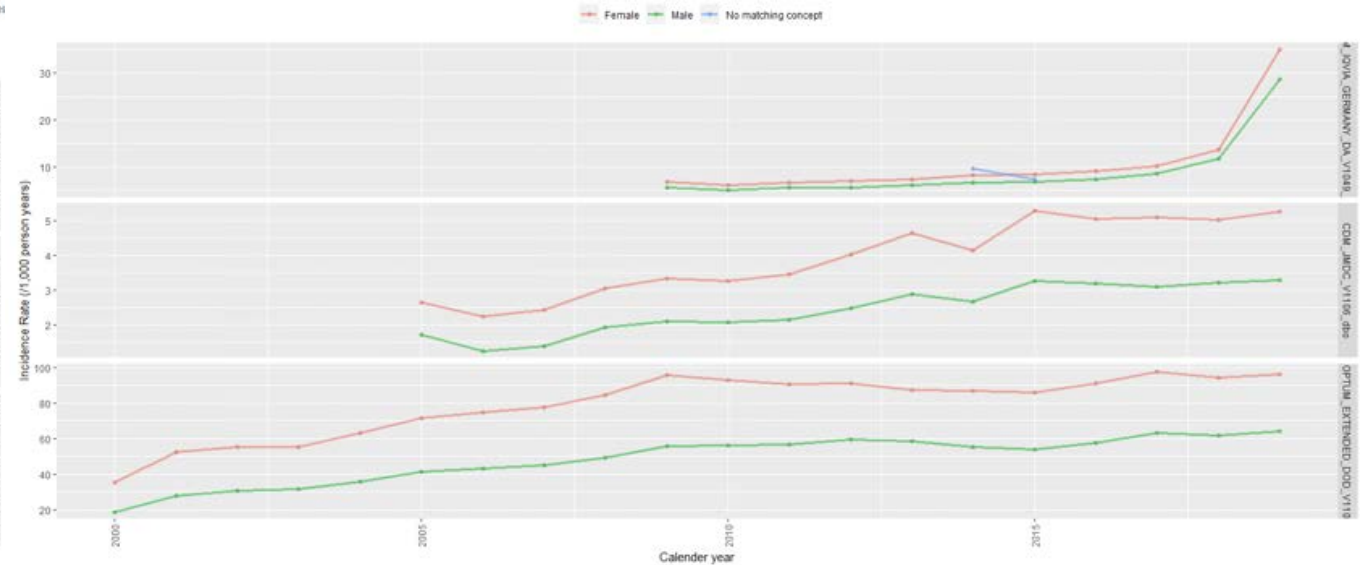
# Exploring the data: capturing coding practices

Malaise



Incidence rate dropped,  
need to add fatigue

Malaise OR (malaise and fatigue)





# Final Results

- Literature reviews done for 36 phenotypes
- 355 cohorts created in atlas-covid19.ohdsi.org
- 114 validated and reviewed cohorts for prediction, estimation and characterization on atlas.ohdsi.org
- Results of Covid19CohortEvaluation are posted on data.ohdsi.org

Cohort #294

[COVID ID13 v1] GP/OP/ER visits of patients presenting with Covid flu or flu-like symptoms AND no symptoms or pneumonia in prior 60d

Definition | Concept Sets | Generation | Reporting | Export | Messages 29

Patients with GP/OP/ER visits presenting with Covid flu or flu-like symptoms (fever AND (cough OR myalgia OR dyspnea OR malaise OR fatigue) AND no di...

Cohort Entry Events

Events having any of the following criteria:

a visit occurrence of [COVID19 v1] Out...

with continuous observation of at least [0] days before and [0] days after event index date  
Limit initial events to: [all events] per person.

Restrict initial events to:  
having [any] of the following criteria:

with [at least] [1] [using all] occurrences of:  
a condition occurrence of [COVID-19 (includ...]  
where [event starts] between [0] days [Before] and [All] days [After] [index start date]  
✗ and [event starts] between [All] days [Before] and [0] days [After] [index end date]  
- restrict to the same visit occurrence  
- allow events from outside observation period

or with [at least] [1] [using all] occurrences of:  
a condition occurrence of [Any Condition]  
✗ Condition Source Concept is [COVID-19 source...]  
where [event starts] between [0] days [Before] and [All] days [After] [index start date]  
✗ and [event starts] between [All] days [Before] and [0] days [After] [index end date]  
- restrict to the same visit occurrence  
- allow events from outside observation period

or with [at least] [1] [using all] occurrences of:  
a measurement of [COVID-19 specifi...]  
where [event starts] between [0] days [Before] and [All] days [After] [index start date]  
✗ and [event starts] between [All] days [Before] and [0] days [After] [index end date]  
- restrict to the same visit occurrence  
- allow events from outside observation period

or with [at least] [1] [using all] occurrences of:  
a measurement of [COVID-19 specifi...]  
✗ Value as Concept is: ✗ Detected ✗ Detected ✗ Positive ✗ Present ✗ Present ✗ Positive Add Import  
where [event starts] between [0] days [Before] and [All] days [After] [index start date]  
✗ and [event starts] between [All] days [Before] and [0] days [After] [index end date]  
- restrict to the same visit occurrence  
- allow events from outside observation period

or with [at least] [1] [using all] occurrences of:  
an observation of [COVID-19 specifi...]  
✗ with Value as Concept: ✗ Detected ✗ Detected ✗ Positive ✗ Positive ✗ Present ✗ Present Add Import  
where [event starts] between [0] days [Before] and [All] days [After] [index start date]  
✗ and [event starts] between [All] days [Before] and [0] days [After] [index end date]  
- restrict to the same visit occurrence  
- allow events from outside observation period

or with [at least] [1] [using all] occurrences of:  
an observation of [Any Observation]





# Next Steps

- Complete the remaining cohorts for characterization
- Finalize the CohortEvaluation package for all cohorts and run across the OHDSI network
- Write a paper about our phenotyping experience