RESEARCH PROTOCOL:

Characterizing adults hospitalized with influenza in 2009-2010 and 2014-2019, and COVID-19 in 2019-2020: protocol for an OHDSI network study

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# 1. List of Abbreviations

|  |  |
| --- | --- |
| CDM | Common data model |
| COVID-19 | Coronavirus disease 2019 |
| OMOP | Observational Medical Outcomes Partnership |
| OHDSI | Observational Health Data Science and Informatics |
| RxNorm | US-specific terminology in medicine that contains all medications available on the US market |
| SNOMED | Systematized Nomenclature of Medicine |

# 2. Responsible Parties

## 2.1. Investigators and Authors

|  |  |
| --- | --- |
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## 2.2 Sponsor

This study was undertaken Observational Health Data Science and Informatics (OHDSI), an open collaboration. **EB** [COI statement]. **DPA** receives partial support from the National Institute for Health Research Oxford Biomedical Research Centre and Senior Research Fellowship. **SCY** receives grant funding from the Korean Ministry of Health & Welfare and from the Korean Ministry of Trade, Industry & Energy. **GH** receives grant funding from the US National Institutes of Health and contracts from Janssen Research and Development. **PBR** is an employee of Janssen Research and Development and shareholder in Johnson & Johnson. **KK** is an employee of IQVIA. **TDS** [COI statement].

# 3. Abstract

*To be added.*

# 4. Amendments and Updates

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Number** | **Date** | **Section of study protocol** | **Amendment or update** | **Reason** |
| V1.1 | 7APR2020 | All | Update | Reformatting entirety of protocol |
|  |  |  |  |  |

# 5. Rationale and Background

Since December 31st 2019, when the first case was reported to WHO, infections by SARS-CoV-2 have spread worldwide. Our current understanding of the disease clinical outcomes is limited to case series. The baseline characteristics of 138 patients with 2019 Novel Coronavirus hospitalized in Wuhan due to pneumonia, for example, have been reported.1 In another study, a series of 21 cases admitted to an ICU in Washington state reported clinical and demographic characteristics at hospital admission.2

As more routinely-collected data emerges on individuals with COVID-19 emerges, a federated network study could provide a fuller picture of the individuals hospitalised with COVID-19. Moreover, the use of such data to inform comparisons with hospitalisations from previous viral outbreaks, like regular seasonal and avian flu epidemics, could also help us to better understand the profiles of individuals hospitalised with COVID-19. Data assets mapped to the Observational Medical Outcomes Partnership (OMOP) common data model (CDM)3 provide a unique opportunity to make a difference in the current crisis, allowing for robust analyses to be performed in a timely across a network of sites.

# 6. Objective

**Aim 1:** To characterize individuals hospitalised with COVID-19 after December 1st 2019

**Aim 2:** To characterize individuals hospitalised with influenza between September 1st 2014 and 1st April 2019

**Aim 3:** To characterize individuals hospitalised with influenza between September 1st 2009 and 1st April 2010.   
For each of these cohorts we will describe their characteristics at time of hospital admission.

# 7. Methods

### 7.1 Data Sources

This study is a multi-national, observational prevalent user cohort study characterizing the baseline characteristics of three cohorts (COVID-19, influenza between 2014-2019 and influenza between 2009-2010 [H1N1 outbreak]) at time of hospital admission.

A South Korean national claims database and two U.S. (New York City and San Francisco) health systems database have already begun accumulating COVID-19 patients and have tested the operability of our analysis package at their sites (**Table 1**). As data become available, we will include additional databases that have already been formatted to the OMOP CDM, which reflect the clinical experience of patients from six European countries (Belgium [general practice EHR], Netherlands [general practice EHR], Germany [general practice EHR, hospital EHR], France [general practice EHR, outpatient specialist EHR], Spain [general practice EHR, outpatient specialist EHR], and Estonia [EHR, claims, and registry data] the United Kingdom [general practice EHR, hospital EHR], the United States of America (general practice EHR, outpatient specialist EHR, hospital EHR, insurance claims], South Korea [EHR, claims, and registry data], and Japan [insurance claims].

The study will be conducted using data from real world data sources that have been mapped to the OMOP Common Data Model in collaboration with the Observational Health Data Sciences and Informatics (OHDSI) and European Health Data and Evidence Network (EHDEN) initiatives. The OMOP Common Data Model (<https://github.com/OHDSI/CommonDataModel/wiki>) includes a standard representation of health care experiences (such as information related to drug utilization and condition occurrence), as well as common vocabularies for coding clinical concepts and enables consistent application of analyses across multiple disparate data sources.4

**Table 1**. Data sources formatted to the OMOP CDM that currently include COVID-19 patients.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data source** | **Source population** | **Sample size** | **Data type** | **Longitudinal history** |
| South Korea: Health Insurance and Review Assessment (HIRA) | All citizens in South Korea | ≈ 50 million | Administrative fee-for-service claims data collected for healthcare reimbursement, including healthcare services such as treatments, pharmaceuticals, procedures, and diagnoses. | 5-years of available look-back (data older than 5-years is deleted from the database) |
| Columbia University Irving Medical Center | Patients of the Columbia University Irving Medical Center | ≈ 6 million | General practice electronic health records, outpatient specialist electronic health records, inpatient hospital electronic health records, hospital billing/summary | 1989 (1978 for diagnoses) |
| Stanford Medicine Research Data Repository (STARR) | Patients of Stanford University | ≈ 3 million | General practice electronic health records, outpatient specialist electronic health records, inpatient hospital electronic health records, hospital billing/summary | 2008 |

### 7.2 Study design

The study will be an observational cohort study based on routinely-collected health care data which has been mapped to the Observational Medical Outcomes Partnership (OMOP) Common Data Model (CDM). Cohorts of individuals hospitalised with COVID-19 or influenza will be identified, and the characteristics of these individuals at their index date will be described.

### 7.3 Target cohorts

**Target Cohort #1:** Patient cohorts in the hospitalised with *COVID-19 cohort* will:

* have a hospitalisation (index event) after December 1st 2019,
* with a record of COVID-19 in the 3 weeks prior and up to end of hospitalisation,
* be aged 18 years or greater at time of the index visit,
* have no COVID-19 associated hospitalisation in the six months prior to the index event

**Target Cohort #2:** Patient cohorts in the *2014-2019 hospitalised with* *influenza cohort* will:

* have a hospitalisation (index event) between September 1st 2014 and 1st April 2019,
* with a record of influenza in the 3 weeks prior and up to end of hospitalisation,
* be aged 18 years or greater at time of the index visit,
* have no influenza associated hospitalisation in the six months prior to the index event

**Target Cohort #3:** Patient cohorts in the *2009-2010 hospitalised with* *influenza cohort* will:

* have a hospitalisation (index event) between September 1st 2009 and 1st April 2010,
* with a record of influenza in the 3 weeks prior and up to end of hospitalisation,
* be aged 18 years or greater at time of the index visit,
* have no influenza associated hospitalisation in the six months prior to the index event

These cohorts will all be identified without any requirement for prior observation time, and also with the added restriction of having a minimum of 365 days of prior observation time available.

### 7.4 Exposures of interest

Narrow and broad were defined for both COVID-19 and influenza to maximize sensitivity and specificity, respectively. The narrow definition of COVID-19 was the presence of a diagnosis code indicating the presence or suspicion of COVID-19 or a positive test result for the disease. Similarly, the narrow definition of influenza also required either a specific diagnosis code or positive test result. For both, broad definitions also allowed for a fever along with one of dyspnea (shortness of breath), malaise and/or fatigue, myalgia, cough, or pneumonia. A time window covering 21 days prior to the day of admission up to the end date of the hospitalization was used to identify both COVID-19 and influenza, allowing for diagnoses and test results shortly prior to and during the hospitalization to be included.

### 7.5 Analysis: Characterising cohorts of time of hospital admission

All analysis will be performed using the OHDSI Methods library. The code for this study can be found: <https://github.com/ohdsi-studies/Covid19HospitalizationCharacterization>. The study package is written using the Cohort Diagnostics package (<https://github.com/OHDSI/CohortDiagnostics>) framework. Baseline covariates will be extracted using the FeatureExtraction package (<http://ohdsi.github.io/FeatureExtraction/>) to quantify Demographics (Gender, Prior Observation Time, Age Group), Charlson Comorbidity Index, Condition Group Eras (0 day [at time of admission], last 30 days, prior 365 days) and Drug Group Eras (0 day [at time of admission], last 30 days, prior 365 days).

At the time of executing Feature Extraction, the package will create a data frame in which individuals’ age and sex will be extracted. Individuals’ prior medical conditions observed over the year prior to their index date will be summarized. Medications will be summarized over three time periods: 1) over the year before index date, 2) over the 30 days before index date, and 3) being taken at time of hospitalization. Continuous variables will be summarized using median and interquartile ranges, while binary covariates will be described in terms of the proportion of the cohort having the covariate. Standardized mean differences (SMD) will be calculated when comparing characteristics of study cohorts, with plots showing comparing the mean values of characteristics for each of the characteristics (with the colour indicating the absolute value of the standardized difference of the mean).

For ease of viewing, you may view analogous Atlas Characterization templates summarizing the measures being captured here:

* <https://atlas.ohdsi.org/#/cc/characterizations/8>
* <https://atlas.ohdsi.org/#/cc/characterizations/10>
* <https://atlas.ohdsi.org/#/cc/characterizations/11>

### 7.6 Logistics of Executing a Federated Analysis

Sites will run study package locally on their OMOP CDM. Only aggregate results will be shared with the study coordinator. Result files will be automatically staged into a ZIP file that can be transmitted using the OhdsiSharing R Library (<http://ohdsi.github.io/OhdsiSharing/>) or through a site’s preferred SFTP client using a site-specific key provisioned by the OHDSI Study Coordinator. Local data stewards are encouraged to review study parameters to ensure minCellCount function follows local governance. At a minimum, it is encouraged to keep this value to >5 to avoid any potential issues with re-identification of patients. An example of tables and figures can be seen in Section 13. (Note: covariates are constructed using controlled ontologies from the OMOP standard vocabularies though some labels may be replaced with publication-friendly labels due to space restrictions of the submitting journal.)

# 8. Sample Size and Study Power

No sample size or study power calculation are necessary for descriptive statistics.

# 9. Strengths and Limitations

### 9.1 Strengths

To our knowledge, this is the single largest observational analyses of secondary health data for COVID-19 cases. We are the first to run a multi-country, multi-center characterization study to understand baseline covariates observed in COVID-19 and influenza cases (both prevalent flu season and H1N1 pandemic season). This will be the first time any analysis compares these samples within the same institution.

### 9.2 Limitations

Misclassification of study variables is unavoidable in observational analyses of secondary health data. Case misclassification is also an important concern, since the COVID-19 cases will be under diagnosed due to limited availability of testing resources and the fact that many infected patients may remain asymptomatic or not require observed healthcare utilization. It is important to note that the extent of underdiagnosis will likely vary by site due to differences in national testing strategies. Furthermore, classification of the cases could also vary with respect to calendar time, since underdiagnosis could become more or less frequent over the course of the pandemic. To address this inherent limitation, we have included a hospitalization-based COVID-19 case definition which will be well-classified in these data to provide additional context. We do not expect case misclassification to be differential with respect to these exposure groups. Thus, bias due to case misclassification will also most likely be toward the null.

# 10. Protection of Human Subjects

The study uses only de-identified data. Confidentiality of patient records will be maintained at all times. All study reports will contain aggregate data only and will not identify individual patients or physicians.

# 11. Management and Reporting of Adverse Events and Adverse Reactions

This study uses coded data that already exist in an electronic database. In this type of database, it is not possible to link (i.e., identify a potential causal association between) a particular product and medical event for any individual. Thus, the minimum criteria for reporting an adverse event (i.e., identifiable patient, identifiable reporter, a suspect product, and event) are not available and adverse events are not reportable as individual adverse events reports. The study results will be assessed for medically important results.

# 12. Plans for Disseminating and Communicating Study Results

The results will be posted on the OHDSI website (data.ohdsi.org) after completion of the study. At least one paper describing the study and its results will be written and submitted for publication to a peer-reviewed scientific journal. The results will also be presented at the OHDSI in-person events.

# 13. Tables and Figures

### 13.1 Tables

### Table 1: narrow COVID, one year prior history - demographics

| covariateName\_label | DB1 | DB2 | DB3 |
| --- | --- | --- | --- |
| sex: male | 52.9 % | 60.0 % | 48.1 % |
| sex: female | 47.1 % | 40.0 % | 51.9 % |
| age group: 15-19 | < 19.6% |  | 1.9 % |
| age group: 20-24 | < 19.6% |  | 10.9 % |
| age group: 25-29 |  | 16.7 % | 13.9 % |
| age group: 35-39 |  | 3.3 % | 11.6 % |
| age group: 30-34 | < 19.6% |  | 10.5 % |
| age group: 40-44 | < 19.6% | 6.7 % | 9.4 % |
| age group: 45-49 | < 19.6% | 3.3 % | 7.2 % |
| age group: 50-54 | < 19.6% | 3.3 % | 5.7 % |
| age group: 55-59 | < 19.6% | 10.0 % | 6.5 % |
| age group: 60-64 | < 19.6% | 23.3 % | 5.7 % |
| age group: 65-69 | < 19.6% | 3.3 % | 3.9 % |
| age group: 70-74 | < 19.6% | 3.3 % | 3.3 % |
| age group: 75-79 | < 19.6% | 10.0 % | 4.1 % |
| age group: 80-84 | < 19.6% | 13.3 % | 3.2 % |
| age group: 85-89 | < 19.6% | 3.3 % | 1.8 % |
| age group: 90-94 | < 19.6% |  | 0.5 % |
| age group: 95-99 |  |  |  |
| age group: 00-04 |  |  |  |

### Table 2: narrow COVID, one year prior history - conditions

| covariateName\_label | DB1 | DB2 | DB3 |
| --- | --- | --- | --- |
| charlson index | | 7.4 | 3.9 | 3.1 |
| anemia | | 29.4 % | 30.0 % | 12.3 % |
| chronic liver disease | | < 19.6% |  | 5.5 % |
| dementia | | < 19.6% | 6.7 % | 4.5 % |
| diabetes mellitus | | 43.1 % | 36.7 % | 16.0 % |
| type 1 diabetes mellitus | | < 19.6% |  | < 0.2% |
| type 2 diabetes mellitus | | 27.5 % | 26.7 % | 6.5 % |
| gastroesophageal reflux disease | | 23.5 % | 20.0 % | 29.8 % |
| gastrointestinal hemorrhage | | < 19.6% | 3.3 % | 2.7 % |
| renal impairment | | 39.2 % | 50.0 % | 3.9 % |
| end-stage renal disease | | < 19.6% | 3.3 % |  |
| HIV | | < 19.6% |  | < 0.2% |
| hyperlipidemia | | 49.0 % | 20.0 % | 29.9 % |
| OA | | 29.4 % | 3.3 % | 13.6 % |
| immunodeficiency | |  | 10.0 % | < 0.2% |
| viral hepatitis | | < 19.6% | 3.3 % | 6.9 % |
| viral hepatitis c | | < 19.6% |  | 2.5 % |
| epilepsy | | < 19.6% |  | 2.9 % |
| atrial fibrillation | | < 19.6% | 6.7 % | 1.3 % |
| cardiomyopathy | | < 19.6% |  | 0.6 % |
| cerebrovascular disease | | < 19.6% | 6.7 % | 5.2 % |
| CAD | | 33.3 % |  | 1.0 % |
| heart disease | | 58.8 % | 26.7 % | 14.9 % |
| heart failure | | 35.3 % | 16.7 % | 6.8 % |
| hypertensive disorder | | 58.8 % | 40.0 % | 21.7 % |
| ischemic heart disease | | 23.5 % | 16.7 % | 7.9 % |
| peripheral vascular disease | | < 19.6% | 3.3 % | 7.6 % |
| pulmonary embolism | | < 19.6% | 3.3 % | 0.9 % |
| venous thrombosis | | < 19.6% | 3.3 % | 1.2 % |
| neoplastic disease | | < 19.6% | 36.7 % | 19.2 % |
| malignant neoplastic disease | | < 19.6% | 23.3 % | 11.4 % |
| malignant tumor of lymphoid hemopoietic and related tissue | | < 19.6% |  | 0.7 % |
| malignant lymphoma | | < 19.6% |  | 0.3 % |
| hematologic neoplasm | | < 19.6% | 3.3 % | 1.2 % |
| malignant neoplasm of female breast | |  |  |  |
| malignant neoplasm of colon and/or rectum | |  | 3.3 % | 1.5 % |
| malignant neoplasm of respiratory system | | < 19.6% | 3.3 % | 2.2 % |
| primary malignant neoplasm of lung | | < 19.6% |  | 0.3 % |
| neoplasm of lung | | < 19.6% |  | 1.1 % |
| primary malignant neoplasm of prostate | | < 19.6% |  | 1.7 % |
| neoplasm of skin | |  | 10.0 % | 1.4 % |
| malignant neoplasm of digestive system | |  | 13.3 % | 5.5 % |
| neoplasm of head and neck | | < 19.6% | 6.7 % | 4.4 % |
| malignant tumor of oropharynx | |  |  |  |
| malignant neoplasm of genitourinary organ | | < 19.6% | 6.7 % | 2.5 % |
| asthma | | 33.3 % | 6.7 % | 14.7 % |
| COPD | | 39.2 % | 6.7 % | 3.8 % |
| chronic bronchitis | |  |  | 9.5 % |
| pulmonary emphysema | | < 19.6% |  | 0.7 % |
| cystic fibrosis | |  |  |  |
| bronchiectasis | | < 19.6% | 3.3 % | 1.2 % |
| interstitial lung disease | |  |  | 1.2 % |
| pulmonary hypertension | | < 19.6% | 3.3 % | < 0.2% |
| psoriasis | |  |  | 1.4 % |
| RA | | < 19.6% |  | 3.3 % |
| lupus | | < 19.6% |  | 0.6 % |
| MS | | < 19.6% |  |  |
| IBD | |  |  | < 0.2% |
| crohn's disease | |  |  | < 0.2% |
| ulcerative colitis | |  |  | 0.3 % |

### Table 3: narrow COVID, one year prior history - medications

| covariateName\_label | DB1 | DB2 | DB3 |
| --- | --- | --- | --- |
|  |  |  |  |
| year prior index date: ACEs | < 19.6% | 23.3 % | 13.3 % |
| 30 days prior index date: ACEs | < 19.6% | 20.0 % | 8.2 % |
| on index date: ACEs | < 19.6% | 16.7 % | 4.1 % |
| year prior index date: antibacterials | 74.5 % | 90.0 % | 74.4 % |
| 30 days prior index date: antibacterials | 52.9 % | 76.7 % | 12.4 % |
| on index date: antibacterials | 43.1 % | 63.3 % | 5.1 % |
| year prior index date: agents acting on the renin-angiotensin system | 33.3 % | 36.7 % | 13.8 % |
| 30 days prior index date: agents acting on the renin-angiotensin system | < 19.6% | 30.0 % | 8.6 % |
| on index date: agents acting on the renin-angiotensin system | < 19.6% | 26.7 % | 4.3 % |
| year prior index date: antiepileptics | 29.4 % | 23.3 % | 11.8 % |
| 30 days prior index date: antiepileptics | < 19.6% | 16.7 % | 3.8 % |
| on index date: antiepileptics | < 19.6% | 16.7 % | 1.4 % |
| year prior index date: antiinflammatory and antirheumatic products | 31.4 % | 36.7 % | 63.2 % |
| 30 days prior index date: antiinflammatory and antirheumatic products | < 19.6% | 23.3 % | 8.4 % |
| on index date: antiinflammatory and antirheumatic products | < 19.6% | 10.0 % | 1.9 % |
| year prior index date: hydroxychloroquine | < 19.6% | 13.3 % | 2.0 % |
| 30 days prior index date: hydroxychloroquine | < 19.6% | 13.3 % | 1.8 % |
| on index date: hydroxychloroquine | < 19.6% | 13.3 % | 1.7 % |
| year prior index date: methotrexate |  | 3.3 % | 0.5 % |
| 30 days prior index date: methotrexate |  | 3.3 % |  |
| on index date: methotrexate |  | 3.3 % |  |
| year prior index date: leflunomide | < 19.6% |  |  |
| 30 days prior index date: leflunomide |  |  |  |
| on index date: leflunomide |  |  |  |
| year prior index date: sulfasalazine |  |  | < 0.2% |
| 30 days prior index date: sulfasalazine |  |  | < 0.2% |
| on index date: sulfasalazine |  |  | < 0.2% |
| year prior index date: antineoplastic agents | < 19.6% | 16.7 % | 3.2 % |
| 30 days prior index date: antineoplastic agents | < 19.6% | 3.3 % | 0.6 % |
| on index date: antineoplastic agents | < 19.6% | 3.3 % | < 0.2% |
| year prior index date: antipsoriatics | < 19.6% | 13.3 % | 0.8 % |
| 30 days prior index date: antipsoriatics |  | 3.3 % | < 0.2% |
| on index date: antipsoriatics |  |  | < 0.2% |
| year prior index date: beta blocking agents | 33.3 % | 50.0 % | 10.6 % |
| 30 days prior index date: beta blocking agents | < 19.6% | 33.3 % | 4.1 % |
| on index date: beta blocking agents | < 19.6% | 30.0 % | 2.2 % |
| year prior index date: calcium channel blockers | 39.2 % | 40.0 % | 14.0 % |
| 30 days prior index date: calcium channel blockers | 21.6 % | 23.3 % | 8.5 % |
| on index date: calcium channel blockers | 21.6 % | 20.0 % | 4.2 % |
| year prior index date: diuretics | 37.3 % | 50.0 % | 10.4 % |
| 30 days prior index date: diuretics | 25.5 % | 23.3 % | 4.9 % |
| on index date: diuretics | 23.5 % | 23.3 % | 2.1 % |
| year prior index date: drugs for acid related disorders | 49.0 % | 70.0 % | 66.5 % |
| 30 days prior index date: drugs for acid related disorders | < 19.6% | 43.3 % | 11.7 % |
| on index date: drugs for acid related disorders | < 19.6% | 40.0 % | 4.3 % |
| year prior index date: drugs for obstructive airway diseases | 58.8 % | 36.7 % | 24.9 % |
| 30 days prior index date: drugs for obstructive airway diseases | 52.9 % | 13.3 % | 3.3 % |
| on index date: drugs for obstructive airway diseases | 52.9 % | 10.0 % | 1.2 % |
| year prior index date: drugs used in diabetes | 35.3 % | 30.0 % | 9.7 % |
| 30 days prior index date: drugs used in diabetes | < 19.6% | 23.3 % | 6.2 % |
| on index date: drugs used in diabetes | < 19.6% | 23.3 % | 2.5 % |
| year prior index date: insulins and analogues | 29.4 % | 23.3 % | 3.5 % |
| 30 days prior index date: insulins and analogues | < 19.6% | 3.3 % | 0.5 % |
| on index date: insulins and analogues | < 19.6% |  | 0.3 % |
| year prior index date: immunosuppressants | < 19.6% | 3.3 % | 2.9 % |
| 30 days prior index date: immunosuppressants | < 19.6% | 3.3 % | 0.8 % |
| on index date: immunosuppressants | < 19.6% | 3.3 % | 0.4 % |
| year prior index date: lipid modifying agents | 52.9 % | 40.0 % | 16.8 % |
| 30 days prior index date: lipid modifying agents | 29.4 % | 33.3 % | 11.0 % |
| on index date: lipid modifying agents | 27.5 % | 33.3 % | 5.8 % |
| year prior index date: opioids | 45.1 % | 50.0 % | 65.8 % |
| 30 days prior index date: opioids | 29.4 % | 33.3 % | 15.3 % |
| on index date: opioids | 27.5 % | 30.0 % | 7.3 % |
| year prior index date: psycholeptics | 39.2 % | 40.0 % | 29.7 % |
| 30 days prior index date: psycholeptics | 27.5 % | 6.7 % | 5.7 % |
| on index date: psycholeptics | < 19.6% | 3.3 % | 1.6 % |
| year prior index date: psychostimulants, agents used for adhd and nootropics |  | 10.0 % | 8.2 % |
| 30 days prior index date: psychostimulants, agents used for adhd and nootropics |  |  | 2.2 % |
| on index date: psychostimulants, agents used for adhd and nootropics |  |  | 1.2 % |
| year prior index date: immunoglobulins |  | 3.3 % | 1.8 % |
| 30 days prior index date: immunoglobulins |  |  | < 0.2% |
| on index date: immunoglobulins |  |  | < 0.2% |

### 13.1 Figures

### Figures 1, 2 & 3: Conditions - COVID-19 compared to Influenza cohorts

# References

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# Appendix 1: Cohort Definitions

**Persons hospitalized with COVID-19 narrow, w/ no prior observation required**

**(**<https://atlas.ohdsi.org/#/cohortdefinition/108>)

Persons hospitalized with COVID-19, age>=18, no prior observation required, narrowly defined = (condition or measurement with positive value) in 21d prior or during (up to date of discharge) of hospitalization, with no COVID associated hospitalization in prior 6 mo, and after 1Dec2019

Initial Event Cohort

People having any of the following:

* a visit occurrence of [OHDSI Covid19 v1] Inpatient Visit5
  + occurrence start is after 2019-12-01

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

For people matching the Primary Events, include:

Having any of the following criteria:

* at least 1 occurrences of a condition occurrence of COVID-19 (including asymptomatic)1

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a condition occurrence of Any Condition
  + Condition Source Concept is COVID-19 source codes2

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a measurement of COVID-19 specific testing (pre-coordinated Measurements) - Positive4

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a measurement of COVID-19 specific testing (pre-coordinated Measurements excluded)3
  + value as concept is any of: Detected, Detected, Positive, Present, Present, Positive

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of an observation of COVID-19 specific testing (pre-coordinated Measurements excluded)3
  + value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of an observation of Any Observation

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

Limit cohort of initial events to: **all events per person.**

Inclusion Rules

Inclusion Criteria #1: age >=18

Having all of the following criteria:

* with the following event criteria:
  + with age >= 18

Inclusion Criteria #2: does not have hospitalization for COVID19 in the 6 months preceding admission

Having all of the following criteria:

* exactly 0 occurrences of a visit occurrence of [OHDSI Covid19 v1] Inpatient Visit5

Having any of the following criteria:

* + - at least 1 occurrences of a condition occurrence of COVID-19 (including asymptomatic)1

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of Any Condition
      * Condition Source Concept is COVID-19 source codes2

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of Any Observation

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of COVID-19 specific testing (pre-coordinated Measurements) - Positive4

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of COVID-19 specific testing (pre-coordinated Measurements excluded)3
      * value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of COVID-19 specific testing (pre-coordinated Measurements excluded)3
      * value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

where event starts between 180 days Before and 1 days Before index start date

Limit qualifying cohort to: **all events per person.**

End Date Strategy

Date Offset Exit Criteria

This cohort definition end date will be the index event's end date plus 0 days

Cohort Collapse Strategy:

Collapse cohort by era with a gap size of 0 days.

**Concept Set: COVID-19 (including asymptomatic)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 37311061 | Disease caused by severe acute respiratory syndrome coronavirus 2 | Condition | SNOMED | NO | YES | NO |

**Concept Set: COVID-19 source codes**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 586414 | Novel coronavirus infection | Condition | KCD7 | NO | NO | NO |
| 586415 | Provisional assignment of new diseases or emergency use | Condition | KCD7 | NO | NO | NO |
| 710155 | COVID-19 pneumonia (machine translation) | Observation | ICD10CN | NO | NO | NO |
| 710156 | COVID-19 pneumonia (machine translation) | Observation | ICD10CN | NO | NO | NO |
| 710157 | Suspected case of COVID-19 (machine translation) | Condition | ICD10CN | YES | NO | NO |
| 710158 | COVID-19 (machine translation) | Observation | ICD10CN | NO | NO | NO |
| 710159 | Confirmed COVID-19, excluding pneumonia (machine translation) | Observation | ICD10CN | NO | NO | NO |
| 710160 | Emergency use of U07.1 | Disease caused by severe acute respiratory syndrome coronavirus 2 | Observation | ICD10CN | NO | NO | NO |
| 42501115 | Emergency use of U07.1 | Disease caused by severe acute respiratory syndrome coronavirus 2 | Condition | KCD7 | NO | NO | NO |
| 45542411 | Contact with and (suspected) exposure to other viral communicable diseases | Observation | ICD10CM | YES | NO | NO |
| 45600471 | Other coronavirus as the cause of diseases classified elsewhere | Condition | ICD10CM | NO | NO | NO |

**Concept Set: COVID-19 specific testing (pre-coordinated Measurements excluded)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 756055 | Measurement of severe acute respiratory syndrome coronavirus 2 | Measurement | OMOP Extension | NO | YES | NO |
| 37310281 | 2019 novel coronavirus not detected | Measurement | SNOMED | YES | YES | NO |
| 37310282 | 2019 novel coronavirus detected | Measurement | SNOMED | YES | YES | NO |

**Concept Set: COVID-19 specific testing (pre-coordinated Measurements) - Positive**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 37310282 | 2019 novel coronavirus detected | Measurement | SNOMED | NO | YES | NO |

**Concept Set: [OHDSI Covid19 v1] Inpatient Visit**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 262 | Emergency Room and Inpatient Visit | Visit | Visit | NO | YES | NO |
| 9201 | Inpatient Visit | Visit | Visit | NO | YES | NO |

**[COVID ID1 v1] Persons hospitalized with COVID-19 narrow w/ prior observation**

**(**<https://atlas.ohdsi.org/#/cohortdefinition/107>)

Persons hospitalized with COVID-19, age>=18, >=365d prior observation, narrowly defined = (condition or measurement with positive value) in 21d prior or during (up to date of discharge) of hospitalization, with no COVID associated hospitalization in prior 6 mo, and after 1Dec2019

Initial Event Cohort

People having any of the following:

* a visit occurrence of [OHDSI Covid19 v1] Inpatient Visit5
  + occurrence start is after 2019-12-01

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

For people matching the Primary Events, include:

Having any of the following criteria:

* at least 1 occurrences of a condition occurrence of COVID-19 (including asymptomatic)1

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a condition occurrence of Any Condition
  + Condition Source Concept is COVID-19 source codes2

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a measurement of COVID-19 specific testing (pre-coordinated Measurements) - Positive4

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a measurement of COVID-19 specific testing (pre-coordinated Measurements excluded)3
  + value as concept is any of: Detected, Detected, Positive, Present, Present, Positive

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of an observation of COVID-19 specific testing (pre-coordinated Measurements excluded)3
  + value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of an observation of Any Observation

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

Limit cohort of initial events to: **all events per person.**

Inclusion Rules

Inclusion Criteria #1: age >=18

Having all of the following criteria:

* with the following event criteria:
  + with age >= 18

Inclusion Criteria #2: has >=365d of prior observation

Having all of the following criteria:

* at least 1 occurrences of an observation period

where event starts between all days Before and 365 days Before index start date and event ends between 0 days Before and all days After index end date

Inclusion Criteria #3: does not have hospitalization for COVID19 in the 6 months preceding admission

Having all of the following criteria:

* exactly 0 occurrences of a visit occurrence of [OHDSI Covid19 v1] Inpatient Visit5

Having any of the following criteria:

* + - at least 1 occurrences of a condition occurrence of COVID-19 (including asymptomatic)1

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of Any Condition
      * Condition Source Concept is COVID-19 source codes2

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of Any Observation

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of COVID-19 specific testing (pre-coordinated Measurements) - Positive4

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of COVID-19 specific testing (pre-coordinated Measurements excluded)3
      * value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of COVID-19 specific testing (pre-coordinated Measurements excluded)3
      * value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

where event starts between 180 days Before and 1 days Before index start date

Limit qualifying cohort to: **all events per person.**

End Date Strategy

Date Offset Exit Criteria

This cohort definition end date will be the index event's end date plus 0 days

Cohort Collapse Strategy:

Collapse cohort by era with a gap size of 0 days.

**Concept Set: COVID-19 (including asymptomatic)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 37311061 | Disease caused by severe acute respiratory syndrome coronavirus 2 | Condition | SNOMED | NO | YES | NO |

**Concept Set: COVID-19 source codes**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 586414 | Novel coronavirus infection | Condition | KCD7 | NO | NO | NO |
| 586415 | Provisional assignment of new diseases or emergency use | Condition | KCD7 | NO | NO | NO |
| 710155 | COVID-19 pneumonia (machine translation) | Observation | ICD10CN | NO | NO | NO |
| 710156 | COVID-19 pneumonia (machine translation) | Observation | ICD10CN | NO | NO | NO |
| 710157 | Suspected case of COVID-19 (machine translation) | Condition | ICD10CN | YES | NO | NO |
| 710158 | COVID-19 (machine translation) | Observation | ICD10CN | NO | NO | NO |
| 710159 | Confirmed COVID-19, excluding pneumonia (machine translation) | Observation | ICD10CN | NO | NO | NO |
| 710160 | Emergency use of U07.1 | Disease caused by severe acute respiratory syndrome coronavirus 2 | Observation | ICD10CN | NO | NO | NO |
| 42501115 | Emergency use of U07.1 | Disease caused by severe acute respiratory syndrome coronavirus 2 | Condition | KCD7 | NO | NO | NO |
| 45542411 | Contact with and (suspected) exposure to other viral communicable diseases | Observation | ICD10CM | YES | NO | NO |
| 45600471 | Other coronavirus as the cause of diseases classified elsewhere | Condition | ICD10CM | NO | NO | NO |

**Concept Set: COVID-19 specific testing (pre-coordinated Measurements excluded)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 756055 | Measurement of severe acute respiratory syndrome coronavirus 2 | Measurement | OMOP Extension | NO | YES | NO |
| 37310281 | 2019 novel coronavirus not detected | Measurement | SNOMED | YES | YES | NO |
| 37310282 | 2019 novel coronavirus detected | Measurement | SNOMED | YES | YES | NO |

**Concept Set: COVID-19 specific testing (pre-coordinated Measurements) - Positive**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 37310282 | 2019 novel coronavirus detected | Measurement | SNOMED | NO | YES | NO |

**Concept Set: [OHDSI Covid19 v1] Inpatient Visit**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 262 | Emergency Room and Inpatient Visit | Visit | Visit | NO | YES | NO |
| 9201 | Inpatient Visit | Visit | Visit | NO | YES | NO |

**[COVID ID3 v1] Persons hospitalized with COVID-19 broad w/ prior observation  
(**<https://atlas.ohdsi.org/#/cohortdefinition/109>)

Persons hospitalized with COVID-19, age>=18, >=365d prior observation, broad defined = (confirmed OR suspected condition or measurement with positive value) OR (fever AND (cough OR dyspnea OR myalgia OR malaise OR pneumonia) in 21d prior or during (up to date of discharge) of hospitalization, with no COVID associated hospitalization in prior 6 mo, and after 1Dec2019

Initial Event Cohort

People having any of the following:

* a visit occurrence of [OHDSI Covid19 v1] Inpatient Visit13
  + occurrence start is after 2019-12-01

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

For people matching the Primary Events, include:

Having any of the following criteria:

* at least 1 occurrences of a condition occurrence of COVID-19 (including asymptomatic)1

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a condition occurrence of Any Condition
  + Condition Source Concept is COVID-19 source codes2

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a measurement of COVID-19 specific testing (pre-coordinated Measurements) - Positive4

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a measurement of COVID-19 specific testing (pre-coordinated Measurements excluded)3
  + value as concept is any of: Detected, Detected, Positive, Present, Present, Positive

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of an observation of COVID-19 specific testing (pre-coordinated Measurements excluded)3
  + value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of an observation of Any Observation

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a condition occurrence of COVID-19 Suspected OR Suspected unspecific coronavirus infection - Source and Standard terminology5

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a condition occurrence of Any Condition
  + Condition Source Concept is COVID-19 Suspected OR Suspected unspecific coronavirus infection - Source and Standard terminology5

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* Or having all of the following criteria:
  + Having any of the following criteria:
    - at least 1 occurrences of a condition occurrence of [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions8

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions8

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 V1] Fever (38.0°C or higher) measurement and observation7
      * with value as number between 38 and 42 (inclusive)
      * unit is any of: degree Celsius

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 V1] Fever (38.0°C or higher) measurement and observation7
      * with value as number between 100.4 and 120 (inclusive)
      * unit is any of: degree Fahrenheit

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of [COVID19 V1] Fever (38.0°C or higher) measurement and observation7
      * with value as number between 38 and 42 (inclusive)
      * unit is any of: degree Celsius

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of [COVID19 V1] Fever (38.0°C or higher) measurement and observation7
      * with value as number between 100.4 and 120 (inclusive)
      * unit is any of: degree Fahrenheit

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + And having any of the following criteria:
    - at least 1 occurrences of a condition occurrence of [OHDSI Cov19] Cough12

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of [COVID V1] Shortness of breath (dyspnea)6

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of [COVID19 v1] Myalgia10

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of [Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)9

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of Any Condition
      * Condition Source Concept is [Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)9

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of [COVID19 v1] Pneumonia11

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

Limit cohort of initial events to: **all events per person.**

Inclusion Rules

Inclusion Criteria #1: age >=18

Having all of the following criteria:

* with the following event criteria:
  + with age >= 18

Inclusion Criteria #2: has >=365d of prior observation

Having all of the following criteria:

* at least 1 occurrences of an observation period

where event starts between all days Before and 365 days Before index start date and event ends between 0 days Before and all days After index end date

Inclusion Criteria #3: does not have hospitalization for COVID19 in the 6 months preceding admission

Having all of the following criteria:

* exactly 0 occurrences of a visit occurrence of [OHDSI Covid19 v1] Inpatient Visit13

Having any of the following criteria:

* + - at least 1 occurrences of a condition occurrence of COVID-19 (including asymptomatic)1

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of Any Condition
      * Condition Source Concept is COVID-19 source codes2

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of Any Observation

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of COVID-19 specific testing (pre-coordinated Measurements) - Positive4

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of COVID-19 specific testing (pre-coordinated Measurements excluded)3
      * value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of COVID-19 specific testing (pre-coordinated Measurements excluded)3
      * value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of COVID-19 Suspected OR Suspected unspecific coronavirus infection - Source and Standard terminology5

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of Any Condition
      * Condition Source Concept is COVID-19 Suspected OR Suspected unspecific coronavirus infection - Source and Standard terminology5

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - Or having all of the following criteria:
      * Having any of the following criteria:
        + at least 1 occurrences of a condition occurrence of [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions8

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of a measurement of [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions8

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of a measurement of [COVID19 V1] Fever (38.0°C or higher) measurement and observation7

with value as number between 38 and 42 (inclusive)

unit is any of: degree Celsius

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of a measurement of [COVID19 V1] Fever (38.0°C or higher) measurement and observation7

with value as number between 100.4 and 120 (inclusive)

unit is any of: degree Fahrenheit

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of an observation of [COVID19 V1] Fever (38.0°C or higher) measurement and observation7

with value as number between 38 and 42 (inclusive)

unit is any of: degree Celsius

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of an observation of [COVID19 V1] Fever (38.0°C or higher) measurement and observation7

with value as number between 100.4 and 120 (inclusive)

unit is any of: degree Fahrenheit

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * And having all of the following criteria:
        + at least 1 occurrences of a condition occurrence of [OHDSI Cov19] Cough12

where event starts between 21 days Before and all days After index start date and event ends between all days Before and 0 days After index start date

* + - * + and at least 1 occurrences of a condition occurrence of [COVID V1] Shortness of breath (dyspnea)6

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + and at least 1 occurrences of a condition occurrence of [COVID19 v1] Myalgia10

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + and at least 1 occurrences of a condition occurrence of [Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)9

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + and at least 1 occurrences of a condition occurrence of Any Condition

Condition Source Concept is [Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)9

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + and at least 1 occurrences of a condition occurrence of [COVID19 v1] Pneumonia11

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

where event starts between 180 days Before and 1 days Before index start date

Limit qualifying cohort to: **all events per person.**

End Date Strategy

Date Offset Exit Criteria

This cohort definition end date will be the index event's end date plus 0 days

Cohort Collapse Strategy:

Collapse cohort by era with a gap size of 0 days.

**Concept Set: COVID-19 (including asymptomatic)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 37311061 | Disease caused by severe acute respiratory syndrome coronavirus 2 | Condition | SNOMED | NO | YES | NO |

**Concept Set: COVID-19 source codes**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 710158 | COVID-19 (machine translation) | Observation | ICD10CN | NO | NO | NO |
| 710155 | COVID-19 pneumonia (machine translation) | Observation | ICD10CN | NO | NO | NO |
| 710156 | COVID-19 pneumonia (machine translation) | Observation | ICD10CN | NO | NO | NO |
| 710159 | Confirmed COVID-19, excluding pneumonia (machine translation) | Observation | ICD10CN | NO | NO | NO |
| 45542411 | Contact with and (suspected) exposure to other viral communicable diseases | Observation | ICD10CM | YES | NO | NO |
| 710160 | Emergency use of U07.1 | Disease caused by severe acute respiratory syndrome coronavirus 2 | Observation | ICD10CN | NO | NO | NO |
| 45756093 | Emergency use of U07.1 | Disease caused by severe acute respiratory syndrome coronavirus 2 | Condition | ICD10 | NO | NO | NO |
| 42501115 | Emergency use of U07.1 | Disease caused by severe acute respiratory syndrome coronavirus 2 | Condition | KCD7 | NO | NO | NO |
| 586414 | Novel coronavirus infection | Condition | KCD7 | NO | NO | NO |
| 45600471 | Other coronavirus as the cause of diseases classified elsewhere | Condition | ICD10CM | NO | NO | NO |
| 586415 | Provisional assignment of new diseases or emergency use | Condition | KCD7 | NO | NO | NO |
| 710157 | Suspected case of COVID-19 (machine translation) | Condition | ICD10CN | YES | NO | NO |

**Concept Set: COVID-19 specific testing (pre-coordinated Measurements excluded)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 37310282 | 2019 novel coronavirus detected | Measurement | SNOMED | YES | YES | NO |
| 37310281 | 2019 novel coronavirus not detected | Measurement | SNOMED | YES | YES | NO |
| 756055 | Measurement of severe acute respiratory syndrome coronavirus 2 | Measurement | OMOP Extension | NO | YES | NO |

**Concept Set: COVID-19 specific testing (pre-coordinated Measurements) - Positive**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 37310282 | 2019 novel coronavirus detected | Measurement | SNOMED | NO | YES | NO |

**Concept Set: COVID-19 Suspected OR Suspected unspecific coronavirus infection - Source and Standard terminology**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 710157 | Suspected case of COVID-19 (machine translation) | Condition | ICD10CN | NO | NO | NO |
| 45763724 | Suspected coronavirus infection | Condition | SNOMED | NO | NO | NO |

**Concept Set: [COVID V1] Shortness of breath (dyspnea)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 4191650 | Acute respiratory distress | Condition | SNOMED | NO | YES | NO |
| 4222908 | Borg Breathlessness Score: 0 none at all | Condition | SNOMED | YES | YES | NO |
| 312437 | Dyspnea | Condition | SNOMED | NO | YES | NO |

**Concept Set: [COVID19 V1] Fever (38.0°C or higher) measurement and observation**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 3025085 | Axillary temperature | Measurement | LOINC | NO | YES | NO |
| 21490870 | Bladder temperature via Foley | Measurement | LOINC | NO | YES | NO |
| 21490688 | Body surface temperature | Measurement | LOINC | NO | YES | NO |
| 3020891 | Body temperature | Measurement | LOINC | NO | YES | NO |
| 3025926 | Body temperature - Core | Measurement | LOINC | NO | YES | NO |
| 3025704 | Body temperature - Urinary bladder | Measurement | LOINC | NO | YES | NO |
| 3017614 | Body temperature 1 hour | Measurement | LOINC | NO | YES | NO |
| 3011783 | Body temperature 1 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3004750 | Body temperature 10 hour | Measurement | LOINC | NO | YES | NO |
| 3008557 | Body temperature 10 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3007846 | Body temperature 12 hour | Measurement | LOINC | NO | YES | NO |
| 3016117 | Body temperature 12 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3006749 | Body temperature 24 hour | Measurement | LOINC | NO | YES | NO |
| 3016715 | Body temperature 24 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3018145 | Body temperature 8 hour | Measurement | LOINC | NO | YES | NO |
| 3015039 | Body temperature 8 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3009553 | Body temperature at First encounter | Measurement | LOINC | NO | YES | NO |
| 4329518 | Body temperature taken with digital thermometer | Observation | SNOMED | NO | YES | NO |
| 4174894 | Core body temperature | Observation | SNOMED | NO | YES | NO |
| 21490907 | Ear temperature | Measurement | LOINC | NO | YES | NO |
| 21490588 | Esophageal temperature | Measurement | LOINC | NO | YES | NO |
| 4212763 | Forehead temperature | Observation | SNOMED | NO | YES | NO |
| 4189949 | Groin temperature | Observation | SNOMED | YES | YES | NO |
| 44809208 | Maximum body temperature | Observation | SNOMED | NO | YES | NO |
| 21490906 | Nasal temperature | Measurement | LOINC | NO | YES | NO |
| 21490590 | Nasopharyngeal temperature | Measurement | LOINC | NO | YES | NO |
| 4040476 | O/E - axillary temperature | Measurement | SNOMED | YES | YES | NO |
| 4039792 | O/E - core temperature | Measurement | SNOMED | YES | YES | NO |
| 4040104 | O/E - groin temperature | Measurement | SNOMED | YES | YES | NO |
| 4164378 | O/E - hyperpyrexia | Measurement | SNOMED | YES | YES | NO |
| 4039796 | O/E - hyperpyrexia - greater than 40.5 degrees Celsius | Measurement | SNOMED | YES | YES | NO |
| 4039793 | O/E - level of fever | Measurement | SNOMED | NO | YES | NO |
| 4077057 | O/E - oral temperature | Measurement | SNOMED | NO | YES | NO |
| 4039791 | O/E - rectal temperature | Measurement | SNOMED | NO | YES | NO |
| 4039795 | O/E - temperature elevated | Measurement | SNOMED | YES | YES | NO |
| 4040106 | O/E - temperature low | Measurement | SNOMED | YES | YES | NO |
| 4039794 | O/E - temperature normal | Measurement | SNOMED | YES | YES | NO |
| 4151775 | O/E - tympanic temperature | Measurement | SNOMED | NO | YES | NO |
| 4038778 | O/E -skin temperature abnormal | Measurement | SNOMED | YES | YES | NO |
| 3006322 | Oral temperature | Measurement | LOINC | NO | YES | NO |
| 3022060 | Rectal temperature | Measurement | LOINC | NO | YES | NO |
| 45769775 | Temperature of neonate at birth | Observation | SNOMED | YES | YES | NO |
| 4265708 | Temperature of skin | Observation | SNOMED | NO | YES | NO |
| 4267945 | Temperature of vagina | Observation | SNOMED | YES | YES | NO |
| 3025163 | Tympanic membrane temperature | Measurement | LOINC | NO | YES | NO |

**Concept Set: [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 4346179 | Bancroftian filarial fever | Condition | SNOMED | YES | YES | NO |
| 4170869 | Dehydration fever in newborn | Condition | SNOMED | YES | YES | NO |
| 4226022 | Drug-induced hyperpyrexia | Condition | SNOMED | YES | YES | NO |
| 37205085 | Familial mesial temporal lobe epilepsy with febrile seizures | Condition | SNOMED | YES | YES | NO |
| 444413 | Febrile convulsion | Condition | SNOMED | NO | YES | NO |
| 437663 | Fever | Condition | SNOMED | NO | YES | NO |
| 4141062 | Fever greater than 100.4 Fahrenheit | Measurement | SNOMED | NO | YES | NO |
| 4318555 | Fever of the newborn | Condition | SNOMED | YES | YES | NO |
| 37016869 | Infection caused by Borrelia miyamotoi | Condition | SNOMED | YES | YES | NO |
| 443908 | Louse-borne relapsing fever | Condition | SNOMED | YES | YES | NO |
| 4093997 | Malarial fever | Condition | SNOMED | YES | YES | NO |
| 4347651 | Malayan filarial fever | Condition | SNOMED | YES | YES | NO |
| 440285 | Malignant hyperthermia | Condition | SNOMED | YES | YES | NO |
| 4087628 | Malignant tertian fever | Condition | SNOMED | YES | YES | NO |
| 4143214 | Maternal pyrexia in labor | Condition | SNOMED | YES | YES | NO |
| 4152360 | O/E - fever | Measurement | SNOMED | NO | YES | NO |
| 4039793 | O/E - level of fever | Measurement | SNOMED | YES | YES | NO |
| 37397178 | PFAPA syndrome | Condition | SNOMED | YES | YES | NO |
| 40493465 | Paraneoplastic fever | Condition | SNOMED | YES | YES | NO |
| 4199309 | Pel Ebstein fever | Condition | SNOMED | YES | YES | NO |
| 44784428 | Post diphtheria vaccination fever | Condition | SNOMED | YES | YES | NO |
| 44784427 | Post diphtheria, tetanus and pertussis vaccination fever | Condition | SNOMED | YES | YES | NO |
| 44784429 | Post pertussis vaccination fever | Condition | SNOMED | YES | YES | NO |
| 44782483 | Post tetanus vaccination fever | Condition | SNOMED | YES | YES | NO |
| 43530646 | Post vaccination fever | Condition | SNOMED | YES | YES | NO |
| 4086668 | Postoperative fever | Condition | SNOMED | YES | YES | NO |
| 3197956 | Postoperative fever | Condition | Nebraska Lexicon | YES | YES | NO |
| 4094003 | Postpartum fever | Condition | SNOMED | YES | YES | NO |
| 43530637 | Postprocedural fever | Condition | SNOMED | YES | YES | NO |
| 37017455 | Pyrexia of unknown origin co-occurrent with human immunodeficiency virus infection | Condition | SNOMED | YES | YES | NO |
| 4087629 | Quartan fever | Condition | SNOMED | YES | YES | NO |
| 4150518 | Relapsing fever of Asia AND/OR Africa | Condition | SNOMED | YES | YES | NO |
| 4184347 | Relapsing fever of Central AND/OR South Africa | Condition | SNOMED | YES | YES | NO |
| 4326408 | Relapsing fever of Central AND/OR South America | Condition | SNOMED | YES | YES | NO |
| 4200980 | Relapsing fever of Iberian Peninsula AND/OR Northwest Africa | Condition | SNOMED | YES | YES | NO |
| 4229442 | Relapsing fever of Iran AND/OR Central Asia | Condition | SNOMED | YES | YES | NO |
| 4239624 | Relapsing fever of Southern U.S., Mexico, Central AND/OR South America | Condition | SNOMED | YES | YES | NO |
| 4300533 | Relapsing fever of Western North America | Condition | SNOMED | YES | YES | NO |
| 4308214 | Relapsing fever of Western United States | Condition | SNOMED | YES | YES | NO |
| 4099900 | Relapsing fever of the Caucasus | Condition | SNOMED | YES | YES | NO |
| 4094000 | Reversed diurnal fever | Condition | SNOMED | YES | YES | NO |
| 4087017 | Tertian fever | Condition | SNOMED | YES | YES | NO |
| 438963 | Tick-borne relapsing fever | Condition | SNOMED | YES | YES | NO |
| 4243806 | Transitory fever of newborn | Condition | SNOMED | YES | YES | NO |

**Concept Set:** **[Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 4158491 | C/O - debility - malaise | Condition | SNOMED | YES | YES | NO |
| 37396808 | Cancer-related fatigue | Condition | SNOMED | YES | YES | NO |
| 4219363 | Congenital debility of fetus | Condition | SNOMED | YES | YES | NO |
| 4223659 | Fatigue | Condition | SNOMED | NO | YES | NO |
| 4221911 | Fatigue associated with AIDS | Condition | SNOMED | YES | YES | NO |
| 37205051 | Fatigue due to chemotherapy | Condition | SNOMED | YES | YES | NO |
| 37205052 | Fatigue due to radiation therapy | Condition | SNOMED | YES | YES | NO |
| 45772721 | Fatigue due to treatment | Condition | SNOMED | YES | YES | NO |
| 4272240 | Malaise | Condition | SNOMED | NO | YES | NO |
| 1572255 | Malaise and fatigue | Condition | ICD10CM | NO | YES | NO |
| 439926 | Malaise and fatigue | Condition | SNOMED | NO | YES | NO |
| 44829293 | Malaise and fatigue | Condition | ICD9CM | NO | YES | NO |
| 4225027 | Malaise associated with AIDS | Condition | SNOMED | YES | YES | NO |
| 44823445 | Other malaise and fatigue | Condition | ICD9CM | NO | YES | NO |
| 1572256 | Other malaise and fatigue | Condition | ICD10CM | NO | YES | NO |
| 40484614 | Postexertional fatigue | Condition | SNOMED | YES | YES | NO |
| 4092860 | Rapid fatigue of gait | Condition | SNOMED | YES | YES | NO |
| 4090207 | Senile asthenia | Condition | SNOMED | YES | YES | NO |
| 44782753 | Weakness as a late effect of stroke | Condition | SNOMED | YES | YES | NO |

**Concept Set:** **[COVID19 v1] Myalgia**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 258828 | Eosinophilia myalgia syndrome | Condition | SNOMED | YES | YES | NO |
| 4298555 | Epidemic cervical myalgia | Condition | SNOMED | YES | YES | NO |
| 195464 | Epidemic pleurodynia | Condition | SNOMED | YES | YES | NO |
| 442315 | Fibrositis | Condition | SNOMED | YES | YES | NO |
| 4347181 | Fibrositis and nodular fasciitis | Condition | SNOMED | YES | YES | NO |
| 442774 | Intermittent claudication | Condition | SNOMED | YES | YES | NO |
| 442752 | Muscle pain | Condition | SNOMED | NO | YES | NO |
| 36713056 | Myalgia caused by statin | Condition | SNOMED | YES | YES | NO |
| 37118025 | Myofascial pain syndrome | Condition | SNOMED | YES | YES | NO |
| 4316217 | Primary fibromyalgia syndrome | Condition | SNOMED | YES | YES | NO |
| 37312366 | RSIS - Repetitive strain injury syndrome | Condition | SNOMED | YES | YES | NO |
| 46284893 | Secondary fibromyalgia | Condition | SNOMED | YES | YES | NO |

**Concept Set: [COVID19 v1] Pneumonia**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 45770911 | Acute pneumonia due to coccidioidomycosis | Condition | SNOMED | YES | YES | NO |
| 4001167 | Acute ulcerative gastroenteritis complicating pneumonia | Condition | SNOMED | YES | YES | NO |
| 4050869 | Atypical pneumonia | Condition | SNOMED | NO | YES | NO |
| 4049965 | Fungal pneumonia | Condition | SNOMED | YES | YES | NO |
| 36712839 | Idiopathic pneumonia syndrome | Condition | SNOMED | YES | YES | NO |
| 252552 | Ornithosis with pneumonia | Condition | SNOMED | YES | YES | NO |
| 255848 | Pneumonia | Condition | SNOMED | NO | YES | NO |

**Concept Set: [OHDSI Cov19] Cough**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 254761 | Cough | Condition | SNOMED | NO | YES | NO |
| 4089228 | Sputum finding | Condition | SNOMED | NO | YES | NO |

**Concept Set: [OHDSI Covid19 v1] Inpatient Visit**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 262 | Emergency Room and Inpatient Visit | Visit | Visit | NO | YES | NO |
| 9201 | Inpatient Visit | Visit | Visit | NO | YES | NO |

**[COVID ID4 v1] Persons hospitalized with COVID-19, broad, no prior observation required**

**(**<https://atlas.ohdsi.org/#/cohortdefinition/110>)

Persons hospitalized with COVID-19, age>=18, no prior observation required, broad defined = (confirmed OR suspected condition or measurement with positive value) OR (fever AND (cough OR dyspnea OR myalgia OR malaise OR pneumonia) in 21d prior or during (up to date of discharge) of hospitalization , with no COVID associated hospitalization in prior 6 mo, and after 1Dec2019

Initial Event Cohort

People having any of the following:

* a visit occurrence of [OHDSI Covid19 v1] Inpatient Visit13
  + occurrence start is after 2019-12-01

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

For people matching the Primary Events, include:

Having any of the following criteria:

* at least 1 occurrences of a condition occurrence of COVID-19 (including asymptomatic)1

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a condition occurrence of Any Condition
  + Condition Source Concept is COVID-19 source codes2

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a measurement of COVID-19 specific testing (pre-coordinated Measurements) - Positive4

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a measurement of COVID-19 specific testing (pre-coordinated Measurements excluded)3
  + value as concept is any of: Detected, Detected, Positive, Present, Present, Positive

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of an observation of COVID-19 specific testing (pre-coordinated Measurements excluded)3
  + value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of an observation of Any Observation

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a condition occurrence of COVID-19 Suspected OR Suspected unspecific coronavirus infection - Source and Standard terminology5

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a condition occurrence of Any Condition
  + Condition Source Concept is COVID-19 Suspected OR Suspected unspecific coronavirus infection - Source and Standard terminology5

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* Or having all of the following criteria:
  + Having any of the following criteria:
    - at least 1 occurrences of a condition occurrence of [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions8

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions8

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 V1] Fever (38.0°C or higher) measurement and observation7
      * with value as number between 38 and 42 (inclusive)
      * unit is any of: degree Celsius

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 V1] Fever (38.0°C or higher) measurement and observation7
      * with value as number between 100.4 and 120 (inclusive)
      * unit is any of: degree Fahrenheit

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of [COVID19 V1] Fever (38.0°C or higher) measurement and observation7
      * with value as number between 38 and 42 (inclusive)
      * unit is any of: degree Celsius

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of [COVID19 V1] Fever (38.0°C or higher) measurement and observation7
      * with value as number between 100.4 and 120 (inclusive)
      * unit is any of: degree Fahrenheit

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + And having any of the following criteria:
    - at least 1 occurrences of a condition occurrence of [OHDSI Cov19] Cough12

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of [COVID V1] Shortness of breath (dyspnea)6

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of [COVID19 v1] Myalgia10

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of [Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)9

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of Any Condition
      * Condition Source Concept is [Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)9

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of [COVID19 v1] Pneumonia11

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

Limit cohort of initial events to: **all events per person.**

Inclusion Rules

Inclusion Criteria #1: age >=18

Having all of the following criteria:

* with the following event criteria:
  + with age >= 18

Inclusion Criteria #2: does not have hospitalization for COVID19 in the 6 months preceding admission

Having all of the following criteria:

* exactly 0 occurrences of a visit occurrence of [OHDSI Covid19 v1] Inpatient Visit13

Having any of the following criteria:

* + - at least 1 occurrences of a condition occurrence of COVID-19 (including asymptomatic)1

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of Any Condition
      * Condition Source Concept is COVID-19 source codes2

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of Any Observation

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of COVID-19 specific testing (pre-coordinated Measurements) - Positive4

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of COVID-19 specific testing (pre-coordinated Measurements excluded)3
      * value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of COVID-19 specific testing (pre-coordinated Measurements excluded)3
      * value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of COVID-19 Suspected OR Suspected unspecific coronavirus infection - Source and Standard terminology5

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of Any Condition
      * Condition Source Concept is COVID-19 Suspected OR Suspected unspecific coronavirus infection - Source and Standard terminology5

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - Or having all of the following criteria:
      * Having any of the following criteria:
        + at least 1 occurrences of a condition occurrence of [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions8

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of a measurement of [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions8

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of a measurement of [COVID19 V1] Fever (38.0°C or higher) measurement and observation7

with value as number between 38 and 42 (inclusive)

unit is any of: degree Celsius

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of a measurement of [COVID19 V1] Fever (38.0°C or higher) measurement and observation7

with value as number between 100.4 and 120 (inclusive)

unit is any of: degree Fahrenheit

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of an observation of [COVID19 V1] Fever (38.0°C or higher) measurement and observation7

with value as number between 38 and 42 (inclusive)

unit is any of: degree Celsius

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of an observation of [COVID19 V1] Fever (38.0°C or higher) measurement and observation7

with value as number between 100.4 and 120 (inclusive)

unit is any of: degree Fahrenheit

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * And having all of the following criteria:
        + at least 1 occurrences of a condition occurrence of [OHDSI Cov19] Cough12

where event starts between 21 days Before and all days After index start date and event ends between all days Before and 0 days After index start date

* + - * + and at least 1 occurrences of a condition occurrence of [COVID V1] Shortness of breath (dyspnea)6

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + and at least 1 occurrences of a condition occurrence of [COVID19 v1] Myalgia10

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + and at least 1 occurrences of a condition occurrence of [Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)9

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + and at least 1 occurrences of a condition occurrence of Any Condition

Condition Source Concept is [Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)9

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + and at least 1 occurrences of a condition occurrence of [COVID19 v1] Pneumonia11

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

where event starts between 180 days Before and 1 days Before index start date

Limit qualifying cohort to: **all events per person.**

End Date Strategy

Date Offset Exit Criteria

This cohort definition end date will be the index event's end date plus 0 days

Cohort Collapse Strategy:

Collapse cohort by era with a gap size of 0 days.

**Concept Set: COVID-19 (including asymptomatic)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 37311061 | Disease caused by severe acute respiratory syndrome coronavirus 2 | Condition | SNOMED | NO | YES | NO |

**Concept Set: COVID-19 source codes**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 710158 | COVID-19 (machine translation) | Observation | ICD10CN | NO | NO | NO |
| 710155 | COVID-19 pneumonia (machine translation) | Observation | ICD10CN | NO | NO | NO |
| 710156 | COVID-19 pneumonia (machine translation) | Observation | ICD10CN | NO | NO | NO |
| 710159 | Confirmed COVID-19, excluding pneumonia (machine translation) | Observation | ICD10CN | NO | NO | NO |
| 45542411 | Contact with and (suspected) exposure to other viral communicable diseases | Observation | ICD10CM | YES | NO | NO |
| 710160 | Emergency use of U07.1 | Disease caused by severe acute respiratory syndrome coronavirus 2 | Observation | ICD10CN | NO | NO | NO |
| 45756093 | Emergency use of U07.1 | Disease caused by severe acute respiratory syndrome coronavirus 2 | Condition | ICD10 | NO | NO | NO |
| 42501115 | Emergency use of U07.1 | Disease caused by severe acute respiratory syndrome coronavirus 2 | Condition | KCD7 | NO | NO | NO |
| 586414 | Novel coronavirus infection | Condition | KCD7 | NO | NO | NO |
| 45600471 | Other coronavirus as the cause of diseases classified elsewhere | Condition | ICD10CM | NO | NO | NO |
| 586415 | Provisional assignment of new diseases or emergency use | Condition | KCD7 | NO | NO | NO |
| 710157 | Suspected case of COVID-19 (machine translation) | Condition | ICD10CN | YES | NO | NO |

**Concept Set: COVID-19 specific testing (pre-coordinated Measurements excluded)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 37310282 | 2019 novel coronavirus detected | Measurement | SNOMED | YES | YES | NO |
| 37310281 | 2019 novel coronavirus not detected | Measurement | SNOMED | YES | YES | NO |
| 756055 | Measurement of severe acute respiratory syndrome coronavirus 2 | Measurement | OMOP Extension | NO | YES | NO |

**Concept Set: COVID-19 specific testing (pre-coordinated Measurements) - Positive**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 37310282 | 2019 novel coronavirus detected | Measurement | SNOMED | NO | YES | NO |

**Concept Set: COVID-19 Suspected OR Suspected unspecific coronavirus infection - Source and Standard terminology**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 710157 | Suspected case of COVID-19 (machine translation) | Condition | ICD10CN | NO | NO | NO |
| 45763724 | Suspected coronavirus infection | Condition | SNOMED | NO | NO | NO |

**Concept Set: [COVID V1] Shortness of breath (dyspnea)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 4191650 | Acute respiratory distress | Condition | SNOMED | NO | YES | NO |
| 4222908 | Borg Breathlessness Score: 0 none at all | Condition | SNOMED | YES | YES | NO |
| 312437 | Dyspnea | Condition | SNOMED | NO | YES | NO |

**Concept Set: [COVID19 V1] Fever (38.0°C or higher) measurement and observation**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 3025085 | Axillary temperature | Measurement | LOINC | NO | YES | NO |
| 21490870 | Bladder temperature via Foley | Measurement | LOINC | NO | YES | NO |
| 21490688 | Body surface temperature | Measurement | LOINC | NO | YES | NO |
| 3020891 | Body temperature | Measurement | LOINC | NO | YES | NO |
| 3025926 | Body temperature - Core | Measurement | LOINC | NO | YES | NO |
| 3025704 | Body temperature - Urinary bladder | Measurement | LOINC | NO | YES | NO |
| 3017614 | Body temperature 1 hour | Measurement | LOINC | NO | YES | NO |
| 3011783 | Body temperature 1 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3004750 | Body temperature 10 hour | Measurement | LOINC | NO | YES | NO |
| 3008557 | Body temperature 10 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3007846 | Body temperature 12 hour | Measurement | LOINC | NO | YES | NO |
| 3016117 | Body temperature 12 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3006749 | Body temperature 24 hour | Measurement | LOINC | NO | YES | NO |
| 3016715 | Body temperature 24 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3018145 | Body temperature 8 hour | Measurement | LOINC | NO | YES | NO |
| 3015039 | Body temperature 8 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3009553 | Body temperature at First encounter | Measurement | LOINC | NO | YES | NO |
| 4329518 | Body temperature taken with digital thermometer | Observation | SNOMED | NO | YES | NO |
| 4174894 | Core body temperature | Observation | SNOMED | NO | YES | NO |
| 21490907 | Ear temperature | Measurement | LOINC | NO | YES | NO |
| 21490588 | Esophageal temperature | Measurement | LOINC | NO | YES | NO |
| 4212763 | Forehead temperature | Observation | SNOMED | NO | YES | NO |
| 4189949 | Groin temperature | Observation | SNOMED | YES | YES | NO |
| 44809208 | Maximum body temperature | Observation | SNOMED | NO | YES | NO |
| 21490906 | Nasal temperature | Measurement | LOINC | NO | YES | NO |
| 21490590 | Nasopharyngeal temperature | Measurement | LOINC | NO | YES | NO |
| 4040476 | O/E - axillary temperature | Measurement | SNOMED | YES | YES | NO |
| 4039792 | O/E - core temperature | Measurement | SNOMED | YES | YES | NO |
| 4040104 | O/E - groin temperature | Measurement | SNOMED | YES | YES | NO |
| 4164378 | O/E - hyperpyrexia | Measurement | SNOMED | YES | YES | NO |
| 4039796 | O/E - hyperpyrexia - greater than 40.5 degrees Celsius | Measurement | SNOMED | YES | YES | NO |
| 4039793 | O/E - level of fever | Measurement | SNOMED | NO | YES | NO |
| 4077057 | O/E - oral temperature | Measurement | SNOMED | NO | YES | NO |
| 4039791 | O/E - rectal temperature | Measurement | SNOMED | NO | YES | NO |
| 4039795 | O/E - temperature elevated | Measurement | SNOMED | YES | YES | NO |
| 4040106 | O/E - temperature low | Measurement | SNOMED | YES | YES | NO |
| 4039794 | O/E - temperature normal | Measurement | SNOMED | YES | YES | NO |
| 4151775 | O/E - tympanic temperature | Measurement | SNOMED | NO | YES | NO |
| 4038778 | O/E -skin temperature abnormal | Measurement | SNOMED | YES | YES | NO |
| 3006322 | Oral temperature | Measurement | LOINC | NO | YES | NO |
| 3022060 | Rectal temperature | Measurement | LOINC | NO | YES | NO |
| 45769775 | Temperature of neonate at birth | Observation | SNOMED | YES | YES | NO |
| 4265708 | Temperature of skin | Observation | SNOMED | NO | YES | NO |
| 4267945 | Temperature of vagina | Observation | SNOMED | YES | YES | NO |
| 3025163 | Tympanic membrane temperature | Measurement | LOINC | NO | YES | NO |

**Concept Set: [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 4346179 | Bancroftian filarial fever | Condition | SNOMED | YES | YES | NO |
| 4170869 | Dehydration fever in newborn | Condition | SNOMED | YES | YES | NO |
| 4226022 | Drug-induced hyperpyrexia | Condition | SNOMED | YES | YES | NO |
| 37205085 | Familial mesial temporal lobe epilepsy with febrile seizures | Condition | SNOMED | YES | YES | NO |
| 444413 | Febrile convulsion | Condition | SNOMED | NO | YES | NO |
| 437663 | Fever | Condition | SNOMED | NO | YES | NO |
| 4141062 | Fever greater than 100.4 Fahrenheit | Measurement | SNOMED | NO | YES | NO |
| 4318555 | Fever of the newborn | Condition | SNOMED | YES | YES | NO |
| 37016869 | Infection caused by Borrelia miyamotoi | Condition | SNOMED | YES | YES | NO |
| 443908 | Louse-borne relapsing fever | Condition | SNOMED | YES | YES | NO |
| 4093997 | Malarial fever | Condition | SNOMED | YES | YES | NO |
| 4347651 | Malayan filarial fever | Condition | SNOMED | YES | YES | NO |
| 440285 | Malignant hyperthermia | Condition | SNOMED | YES | YES | NO |
| 4087628 | Malignant tertian fever | Condition | SNOMED | YES | YES | NO |
| 4143214 | Maternal pyrexia in labor | Condition | SNOMED | YES | YES | NO |
| 4152360 | O/E - fever | Measurement | SNOMED | NO | YES | NO |
| 4039793 | O/E - level of fever | Measurement | SNOMED | YES | YES | NO |
| 37397178 | PFAPA syndrome | Condition | SNOMED | YES | YES | NO |
| 40493465 | Paraneoplastic fever | Condition | SNOMED | YES | YES | NO |
| 4199309 | Pel Ebstein fever | Condition | SNOMED | YES | YES | NO |
| 44784428 | Post diphtheria vaccination fever | Condition | SNOMED | YES | YES | NO |
| 44784427 | Post diphtheria, tetanus and pertussis vaccination fever | Condition | SNOMED | YES | YES | NO |
| 44784429 | Post pertussis vaccination fever | Condition | SNOMED | YES | YES | NO |
| 44782483 | Post tetanus vaccination fever | Condition | SNOMED | YES | YES | NO |
| 43530646 | Post vaccination fever | Condition | SNOMED | YES | YES | NO |
| 4086668 | Postoperative fever | Condition | SNOMED | YES | YES | NO |
| 3197956 | Postoperative fever | Condition | Nebraska Lexicon | YES | YES | NO |
| 4094003 | Postpartum fever | Condition | SNOMED | YES | YES | NO |
| 43530637 | Postprocedural fever | Condition | SNOMED | YES | YES | NO |
| 37017455 | Pyrexia of unknown origin co-occurrent with human immunodeficiency virus infection | Condition | SNOMED | YES | YES | NO |
| 4087629 | Quartan fever | Condition | SNOMED | YES | YES | NO |
| 4150518 | Relapsing fever of Asia AND/OR Africa | Condition | SNOMED | YES | YES | NO |
| 4184347 | Relapsing fever of Central AND/OR South Africa | Condition | SNOMED | YES | YES | NO |
| 4326408 | Relapsing fever of Central AND/OR South America | Condition | SNOMED | YES | YES | NO |
| 4200980 | Relapsing fever of Iberian Peninsula AND/OR Northwest Africa | Condition | SNOMED | YES | YES | NO |
| 4229442 | Relapsing fever of Iran AND/OR Central Asia | Condition | SNOMED | YES | YES | NO |
| 4239624 | Relapsing fever of Southern U.S., Mexico, Central AND/OR South America | Condition | SNOMED | YES | YES | NO |
| 4300533 | Relapsing fever of Western North America | Condition | SNOMED | YES | YES | NO |
| 4308214 | Relapsing fever of Western United States | Condition | SNOMED | YES | YES | NO |
| 4099900 | Relapsing fever of the Caucasus | Condition | SNOMED | YES | YES | NO |
| 4094000 | Reversed diurnal fever | Condition | SNOMED | YES | YES | NO |
| 4087017 | Tertian fever | Condition | SNOMED | YES | YES | NO |
| 438963 | Tick-borne relapsing fever | Condition | SNOMED | YES | YES | NO |
| 4243806 | Transitory fever of newborn | Condition | SNOMED | YES | YES | NO |

**Concept Set:** **[Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 4158491 | C/O - debility - malaise | Condition | SNOMED | YES | YES | NO |
| 37396808 | Cancer-related fatigue | Condition | SNOMED | YES | YES | NO |
| 4219363 | Congenital debility of fetus | Condition | SNOMED | YES | YES | NO |
| 4223659 | Fatigue | Condition | SNOMED | NO | YES | NO |
| 4221911 | Fatigue associated with AIDS | Condition | SNOMED | YES | YES | NO |
| 37205051 | Fatigue due to chemotherapy | Condition | SNOMED | YES | YES | NO |
| 37205052 | Fatigue due to radiation therapy | Condition | SNOMED | YES | YES | NO |
| 45772721 | Fatigue due to treatment | Condition | SNOMED | YES | YES | NO |
| 4272240 | Malaise | Condition | SNOMED | NO | YES | NO |
| 1572255 | Malaise and fatigue | Condition | ICD10CM | NO | YES | NO |
| 439926 | Malaise and fatigue | Condition | SNOMED | NO | YES | NO |
| 44829293 | Malaise and fatigue | Condition | ICD9CM | NO | YES | NO |
| 4225027 | Malaise associated with AIDS | Condition | SNOMED | YES | YES | NO |
| 44823445 | Other malaise and fatigue | Condition | ICD9CM | NO | YES | NO |
| 1572256 | Other malaise and fatigue | Condition | ICD10CM | NO | YES | NO |
| 40484614 | Postexertional fatigue | Condition | SNOMED | YES | YES | NO |
| 4092860 | Rapid fatigue of gait | Condition | SNOMED | YES | YES | NO |
| 4090207 | Senile asthenia | Condition | SNOMED | YES | YES | NO |
| 44782753 | Weakness as a late effect of stroke | Condition | SNOMED | YES | YES | NO |

**Concept Set:** **[COVID19 v1] Myalgia**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 258828 | Eosinophilia myalgia syndrome | Condition | SNOMED | YES | YES | NO |
| 4298555 | Epidemic cervical myalgia | Condition | SNOMED | YES | YES | NO |
| 195464 | Epidemic pleurodynia | Condition | SNOMED | YES | YES | NO |
| 442315 | Fibrositis | Condition | SNOMED | YES | YES | NO |
| 4347181 | Fibrositis and nodular fasciitis | Condition | SNOMED | YES | YES | NO |
| 442774 | Intermittent claudication | Condition | SNOMED | YES | YES | NO |
| 442752 | Muscle pain | Condition | SNOMED | NO | YES | NO |
| 36713056 | Myalgia caused by statin | Condition | SNOMED | YES | YES | NO |
| 37118025 | Myofascial pain syndrome | Condition | SNOMED | YES | YES | NO |
| 4316217 | Primary fibromyalgia syndrome | Condition | SNOMED | YES | YES | NO |
| 37312366 | RSIS - Repetitive strain injury syndrome | Condition | SNOMED | YES | YES | NO |
| 46284893 | Secondary fibromyalgia | Condition | SNOMED | YES | YES | NO |

**Concept Set: [COVID19 v1] Pneumonia**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 45770911 | Acute pneumonia due to coccidioidomycosis | Condition | SNOMED | YES | YES | NO |
| 4001167 | Acute ulcerative gastroenteritis complicating pneumonia | Condition | SNOMED | YES | YES | NO |
| 4050869 | Atypical pneumonia | Condition | SNOMED | NO | YES | NO |
| 4049965 | Fungal pneumonia | Condition | SNOMED | YES | YES | NO |
| 36712839 | Idiopathic pneumonia syndrome | Condition | SNOMED | YES | YES | NO |
| 252552 | Ornithosis with pneumonia | Condition | SNOMED | YES | YES | NO |
| 255848 | Pneumonia | Condition | SNOMED | NO | YES | NO |

**Concept Set: [OHDSI Cov19] Cough**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 254761 | Cough | Condition | SNOMED | NO | YES | NO |
| 4089228 | Sputum finding | Condition | SNOMED | NO | YES | NO |

**Concept Set: [OHDSI Covid19 v1] Inpatient Visit**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 262 | Emergency Room and Inpatient Visit | Visit | Visit | NO | YES | NO |
| 9201 | Inpatient Visit | Visit | Visit | NO | YES | NO |

**[COVID ID9 v1] Persons hospitalized with influenza, narrow, w/ prior observation, 2014-2019 seasons**

**(**<https://atlas.ohdsi.org/#/cohortdefinition/116>)

Persons hospitalized with influenza, age>=18, >=365d prior observation, narrowly defined = (condition or measurement with positive value) in 21d prior or during (up to date of discharge) of hospitalization , with no influenza hospitalization in prior 6 mo, and between 2014-2019 seasons

Initial Event Cohort

People having any of the following:

* a visit occurrence of [OHDSI Covid19 v1] Inpatient Visit4
  + occurrence start is between 2014-09-01 and 2019-04-01 (inclusive)

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

For people matching the Primary Events, include:

Having any of the following criteria:

* at least 1 occurrences of a condition occurrence of [COVID19 v1] Influenza (including complications) - Conditions1

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a measurement of [COVID19 v1] Influenza (pre-coordinated Positive Measurements)2

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a measurement of [COVID19 v1] Influenza testing (excluding Ab testing)3
  + value as concept is any of: Detected, Detected, Positive, Present, Present, Positive

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of an observation of [COVID19 v1] Influenza testing (excluding Ab testing)3
  + value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

Limit cohort of initial events to: **all events per person.**

Inclusion Rules

Inclusion Criteria #1: age >=18

Having all of the following criteria:

* with the following event criteria:
  + with age >= 18

Inclusion Criteria #2: has >=365d of prior observation

Having all of the following criteria:

* at least 1 occurrences of an observation period

where event starts between all days Before and 365 days Before index start date and event ends between 0 days Before and all days After index end date

Inclusion Criteria #3: does not have hospitalization for influenza in the 6 months preceding admission

Having all of the following criteria:

* exactly 0 occurrences of a visit occurrence of [OHDSI Covid19 v1] Inpatient Visit4

Having any of the following criteria:

* + - at least 1 occurrences of a condition occurrence of [COVID19 v1] Influenza (including complications) - Conditions1

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 v1] Influenza (pre-coordinated Positive Measurements)2

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 v1] Influenza testing (excluding Ab testing)3
      * value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of [COVID19 v1] Influenza testing (excluding Ab testing)3
      * value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

where event starts between 180 days Before and 1 days Before index start date

Limit qualifying cohort to: **all events per person.**

End Date Strategy

Date Offset Exit Criteria

This cohort definition end date will be the index event's end date plus 0 days

Cohort Collapse Strategy:

Collapse cohort by era with a gap size of 0 days.

**Concept Set: [COVID19 v1] Influenza (including complications) - Conditions**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 4146943 | Encephalitis due to influenza | Condition | SNOMED | NO | YES | NO |
| 46274061 | Encephalopathy due to Influenza A virus | Condition | SNOMED | NO | YES | NO |
| 4266367 | Influenza | Condition | SNOMED | NO | YES | NO |
| 42537960 | Influenza with CNS disorder | Condition | SNOMED | NO | YES | NO |
| 4112824 | Influenza with gastrointestinal tract involvement | Condition | SNOMED | NO | YES | NO |
| 4299935 | Myocarditis due to influenza virus | Condition | SNOMED | NO | YES | NO |
| 46269706 | Otitis media due to influenza | Condition | SNOMED | NO | YES | NO |
| 763011 | Pneumonia due to Influenza A virus | Condition | SNOMED | NO | YES | NO |
| 4042202 | Post-influenza encephalitis | Condition | SNOMED | YES | YES | NO |

**Concept Set: [COVID19 v1] Influenza (pre-coordinated Positive Measurements)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 45757528 | Influenza A virus present | Measurement | SNOMED | NO | YES | NO |
| 4262075 | Influenza B virus present | Measurement | SNOMED | NO | YES | NO |

**Concept Set: [COVID19 v1] Influenza testing (excluding Ab testing)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 44789502 | Avian infl virus nucl acid det | Measurement | SNOMED | NO | YES | NO |
| 37392948 | Avian influenza virus RNA (ribonucleic acid) detection assay | Observation | SNOMED | NO | YES | NO |
| 37394408 | Avian influenza virus nucleic acid detection assay | Observation | SNOMED | NO | YES | NO |
| 36676235 | Detection of Influenza A virus using PCR - polymerase chain reaction technique | Measurement | SNOMED | NO | YES | NO |
| 37066972 | Equine influenza virus A1 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 3001703 | Equine influenza virus A1 Ag [Titer] in Unspecified specimen by Hemagglutination inhibition | Measurement | LOINC | NO | YES | NO |
| 3016424 | Equine influenza virus A1 Ag [Units/volume] in Unspecified specimen | Measurement | LOINC | NO | YES | NO |
| 3002696 | Equine influenza virus A2 Ab [Presence] in Serum | Measurement | LOINC | YES | YES | NO |
| 3000619 | Equine influenza virus A2 Ab [Presence] in Serum by Complement fixation | Measurement | LOINC | YES | YES | NO |
| 3023674 | Equine influenza virus A2 Ab [Titer] in Serum | Measurement | LOINC | YES | YES | NO |
| 3001047 | Equine influenza virus A2 Ab [Titer] in Serum by Hemagglutination inhibition | Measurement | LOINC | YES | YES | NO |
| 3007341 | Equine influenza virus A2 Ab [Units/volume] in Serum | Measurement | LOINC | YES | YES | NO |
| 3038149 | Equine influenza virus A2 Ag [Titer] in Unspecified specimen by Hemagglutination inhibition | Measurement | LOINC | NO | YES | NO |
| 3016676 | Equine influenza virus A2 Ag [Units/volume] in Unspecified specimen | Measurement | LOINC | NO | YES | NO |
| 3017256 | Equine influenza virus Ag [Presence] in Nose | Measurement | LOINC | NO | YES | NO |
| 3020370 | Equine influenza virus Ag [Presence] in Nose by Immunoassay | Measurement | LOINC | NO | YES | NO |
| 2213094 | Infectious agent antigen detection by immunoassay technique, (eg, enzyme immunoassay [EIA], enzyme-linked immunosorbent assay [ELISA], immunochemiluminometric assay [IMCA]) qualitative or semiquantitative, multiple-step method; Influenza, A or B, each | Measurement | CPT4 | NO | YES | NO |
| 2213181 | Infectious agent antigen detection by immunoassay with direct optical observation; Influenza | Measurement | CPT4 | NO | YES | NO |
| 2213063 | Infectious agent antigen detection by immunofluorescent technique; influenza A virus | Measurement | CPT4 | NO | YES | NO |
| 2213062 | Infectious agent antigen detection by immunofluorescent technique; influenza B virus | Measurement | CPT4 | NO | YES | NO |
| 40757077 | Infectious agent detection by nucleic acid (DNA or RNA); influenza virus, for multiple types or sub-types, includes multiplex reverse transcription, when performed, and multiplex amplified probe technique, first 2 types or sub-types | Measurement | CPT4 | NO | YES | NO |
| 40756898 | Infectious agent detection by nucleic acid (DNA or RNA); influenza virus, includes reverse transcription, when performed, and amplified probe technique, each type or subtype | Measurement | CPT4 | NO | YES | NO |
| 37398130 | Influenza (A and B) serology | Observation | SNOMED | YES | YES | NO |
| 4039357 | Influenza A and B virus antigen assay | Measurement | SNOMED | NO | YES | NO |
| 4201049 | Influenza A antibody level | Measurement | SNOMED | YES | YES | NO |
| 37393224 | Influenza A antibody level | Observation | SNOMED | YES | YES | NO |
| 37392223 | Influenza A antigen level | Observation | SNOMED | NO | YES | NO |
| 44806470 | Influenza A nucleic acid detection | Measurement | SNOMED | NO | YES | NO |
| 37394297 | Influenza A nucleic acid detection assay | Observation | SNOMED | NO | YES | NO |
| 44805899 | Influenza A virus IgG antibody measurement | Measurement | SNOMED | YES | YES | NO |
| 4044987 | Influenza A virus antigen assay | Measurement | SNOMED | NO | YES | NO |
| 45757528 | Influenza A virus present | Measurement | SNOMED | YES | YES | NO |
| 4039358 | Influenza A, B, and C virus antigen assay | Measurement | SNOMED | NO | YES | NO |
| 37393225 | Influenza B antibody level | Observation | SNOMED | YES | YES | NO |
| 4196405 | Influenza B antibody level | Measurement | SNOMED | YES | YES | NO |
| 37392224 | Influenza B antigen level | Observation | SNOMED | NO | YES | NO |
| 44807860 | Influenza B nucleic acid detection | Measurement | SNOMED | NO | YES | NO |
| 37394300 | Influenza B nucleic acid detection assay | Observation | SNOMED | NO | YES | NO |
| 44805900 | Influenza B virus IgG antibody measurement | Measurement | SNOMED | YES | YES | NO |
| 4044988 | Influenza B virus antigen assay | Measurement | SNOMED | NO | YES | NO |
| 4262075 | Influenza B virus present | Measurement | SNOMED | YES | YES | NO |
| 37392761 | Influenza B virus ribonucleic acid detection assay | Observation | SNOMED | NO | YES | NO |
| 40760327 | Influenza vaccination received in Reporting Period [CMS Assessment] | Observation | LOINC | YES | YES | NO |
| 40653953 | Influenza virus | Measurement | LOINC | NO | YES | NO |
| 40655680 | Influenza virus A & B Ag|Prid|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37048815 | Influenza virus A Ab | Body fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37058506 | Influenza virus A Ab | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37055728 | Influenza virus A Ab | Egg yolk | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37040765 | Influenza virus A Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37023170 | Influenza virus A Ab/Positive control | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655681 | Influenza virus A Ag|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37075082 | Influenza virus A Bangkok Ab | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37041511 | Influenza virus A Bangkok Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37066453 | Influenza virus A England Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37057346 | Influenza virus A H1 2009 pandemic Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655682 | Influenza virus A H1 2009 pandemic RNA|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37054344 | Influenza virus A H1 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655683 | Influenza virus A H1 RNA|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37022661 | Influenza virus A H10 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37067997 | Influenza virus A H11 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37028300 | Influenza virus A H12 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37054453 | Influenza virus A H13 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37036578 | Influenza virus A H14 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37078464 | Influenza virus A H15 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37067504 | Influenza virus A H16 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37070652 | Influenza virus A H2 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37048012 | Influenza virus A H3 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655684 | Influenza virus A H3 RNA|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37071077 | Influenza virus A H4 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37042025 | Influenza virus A H5 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655685 | Influenza virus A H5 Asian RNA|ThreshNum|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37024679 | Influenza virus A H6 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37042070 | Influenza virus A H7 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37052164 | Influenza virus A H8 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37037245 | Influenza virus A H9 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37072518 | Influenza virus A Hong Kong Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37044556 | Influenza virus A IgA | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37025175 | Influenza virus A IgA | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37063376 | Influenza virus A IgG | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37068553 | Influenza virus A IgG | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37045806 | Influenza virus A IgM | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37036252 | Influenza virus A IgM | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37064420 | Influenza virus A Leningrad Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37037941 | Influenza virus A Mississippi Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37062169 | Influenza virus A N1 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37076139 | Influenza virus A N2 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37034233 | Influenza virus A N3 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37051887 | Influenza virus A N4 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37075960 | Influenza virus A N5 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37022372 | Influenza virus A N6 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37031117 | Influenza virus A N7 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37073627 | Influenza virus A N8 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37057853 | Influenza virus A N9 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37042870 | Influenza virus A Phillipines Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37075259 | Influenza virus A Port Chalmers Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655686 | Influenza virus A RNA|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37030627 | Influenza virus A Texas Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37059249 | Influenza virus A Victoria Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37037961 | Influenza virus A and B Ab | Body fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37047321 | Influenza virus A avian origin nucleoprotein Ab/Negative control | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37075847 | Influenza virus A porcine origin nucleoprotein Ab.IgA/Positive control | XXX | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37073492 | Influenza virus A porcine origin nucleoprotein Ab.IgG/Positive control | XXX | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37080282 | Influenza virus A subtype|Prid|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37056311 | Influenza virus A+B Ab | Body fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37029363 | Influenza virus A+B Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655687 | Influenza virus A+B Ag|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 40655688 | Influenza virus A+B+C Ag|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37023424 | Influenza virus Ab | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37073273 | Influenza virus Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37076384 | Influenza virus B Ab | Body fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37069805 | Influenza virus B Ab | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37026917 | Influenza virus B Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655689 | Influenza virus B Ag|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37048913 | Influenza virus B IgA | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37074405 | Influenza virus B IgA | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37040736 | Influenza virus B IgG | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37076803 | Influenza virus B IgG | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37075491 | Influenza virus B IgM | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37072743 | Influenza virus B IgM | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655690 | Influenza virus B RNA|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 4047171 | Influenza virus culture | Measurement | SNOMED | NO | YES | NO |
| 40655691 | Influenza virus identified|Prid|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 40758391 | Influenza virus immunization status | Observation | LOINC | YES | YES | NO |
| 42869813 | Influenza virus vaccination received | Observation | LOINC | YES | YES | NO |
| 40758149 | Influenza virus vaccine received in facility [CMS Assessment] | Observation | LOINC | YES | YES | NO |
| 3043198 | Influenza virus vaccine received in facility [Minimum Data Set] | Observation | LOINC | YES | YES | NO |
| 4017924 | Influenzavirus antibody assay | Measurement | SNOMED | YES | YES | NO |
| 40484560 | Measurement of Influenza A virus subtype H1N1 antigen | Measurement | SNOMED | NO | YES | NO |
| 37050279 | Porcine influenza virus A Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 3002988 | Porcine influenza virus A Ag [Presence] in Tissue by Immune stain | Measurement | LOINC | NO | YES | NO |
| 3026510 | Swine influenza virus Ab [Presence] in Serum | Measurement | LOINC | YES | YES | NO |
| 3027889 | Swine influenza virus Ab [Presence] in Serum by Hemagglutination inhibition | Measurement | LOINC | YES | YES | NO |
| 3002646 | Swine influenza virus Ag [Presence] in Tissue by Immune stain | Measurement | LOINC | NO | YES | NO |
| 3003682 | Swine influenza virus Ag [Presence] in Tissue by Immunofluorescence | Measurement | LOINC | NO | YES | NO |
| Concept Id | Concept Name | Domain | Vocabulary | Excluded | Descendants | Mapped |
| 44789502 | Avian infl virus nucl acid det | Measurement | SNOMED | NO | YES | NO |

**Concept Set: [OHDSI Covid19 v1] Inpatient Visit**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 262 | Emergency Room and Inpatient Visit | Visit | Visit | NO | YES | NO |
| 9201 | Inpatient Visit | Visit | Visit | NO | YES | NO |

**COVID ID10 v1] Persons hospitalized with influenza, narrow, no prior observation required, 2014-2019 season**

**(**<https://atlas.ohdsi.org/#/cohortdefinition/117>)

Persons hospitalized with influenza, age>=18, no prior observation required, narrowly defined = (condition or measurement with positive value) in 21d prior or during (up to date of discharge) of hospitalization, with no influenza hospitalization in prior 6 mo, and between 1Sept2014-1Apr2019

Initial Event Cohort

People having any of the following:

* a visit occurrence of [OHDSI Covid19 v1] Inpatient Visit4
  + occurrence start is between 2014-09-01 and 2019-04-01 (inclusive)

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

For people matching the Primary Events, include:

Having any of the following criteria:

* at least 1 occurrences of a condition occurrence of [COVID19 v1] Influenza (including complications) - Conditions1

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a measurement of [COVID19 v1] Influenza (pre-coordinated Positive Measurements)2

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a measurement of [COVID19 v1] Influenza testing (excluding Ab testing)3
  + value as concept is any of: Detected, Detected, Positive, Present, Present, Positive

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of an observation of [COVID19 v1] Influenza testing (excluding Ab testing)3
  + value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

Limit cohort of initial events to: **all events per person.**

Inclusion Rules

Inclusion Criteria #1: age >=18

Having all of the following criteria:

* with the following event criteria:
  + with age >= 18

Inclusion Criteria #2: does not have hospitalization for influenza in the 6 months preceding admission

Having all of the following criteria:

* exactly 0 occurrences of a visit occurrence of [OHDSI Covid19 v1] Inpatient Visit4

Having any of the following criteria:

* + - at least 1 occurrences of a condition occurrence of [COVID19 v1] Influenza (including complications) - Conditions1

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 v1] Influenza (pre-coordinated Positive Measurements)2

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 v1] Influenza testing (excluding Ab testing)3
      * value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of [COVID19 v1] Influenza testing (excluding Ab testing)3
      * value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

where event starts between 180 days Before and 1 days Before index start date

Limit qualifying cohort to: **all events per person.**

End Date Strategy

Date Offset Exit Criteria

This cohort definition end date will be the index event's end date plus 0 days

Cohort Collapse Strategy:

Collapse cohort by era with a gap size of 0 days.

**Concept Set: [COVID19 v1] Influenza (including complications) - Conditions**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 4146943 | Encephalitis due to influenza | Condition | SNOMED | NO | YES | NO |
| 46274061 | Encephalopathy due to Influenza A virus | Condition | SNOMED | NO | YES | NO |
| 4266367 | Influenza | Condition | SNOMED | NO | YES | NO |
| 42537960 | Influenza with CNS disorder | Condition | SNOMED | NO | YES | NO |
| 4112824 | Influenza with gastrointestinal tract involvement | Condition | SNOMED | NO | YES | NO |
| 4299935 | Myocarditis due to influenza virus | Condition | SNOMED | NO | YES | NO |
| 46269706 | Otitis media due to influenza | Condition | SNOMED | NO | YES | NO |
| 763011 | Pneumonia due to Influenza A virus | Condition | SNOMED | NO | YES | NO |
| 4042202 | Post-influenza encephalitis | Condition | SNOMED | YES | YES | NO |

**Concept Set: [COVID19 v1] Influenza (pre-coordinated Positive Measurements)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 45757528 | Influenza A virus present | Measurement | SNOMED | NO | YES | NO |
| 4262075 | Influenza B virus present | Measurement | SNOMED | NO | YES | NO |

**Concept Set: [COVID19 v1] Influenza testing (excluding Ab testing)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 44789502 | Avian infl virus nucl acid det | Measurement | SNOMED | NO | YES | NO |
| 37392948 | Avian influenza virus RNA (ribonucleic acid) detection assay | Observation | SNOMED | NO | YES | NO |
| 37394408 | Avian influenza virus nucleic acid detection assay | Observation | SNOMED | NO | YES | NO |
| 36676235 | Detection of Influenza A virus using PCR - polymerase chain reaction technique | Measurement | SNOMED | NO | YES | NO |
| 37066972 | Equine influenza virus A1 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 3001703 | Equine influenza virus A1 Ag [Titer] in Unspecified specimen by Hemagglutination inhibition | Measurement | LOINC | NO | YES | NO |
| 3016424 | Equine influenza virus A1 Ag [Units/volume] in Unspecified specimen | Measurement | LOINC | NO | YES | NO |
| 3002696 | Equine influenza virus A2 Ab [Presence] in Serum | Measurement | LOINC | YES | YES | NO |
| 3000619 | Equine influenza virus A2 Ab [Presence] in Serum by Complement fixation | Measurement | LOINC | YES | YES | NO |
| 3023674 | Equine influenza virus A2 Ab [Titer] in Serum | Measurement | LOINC | YES | YES | NO |
| 3001047 | Equine influenza virus A2 Ab [Titer] in Serum by Hemagglutination inhibition | Measurement | LOINC | YES | YES | NO |
| 3007341 | Equine influenza virus A2 Ab [Units/volume] in Serum | Measurement | LOINC | YES | YES | NO |
| 3038149 | Equine influenza virus A2 Ag [Titer] in Unspecified specimen by Hemagglutination inhibition | Measurement | LOINC | NO | YES | NO |
| 3016676 | Equine influenza virus A2 Ag [Units/volume] in Unspecified specimen | Measurement | LOINC | NO | YES | NO |
| 3017256 | Equine influenza virus Ag [Presence] in Nose | Measurement | LOINC | NO | YES | NO |
| 3020370 | Equine influenza virus Ag [Presence] in Nose by Immunoassay | Measurement | LOINC | NO | YES | NO |
| 2213094 | Infectious agent antigen detection by immunoassay technique, (eg, enzyme immunoassay [EIA], enzyme-linked immunosorbent assay [ELISA], immunochemiluminometric assay [IMCA]) qualitative or semiquantitative, multiple-step method; Influenza, A or B, each | Measurement | CPT4 | NO | YES | NO |
| 2213181 | Infectious agent antigen detection by immunoassay with direct optical observation; Influenza | Measurement | CPT4 | NO | YES | NO |
| 2213063 | Infectious agent antigen detection by immunofluorescent technique; influenza A virus | Measurement | CPT4 | NO | YES | NO |
| 2213062 | Infectious agent antigen detection by immunofluorescent technique; influenza B virus | Measurement | CPT4 | NO | YES | NO |
| 40757077 | Infectious agent detection by nucleic acid (DNA or RNA); influenza virus, for multiple types or sub-types, includes multiplex reverse transcription, when performed, and multiplex amplified probe technique, first 2 types or sub-types | Measurement | CPT4 | NO | YES | NO |
| 40756898 | Infectious agent detection by nucleic acid (DNA or RNA); influenza virus, includes reverse transcription, when performed, and amplified probe technique, each type or subtype | Measurement | CPT4 | NO | YES | NO |
| 37398130 | Influenza (A and B) serology | Observation | SNOMED | YES | YES | NO |
| 4039357 | Influenza A and B virus antigen assay | Measurement | SNOMED | NO | YES | NO |
| 4201049 | Influenza A antibody level | Measurement | SNOMED | YES | YES | NO |
| 37393224 | Influenza A antibody level | Observation | SNOMED | YES | YES | NO |
| 37392223 | Influenza A antigen level | Observation | SNOMED | NO | YES | NO |
| 44806470 | Influenza A nucleic acid detection | Measurement | SNOMED | NO | YES | NO |
| 37394297 | Influenza A nucleic acid detection assay | Observation | SNOMED | NO | YES | NO |
| 44805899 | Influenza A virus IgG antibody measurement | Measurement | SNOMED | YES | YES | NO |
| 4044987 | Influenza A virus antigen assay | Measurement | SNOMED | NO | YES | NO |
| 45757528 | Influenza A virus present | Measurement | SNOMED | YES | YES | NO |
| 4039358 | Influenza A, B, and C virus antigen assay | Measurement | SNOMED | NO | YES | NO |
| 37393225 | Influenza B antibody level | Observation | SNOMED | YES | YES | NO |
| 4196405 | Influenza B antibody level | Measurement | SNOMED | YES | YES | NO |
| 37392224 | Influenza B antigen level | Observation | SNOMED | NO | YES | NO |
| 44807860 | Influenza B nucleic acid detection | Measurement | SNOMED | NO | YES | NO |
| 37394300 | Influenza B nucleic acid detection assay | Observation | SNOMED | NO | YES | NO |
| 44805900 | Influenza B virus IgG antibody measurement | Measurement | SNOMED | YES | YES | NO |
| 4044988 | Influenza B virus antigen assay | Measurement | SNOMED | NO | YES | NO |
| 4262075 | Influenza B virus present | Measurement | SNOMED | YES | YES | NO |
| 37392761 | Influenza B virus ribonucleic acid detection assay | Observation | SNOMED | NO | YES | NO |
| 40760327 | Influenza vaccination received in Reporting Period [CMS Assessment] | Observation | LOINC | YES | YES | NO |
| 40653953 | Influenza virus | Measurement | LOINC | NO | YES | NO |
| 40655680 | Influenza virus A & B Ag|Prid|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37048815 | Influenza virus A Ab | Body fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37058506 | Influenza virus A Ab | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37055728 | Influenza virus A Ab | Egg yolk | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37040765 | Influenza virus A Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37023170 | Influenza virus A Ab/Positive control | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655681 | Influenza virus A Ag|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37075082 | Influenza virus A Bangkok Ab | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37041511 | Influenza virus A Bangkok Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37066453 | Influenza virus A England Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37057346 | Influenza virus A H1 2009 pandemic Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655682 | Influenza virus A H1 2009 pandemic RNA|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37054344 | Influenza virus A H1 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655683 | Influenza virus A H1 RNA|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37022661 | Influenza virus A H10 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37067997 | Influenza virus A H11 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37028300 | Influenza virus A H12 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37054453 | Influenza virus A H13 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37036578 | Influenza virus A H14 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37078464 | Influenza virus A H15 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37067504 | Influenza virus A H16 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37070652 | Influenza virus A H2 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37048012 | Influenza virus A H3 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655684 | Influenza virus A H3 RNA|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37071077 | Influenza virus A H4 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37042025 | Influenza virus A H5 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655685 | Influenza virus A H5 Asian RNA|ThreshNum|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37024679 | Influenza virus A H6 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37042070 | Influenza virus A H7 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37052164 | Influenza virus A H8 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37037245 | Influenza virus A H9 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37072518 | Influenza virus A Hong Kong Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37044556 | Influenza virus A IgA | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37025175 | Influenza virus A IgA | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37063376 | Influenza virus A IgG | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37068553 | Influenza virus A IgG | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37045806 | Influenza virus A IgM | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37036252 | Influenza virus A IgM | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37064420 | Influenza virus A Leningrad Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37037941 | Influenza virus A Mississippi Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37062169 | Influenza virus A N1 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37076139 | Influenza virus A N2 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37034233 | Influenza virus A N3 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37051887 | Influenza virus A N4 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37075960 | Influenza virus A N5 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37022372 | Influenza virus A N6 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37031117 | Influenza virus A N7 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37073627 | Influenza virus A N8 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37057853 | Influenza virus A N9 Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37042870 | Influenza virus A Phillipines Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37075259 | Influenza virus A Port Chalmers Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655686 | Influenza virus A RNA|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37030627 | Influenza virus A Texas Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37059249 | Influenza virus A Victoria Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37037961 | Influenza virus A and B Ab | Body fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37047321 | Influenza virus A avian origin nucleoprotein Ab/Negative control | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37075847 | Influenza virus A porcine origin nucleoprotein Ab.IgA/Positive control | XXX | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37073492 | Influenza virus A porcine origin nucleoprotein Ab.IgG/Positive control | XXX | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37080282 | Influenza virus A subtype|Prid|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37056311 | Influenza virus A+B Ab | Body fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37029363 | Influenza virus A+B Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655687 | Influenza virus A+B Ag|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 40655688 | Influenza virus A+B+C Ag|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37023424 | Influenza virus Ab | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37073273 | Influenza virus Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37076384 | Influenza virus B Ab | Body fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37069805 | Influenza virus B Ab | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37026917 | Influenza virus B Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655689 | Influenza virus B Ag|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 37048913 | Influenza virus B IgA | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37074405 | Influenza virus B IgA | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37040736 | Influenza virus B IgG | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37076803 | Influenza virus B IgG | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37075491 | Influenza virus B IgM | Cerebral spinal fluid | Microbiology | Measurement | LOINC | YES | YES | NO |
| 37072743 | Influenza virus B IgM | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 40655690 | Influenza virus B RNA|PrThr|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 4047171 | Influenza virus culture | Measurement | SNOMED | NO | YES | NO |
| 40655691 | Influenza virus identified|Prid|Sys:ANYResp | Measurement | LOINC | NO | YES | NO |
| 40758391 | Influenza virus immunization status | Observation | LOINC | YES | YES | NO |
| 42869813 | Influenza virus vaccination received | Observation | LOINC | YES | YES | NO |
| 40758149 | Influenza virus vaccine received in facility [CMS Assessment] | Observation | LOINC | YES | YES | NO |
| 3043198 | Influenza virus vaccine received in facility [Minimum Data Set] | Observation | LOINC | YES | YES | NO |
| 4017924 | Influenzavirus antibody assay | Measurement | SNOMED | YES | YES | NO |
| 40484560 | Measurement of Influenza A virus subtype H1N1 antigen | Measurement | SNOMED | NO | YES | NO |
| 37050279 | Porcine influenza virus A Ab | Serum | Microbiology | Measurement | LOINC | YES | YES | NO |
| 3002988 | Porcine influenza virus A Ag [Presence] in Tissue by Immune stain | Measurement | LOINC | NO | YES | NO |
| 3026510 | Swine influenza virus Ab [Presence] in Serum | Measurement | LOINC | YES | YES | NO |
| 3027889 | Swine influenza virus Ab [Presence] in Serum by Hemagglutination inhibition | Measurement | LOINC | YES | YES | NO |
| 3002646 | Swine influenza virus Ag [Presence] in Tissue by Immune stain | Measurement | LOINC | NO | YES | NO |
| 3003682 | Swine influenza virus Ag [Presence] in Tissue by Immunofluorescence | Measurement | LOINC | NO | YES | NO |
| Concept Id | Concept Name | Domain | Vocabulary | Excluded | Descendants | Mapped |
| 44789502 | Avian infl virus nucl acid det | Measurement | SNOMED | NO | YES | NO |

**Concept Set: [OHDSI Covid19 v1] Inpatient Visit**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 262 | Emergency Room and Inpatient Visit | Visit | Visit | NO | YES | NO |
| 9201 | Inpatient Visit | Visit | Visit | NO | YES | NO |

**[COVID ID11 v1] Persons hospitalized with influenza, broad, w/ prior observation, 2014-2019 season**

**(**<https://atlas.ohdsi.org/#/cohortdefinition/118>)

Persons hospitalized with influenza, age>=18, >=365d prior observation, broad defined = (condition or measurement with positive value) OR (fever AND (cough OR dyspnea OR myalgia OR malaise OR pneumonia) in 21d prior or during (up to date of discharge) of hospitalization , with no influenza hospitalization in prior 6 mo, and between 1Sept2014-1Apr2019

Initial Event Cohort

People having any of the following:

* a visit occurrence of [OHDSI Covid19 v1] Inpatient Visit11
  + occurrence start is between 2014-09-01 and 2019-04-01 (inclusive)

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

For people matching the Primary Events, include:

Having any of the following criteria:

* at least 1 occurrences of a condition occurrence of [COVID19 v1] Influenza (including complications) - Conditions4

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a measurement of [COVID19 v1] Influenza (pre-coordinated Positive Measurements)5

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a measurement of [COVID19 v1] Influenza testing (excluding Ab testing)6
  + value as concept is any of: Detected, Detected, Positive, Present, Present, Positive

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of an observation of [COVID19 v1] Influenza testing (excluding Ab testing)6
  + value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* Or having all of the following criteria:
  + Having any of the following criteria:
    - at least 1 occurrences of a condition occurrence of [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions3

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions3

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 V1] Fever (38.0°C or higher) measurement and observation2
      * with value as number between 38 and 42 (inclusive)
      * unit is any of: degree Celsius

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 V1] Fever (38.0°C or higher) measurement and observation2
      * with value as number between 100.4 and 120 (inclusive)
      * unit is any of: degree Fahrenheit

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of [COVID19 V1] Fever (38.0°C or higher) measurement and observation2
      * with value as number between 38 and 42 (inclusive)
      * unit is any of: degree Celsius

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of [COVID19 V1] Fever (38.0°C or higher) measurement and observation2
      * with value as number between 100.4 and 120 (inclusive)
      * unit is any of: degree Fahrenheit

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + And having any of the following criteria:
    - at least 1 occurrences of a condition occurrence of [OHDSI Cov19] Cough10

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of [COVID V1] Shortness of breath (dyspnea)1

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of [COVID19 v1] Myalgia8

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of [Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)7

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of Any Condition
      * Condition Source Concept is [Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)7

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of [COVID19 v1] Pneumonia9

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

Limit cohort of initial events to: **all events per person.**

Inclusion Rules

Inclusion Criteria #1: age >=18

Having all of the following criteria:

* with the following event criteria:
  + with age >= 18

Inclusion Criteria #2: has >=365d of prior observation

Having all of the following criteria:

* at least 1 occurrences of an observation period

where event starts between all days Before and 365 days Before index start date and event ends between 0 days Before and all days After index end date

Inclusion Criteria #3: does not have hospitalization for influenza in the 6 months preceding admission

Having all of the following criteria:

* exactly 0 occurrences of a visit occurrence of [OHDSI Covid19 v1] Inpatient Visit11

Having any of the following criteria:

* + - at least 1 occurrences of a condition occurrence of [COVID19 v1] Influenza (including complications) - Conditions4

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 v1] Influenza (pre-coordinated Positive Measurements)5

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 v1] Influenza testing (excluding Ab testing)6
      * value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of [COVID19 v1] Influenza testing (excluding Ab testing)6
      * value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - Or having all of the following criteria:
      * Having any of the following criteria:
        + at least 1 occurrences of a condition occurrence of [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions3

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of a measurement of [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions3

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of a measurement of [COVID19 V1] Fever (38.0°C or higher) measurement and observation2

with value as number between 38 and 42 (inclusive)

unit is any of: degree Celsius

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of a measurement of [COVID19 V1] Fever (38.0°C or higher) measurement and observation2

with value as number between 100.4 and 120 (inclusive)

unit is any of: degree Fahrenheit

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of an observation of [COVID19 V1] Fever (38.0°C or higher) measurement and observation2

with value as number between 38 and 42 (inclusive)

unit is any of: degree Celsius

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of an observation of [COVID19 V1] Fever (38.0°C or higher) measurement and observation2

with value as number between 100.4 and 120 (inclusive)

unit is any of: degree Fahrenheit

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * And having all of the following criteria:
        + at least 1 occurrences of a condition occurrence of [OHDSI Cov19] Cough10

where event starts between 21 days Before and all days After index start date and event ends between all days Before and 0 days After index start date

* + - * + and at least 1 occurrences of a condition occurrence of [COVID V1] Shortness of breath (dyspnea)1

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + and at least 1 occurrences of a condition occurrence of [COVID19 v1] Myalgia8

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + and at least 1 occurrences of a condition occurrence of [Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)7

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + and at least 1 occurrences of a condition occurrence of Any Condition

Condition Source Concept is [Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)7

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + and at least 1 occurrences of a condition occurrence of [COVID19 v1] Pneumonia9

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

where event starts between 180 days Before and 1 days Before index start date

Limit qualifying cohort to: **all events per person.**

End Date Strategy

Date Offset Exit Criteria

This cohort definition end date will be the index event's end date plus 0 days

Cohort Collapse Strategy:

Collapse cohort by era with a gap size of 0 days.

**Concept Set: [COVID V1] Shortness of breath (dyspnea)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 4191650 | Acute respiratory distress | Condition | SNOMED | NO | YES | NO |
| 4222908 | Borg Breathlessness Score: 0 none at all | Condition | SNOMED | YES | YES | NO |
| 312437 | Dyspnea | Condition | SNOMED | NO | YES | NO |

**Concept Set: [COVID19 V1] Fever (38.0°C or higher) measurement and observation**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 3025085 | Axillary temperature | Measurement | LOINC | NO | YES | NO |
| 21490870 | Bladder temperature via Foley | Measurement | LOINC | NO | YES | NO |
| 21490688 | Body surface temperature | Measurement | LOINC | NO | YES | NO |
| 3020891 | Body temperature | Measurement | LOINC | NO | YES | NO |
| 3025926 | Body temperature - Core | Measurement | LOINC | NO | YES | NO |
| 3025704 | Body temperature - Urinary bladder | Measurement | LOINC | NO | YES | NO |
| 3017614 | Body temperature 1 hour | Measurement | LOINC | NO | YES | NO |
| 3011783 | Body temperature 1 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3004750 | Body temperature 10 hour | Measurement | LOINC | NO | YES | NO |
| 3008557 | Body temperature 10 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3007846 | Body temperature 12 hour | Measurement | LOINC | NO | YES | NO |
| 3016117 | Body temperature 12 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3006749 | Body temperature 24 hour | Measurement | LOINC | NO | YES | NO |
| 3016715 | Body temperature 24 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3018145 | Body temperature 8 hour | Measurement | LOINC | NO | YES | NO |
| 3015039 | Body temperature 8 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3009553 | Body temperature at First encounter | Measurement | LOINC | NO | YES | NO |
| 4329518 | Body temperature taken with digital thermometer | Observation | SNOMED | NO | YES | NO |
| 4174894 | Core body temperature | Observation | SNOMED | NO | YES | NO |
| 21490907 | Ear temperature | Measurement | LOINC | NO | YES | NO |
| 21490588 | Esophageal temperature | Measurement | LOINC | NO | YES | NO |
| 4212763 | Forehead temperature | Observation | SNOMED | NO | YES | NO |
| 4189949 | Groin temperature | Observation | SNOMED | YES | YES | NO |
| 44809208 | Maximum body temperature | Observation | SNOMED | NO | YES | NO |
| 21490906 | Nasal temperature | Measurement | LOINC | NO | YES | NO |
| 21490590 | Nasopharyngeal temperature | Measurement | LOINC | NO | YES | NO |
| 4040476 | O/E - axillary temperature | Measurement | SNOMED | YES | YES | NO |
| 4039792 | O/E - core temperature | Measurement | SNOMED | YES | YES | NO |
| 4040104 | O/E - groin temperature | Measurement | SNOMED | YES | YES | NO |
| 4164378 | O/E - hyperpyrexia | Measurement | SNOMED | YES | YES | NO |
| 4039796 | O/E - hyperpyrexia - greater than 40.5 degrees Celsius | Measurement | SNOMED | YES | YES | NO |
| 4039793 | O/E - level of fever | Measurement | SNOMED | NO | YES | NO |
| 4077057 | O/E - oral temperature | Measurement | SNOMED | NO | YES | NO |
| 4039791 | O/E - rectal temperature | Measurement | SNOMED | NO | YES | NO |
| 4039795 | O/E - temperature elevated | Measurement | SNOMED | YES | YES | NO |
| 4040106 | O/E - temperature low | Measurement | SNOMED | YES | YES | NO |
| 4039794 | O/E - temperature normal | Measurement | SNOMED | YES | YES | NO |
| 4151775 | O/E - tympanic temperature | Measurement | SNOMED | NO | YES | NO |
| 4038778 | O/E -skin temperature abnormal | Measurement | SNOMED | YES | YES | NO |
| 3006322 | Oral temperature | Measurement | LOINC | NO | YES | NO |
| 3022060 | Rectal temperature | Measurement | LOINC | NO | YES | NO |
| 45769775 | Temperature of neonate at birth | Observation | SNOMED | YES | YES | NO |
| 4265708 | Temperature of skin | Observation | SNOMED | NO | YES | NO |
| 4267945 | Temperature of vagina | Observation | SNOMED | YES | YES | NO |
| 3025163 | Tympanic membrane temperature | Measurement | LOINC | NO | YES | NO |

**Concept Set: [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 4346179 | Bancroftian filarial fever | Condition | SNOMED | YES | YES | NO |
| 4170869 | Dehydration fever in newborn | Condition | SNOMED | YES | YES | NO |
| 4226022 | Drug-induced hyperpyrexia | Condition | SNOMED | YES | YES | NO |
| 37205085 | Familial mesial temporal lobe epilepsy with febrile seizures | Condition | SNOMED | YES | YES | NO |
| 444413 | Febrile convulsion | Condition | SNOMED | NO | YES | NO |
| 437663 | Fever | Condition | SNOMED | NO | YES | NO |
| 4141062 | Fever greater than 100.4 Fahrenheit | Measurement | SNOMED | NO | YES | NO |
| 4318555 | Fever of the newborn | Condition | SNOMED | YES | YES | NO |
| 37016869 | Infection caused by Borrelia miyamotoi | Condition | SNOMED | YES | YES | NO |
| 443908 | Louse-borne relapsing fever | Condition | SNOMED | YES | YES | NO |
| 4093997 | Malarial fever | Condition | SNOMED | YES | YES | NO |
| 4347651 | Malayan filarial fever | Condition | SNOMED | YES | YES | NO |
| 440285 | Malignant hyperthermia | Condition | SNOMED | YES | YES | NO |
| 4087628 | Malignant tertian fever | Condition | SNOMED | YES | YES | NO |
| 4143214 | Maternal pyrexia in labor | Condition | SNOMED | YES | YES | NO |
| 4152360 | O/E - fever | Measurement | SNOMED | NO | YES | NO |
| 4039793 | O/E - level of fever | Measurement | SNOMED | YES | YES | NO |
| 37397178 | PFAPA syndrome | Condition | SNOMED | YES | YES | NO |
| 40493465 | Paraneoplastic fever | Condition | SNOMED | YES | YES | NO |
| 4199309 | Pel Ebstein fever | Condition | SNOMED | YES | YES | NO |
| 44784428 | Post diphtheria vaccination fever | Condition | SNOMED | YES | YES | NO |
| 44784427 | Post diphtheria, tetanus and pertussis vaccination fever | Condition | SNOMED | YES | YES | NO |
| 44784429 | Post pertussis vaccination fever | Condition | SNOMED | YES | YES | NO |
| 44782483 | Post tetanus vaccination fever | Condition | SNOMED | YES | YES | NO |
| 43530646 | Post vaccination fever | Condition | SNOMED | YES | YES | NO |
| 4086668 | Postoperative fever | Condition | SNOMED | YES | YES | NO |
| 3197956 | Postoperative fever | Condition | Nebraska Lexicon | YES | YES | NO |
| 4094003 | Postpartum fever | Condition | SNOMED | YES | YES | NO |
| 43530637 | Postprocedural fever | Condition | SNOMED | YES | YES | NO |
| 37017455 | Pyrexia of unknown origin co-occurrent with human immunodeficiency virus infection | Condition | SNOMED | YES | YES | NO |
| 4087629 | Quartan fever | Condition | SNOMED | YES | YES | NO |
| 4150518 | Relapsing fever of Asia AND/OR Africa | Condition | SNOMED | YES | YES | NO |
| 4184347 | Relapsing fever of Central AND/OR South Africa | Condition | SNOMED | YES | YES | NO |
| 4326408 | Relapsing fever of Central AND/OR South America | Condition | SNOMED | YES | YES | NO |
| 4200980 | Relapsing fever of Iberian Peninsula AND/OR Northwest Africa | Condition | SNOMED | YES | YES | NO |
| 4229442 | Relapsing fever of Iran AND/OR Central Asia | Condition | SNOMED | YES | YES | NO |
| 4239624 | Relapsing fever of Southern U.S., Mexico, Central AND/OR South America | Condition | SNOMED | YES | YES | NO |
| 4300533 | Relapsing fever of Western North America | Condition | SNOMED | YES | YES | NO |
| 4308214 | Relapsing fever of Western United States | Condition | SNOMED | YES | YES | NO |
| 4099900 | Relapsing fever of the Caucasus | Condition | SNOMED | YES | YES | NO |
| 4094000 | Reversed diurnal fever | Condition | SNOMED | YES | YES | NO |
| 4087017 | Tertian fever | Condition | SNOMED | YES | YES | NO |
| 438963 | Tick-borne relapsing fever | Condition | SNOMED | YES | YES | NO |
| 4243806 | Transitory fever of newborn | Condition | SNOMED | YES | YES | NO |

**Concept Set:** **[Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 4158491 | C/O - debility - malaise | Condition | SNOMED | YES | YES | NO |
| 37396808 | Cancer-related fatigue | Condition | SNOMED | YES | YES | NO |
| 4219363 | Congenital debility of fetus | Condition | SNOMED | YES | YES | NO |
| 4223659 | Fatigue | Condition | SNOMED | NO | YES | NO |
| 4221911 | Fatigue associated with AIDS | Condition | SNOMED | YES | YES | NO |
| 37205051 | Fatigue due to chemotherapy | Condition | SNOMED | YES | YES | NO |
| 37205052 | Fatigue due to radiation therapy | Condition | SNOMED | YES | YES | NO |
| 45772721 | Fatigue due to treatment | Condition | SNOMED | YES | YES | NO |
| 4272240 | Malaise | Condition | SNOMED | NO | YES | NO |
| 1572255 | Malaise and fatigue | Condition | ICD10CM | NO | YES | NO |
| 439926 | Malaise and fatigue | Condition | SNOMED | NO | YES | NO |
| 44829293 | Malaise and fatigue | Condition | ICD9CM | NO | YES | NO |
| 4225027 | Malaise associated with AIDS | Condition | SNOMED | YES | YES | NO |
| 44823445 | Other malaise and fatigue | Condition | ICD9CM | NO | YES | NO |
| 1572256 | Other malaise and fatigue | Condition | ICD10CM | NO | YES | NO |
| 40484614 | Postexertional fatigue | Condition | SNOMED | YES | YES | NO |
| 4092860 | Rapid fatigue of gait | Condition | SNOMED | YES | YES | NO |
| 4090207 | Senile asthenia | Condition | SNOMED | YES | YES | NO |
| 44782753 | Weakness as a late effect of stroke | Condition | SNOMED | YES | YES | NO |

**Concept Set:** **[COVID19 v1] Myalgia**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 258828 | Eosinophilia myalgia syndrome | Condition | SNOMED | YES | YES | NO |
| 4298555 | Epidemic cervical myalgia | Condition | SNOMED | YES | YES | NO |
| 195464 | Epidemic pleurodynia | Condition | SNOMED | YES | YES | NO |
| 442315 | Fibrositis | Condition | SNOMED | YES | YES | NO |
| 4347181 | Fibrositis and nodular fasciitis | Condition | SNOMED | YES | YES | NO |
| 442774 | Intermittent claudication | Condition | SNOMED | YES | YES | NO |
| 442752 | Muscle pain | Condition | SNOMED | NO | YES | NO |
| 36713056 | Myalgia caused by statin | Condition | SNOMED | YES | YES | NO |
| 37118025 | Myofascial pain syndrome | Condition | SNOMED | YES | YES | NO |
| 4316217 | Primary fibromyalgia syndrome | Condition | SNOMED | YES | YES | NO |
| 37312366 | RSIS - Repetitive strain injury syndrome | Condition | SNOMED | YES | YES | NO |
| 46284893 | Secondary fibromyalgia | Condition | SNOMED | YES | YES | NO |

**Concept Set: [COVID19 v1] Pneumonia**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 45770911 | Acute pneumonia due to coccidioidomycosis | Condition | SNOMED | YES | YES | NO |
| 4001167 | Acute ulcerative gastroenteritis complicating pneumonia | Condition | SNOMED | YES | YES | NO |
| 4050869 | Atypical pneumonia | Condition | SNOMED | NO | YES | NO |
| 4049965 | Fungal pneumonia | Condition | SNOMED | YES | YES | NO |
| 36712839 | Idiopathic pneumonia syndrome | Condition | SNOMED | YES | YES | NO |
| 252552 | Ornithosis with pneumonia | Condition | SNOMED | YES | YES | NO |
| 255848 | Pneumonia | Condition | SNOMED | NO | YES | NO |

**Concept Set: [OHDSI Cov19] Cough**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 254761 | Cough | Condition | SNOMED | NO | YES | NO |
| 4089228 | Sputum finding | Condition | SNOMED | NO | YES | NO |

**Concept Set: [OHDSI Covid19 v1] Inpatient Visit**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 262 | Emergency Room and Inpatient Visit | Visit | Visit | NO | YES | NO |
| 9201 | Inpatient Visit | Visit | Visit | NO | YES | NO |

**[COVID ID12 v1] Persons hospitalized with influenza, broad, w/ no prior observation required, 2014-2019 season**

**(**<https://atlas.ohdsi.org/#/cohortdefinition/119>)

Persons hospitalized with influenza, age>=18, no prior observation required, broad defined = (condition or measurement with positive value) OR (fever AND (cough OR dyspnea OR myalgia OR malaise OR pneumonia) in 21d prior or during (up to date of discharge) of hospitalization , with no influenza hospitalization in prior 6 mo, and between 2014-2019 season

Initial Event Cohort

People having any of the following:

* a visit occurrence of [OHDSI Covid19 v1] Inpatient Visit11
  + occurrence start is between 2014-09-01 and 2019-04-01 (inclusive)

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

For people matching the Primary Events, include:

Having any of the following criteria:

* at least 1 occurrences of a condition occurrence of [COVID19 v1] Influenza (including complications) - Conditions4

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a measurement of [COVID19 v1] Influenza (pre-coordinated Positive Measurements)5

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of a measurement of [COVID19 v1] Influenza testing (excluding Ab testing)6
  + value as concept is any of: Detected, Detected, Positive, Present, Present, Positive

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* or at least 1 occurrences of an observation of [COVID19 v1] Influenza testing (excluding Ab testing)6
  + value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* Or having all of the following criteria:
  + Having any of the following criteria:
    - at least 1 occurrences of a condition occurrence of [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions3

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions3

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 V1] Fever (38.0°C or higher) measurement and observation2
      * with value as number between 38 and 42 (inclusive)
      * unit is any of: degree Celsius

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 V1] Fever (38.0°C or higher) measurement and observation2
      * with value as number between 100.4 and 120 (inclusive)
      * unit is any of: degree Fahrenheit

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of [COVID19 V1] Fever (38.0°C or higher) measurement and observation2
      * with value as number between 38 and 42 (inclusive)
      * unit is any of: degree Celsius

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of [COVID19 V1] Fever (38.0°C or higher) measurement and observation2
      * with value as number between 100.4 and 120 (inclusive)
      * unit is any of: degree Fahrenheit

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + And having any of the following criteria:
    - at least 1 occurrences of a condition occurrence of [OHDSI Cov19] Cough10

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of [COVID V1] Shortness of breath (dyspnea)1

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of [COVID19 v1] Myalgia8

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of [Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)7

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of Any Condition
      * Condition Source Concept is [Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)7

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a condition occurrence of [COVID19 v1] Pneumonia9

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

Limit cohort of initial events to: **all events per person.**

Inclusion Rules

Inclusion Criteria #1: age >=18

Having all of the following criteria:

* with the following event criteria:
  + with age >= 18

Inclusion Criteria #2: does not have hospitalization for influenza in the 6 months preceding admission

Having all of the following criteria:

* exactly 0 occurrences of a visit occurrence of [OHDSI Covid19 v1] Inpatient Visit11

Having any of the following criteria:

* + - at least 1 occurrences of a condition occurrence of [COVID19 v1] Influenza (including complications) - Conditions4

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 v1] Influenza (pre-coordinated Positive Measurements)5

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of a measurement of [COVID19 v1] Influenza testing (excluding Ab testing)6
      * value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - or at least 1 occurrences of an observation of [COVID19 v1] Influenza testing (excluding Ab testing)6
      * value as concept is any of: Detected, Detected, Positive, Positive, Present, Present

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - Or having all of the following criteria:
      * Having any of the following criteria:
        + at least 1 occurrences of a condition occurrence of [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions3

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of a measurement of [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions3

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of a measurement of [COVID19 V1] Fever (38.0°C or higher) measurement and observation2

with value as number between 38 and 42 (inclusive)

unit is any of: degree Celsius

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of a measurement of [COVID19 V1] Fever (38.0°C or higher) measurement and observation2

with value as number between 100.4 and 120 (inclusive)

unit is any of: degree Fahrenheit

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of an observation of [COVID19 V1] Fever (38.0°C or higher) measurement and observation2

with value as number between 38 and 42 (inclusive)

unit is any of: degree Celsius

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + or at least 1 occurrences of an observation of [COVID19 V1] Fever (38.0°C or higher) measurement and observation2

with value as number between 100.4 and 120 (inclusive)

unit is any of: degree Fahrenheit

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * And having all of the following criteria:
        + at least 1 occurrences of a condition occurrence of [OHDSI Cov19] Cough10

where event starts between 21 days Before and all days After index start date and event ends between all days Before and 0 days After index start date

* + - * + and at least 1 occurrences of a condition occurrence of [COVID V1] Shortness of breath (dyspnea)1

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + and at least 1 occurrences of a condition occurrence of [COVID19 v1] Myalgia8

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + and at least 1 occurrences of a condition occurrence of [Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)7

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + and at least 1 occurrences of a condition occurrence of Any Condition

Condition Source Concept is [Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)7

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

* + - * + and at least 1 occurrences of a condition occurrence of [COVID19 v1] Pneumonia9

where event starts between 21 days Before and all days After index start date and event starts between all days Before and 0 days After index end date

where event starts between 180 days Before and 1 days Before index start date

Limit qualifying cohort to: **all events per person.**

End Date Strategy

Date Offset Exit Criteria

This cohort definition end date will be the index event's end date plus 0 days

Cohort Collapse Strategy:

Collapse cohort by era with a gap size of 0 days.

**Concept Set: [COVID V1] Shortness of breath (dyspnea)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 4191650 | Acute respiratory distress | Condition | SNOMED | NO | YES | NO |
| 4222908 | Borg Breathlessness Score: 0 none at all | Condition | SNOMED | YES | YES | NO |
| 312437 | Dyspnea | Condition | SNOMED | NO | YES | NO |

**Concept Set: [COVID19 V1] Fever (38.0°C or higher) measurement and observation**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 3025085 | Axillary temperature | Measurement | LOINC | NO | YES | NO |
| 21490870 | Bladder temperature via Foley | Measurement | LOINC | NO | YES | NO |
| 21490688 | Body surface temperature | Measurement | LOINC | NO | YES | NO |
| 3020891 | Body temperature | Measurement | LOINC | NO | YES | NO |
| 3025926 | Body temperature - Core | Measurement | LOINC | NO | YES | NO |
| 3025704 | Body temperature - Urinary bladder | Measurement | LOINC | NO | YES | NO |
| 3017614 | Body temperature 1 hour | Measurement | LOINC | NO | YES | NO |
| 3011783 | Body temperature 1 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3004750 | Body temperature 10 hour | Measurement | LOINC | NO | YES | NO |
| 3008557 | Body temperature 10 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3007846 | Body temperature 12 hour | Measurement | LOINC | NO | YES | NO |
| 3016117 | Body temperature 12 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3006749 | Body temperature 24 hour | Measurement | LOINC | NO | YES | NO |
| 3016715 | Body temperature 24 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3018145 | Body temperature 8 hour | Measurement | LOINC | NO | YES | NO |
| 3015039 | Body temperature 8 hour maximum | Measurement | LOINC | NO | YES | NO |
| 3009553 | Body temperature at First encounter | Measurement | LOINC | NO | YES | NO |
| 4329518 | Body temperature taken with digital thermometer | Observation | SNOMED | NO | YES | NO |
| 4174894 | Core body temperature | Observation | SNOMED | NO | YES | NO |
| 21490907 | Ear temperature | Measurement | LOINC | NO | YES | NO |
| 21490588 | Esophageal temperature | Measurement | LOINC | NO | YES | NO |
| 4212763 | Forehead temperature | Observation | SNOMED | NO | YES | NO |
| 4189949 | Groin temperature | Observation | SNOMED | YES | YES | NO |
| 44809208 | Maximum body temperature | Observation | SNOMED | NO | YES | NO |
| 21490906 | Nasal temperature | Measurement | LOINC | NO | YES | NO |
| 21490590 | Nasopharyngeal temperature | Measurement | LOINC | NO | YES | NO |
| 4040476 | O/E - axillary temperature | Measurement | SNOMED | YES | YES | NO |
| 4039792 | O/E - core temperature | Measurement | SNOMED | YES | YES | NO |
| 4040104 | O/E - groin temperature | Measurement | SNOMED | YES | YES | NO |
| 4164378 | O/E - hyperpyrexia | Measurement | SNOMED | YES | YES | NO |
| 4039796 | O/E - hyperpyrexia - greater than 40.5 degrees Celsius | Measurement | SNOMED | YES | YES | NO |
| 4039793 | O/E - level of fever | Measurement | SNOMED | NO | YES | NO |
| 4077057 | O/E - oral temperature | Measurement | SNOMED | NO | YES | NO |
| 4039791 | O/E - rectal temperature | Measurement | SNOMED | NO | YES | NO |
| 4039795 | O/E - temperature elevated | Measurement | SNOMED | YES | YES | NO |
| 4040106 | O/E - temperature low | Measurement | SNOMED | YES | YES | NO |
| 4039794 | O/E - temperature normal | Measurement | SNOMED | YES | YES | NO |
| 4151775 | O/E - tympanic temperature | Measurement | SNOMED | NO | YES | NO |
| 4038778 | O/E -skin temperature abnormal | Measurement | SNOMED | YES | YES | NO |
| 3006322 | Oral temperature | Measurement | LOINC | NO | YES | NO |
| 3022060 | Rectal temperature | Measurement | LOINC | NO | YES | NO |
| 45769775 | Temperature of neonate at birth | Observation | SNOMED | YES | YES | NO |
| 4265708 | Temperature of skin | Observation | SNOMED | NO | YES | NO |
| 4267945 | Temperature of vagina | Observation | SNOMED | YES | YES | NO |
| 3025163 | Tympanic membrane temperature | Measurement | LOINC | NO | YES | NO |

**Concept Set: [COVID19 v1] Fever (38.0°C or higher) pre-coordinated measurement and conditions**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 4346179 | Bancroftian filarial fever | Condition | SNOMED | YES | YES | NO |
| 4170869 | Dehydration fever in newborn | Condition | SNOMED | YES | YES | NO |
| 4226022 | Drug-induced hyperpyrexia | Condition | SNOMED | YES | YES | NO |
| 37205085 | Familial mesial temporal lobe epilepsy with febrile seizures | Condition | SNOMED | YES | YES | NO |
| 444413 | Febrile convulsion | Condition | SNOMED | NO | YES | NO |
| 437663 | Fever | Condition | SNOMED | NO | YES | NO |
| 4141062 | Fever greater than 100.4 Fahrenheit | Measurement | SNOMED | NO | YES | NO |
| 4318555 | Fever of the newborn | Condition | SNOMED | YES | YES | NO |
| 37016869 | Infection caused by Borrelia miyamotoi | Condition | SNOMED | YES | YES | NO |
| 443908 | Louse-borne relapsing fever | Condition | SNOMED | YES | YES | NO |
| 4093997 | Malarial fever | Condition | SNOMED | YES | YES | NO |
| 4347651 | Malayan filarial fever | Condition | SNOMED | YES | YES | NO |
| 440285 | Malignant hyperthermia | Condition | SNOMED | YES | YES | NO |
| 4087628 | Malignant tertian fever | Condition | SNOMED | YES | YES | NO |
| 4143214 | Maternal pyrexia in labor | Condition | SNOMED | YES | YES | NO |
| 4152360 | O/E - fever | Measurement | SNOMED | NO | YES | NO |
| 4039793 | O/E - level of fever | Measurement | SNOMED | YES | YES | NO |
| 37397178 | PFAPA syndrome | Condition | SNOMED | YES | YES | NO |
| 40493465 | Paraneoplastic fever | Condition | SNOMED | YES | YES | NO |
| 4199309 | Pel Ebstein fever | Condition | SNOMED | YES | YES | NO |
| 44784428 | Post diphtheria vaccination fever | Condition | SNOMED | YES | YES | NO |
| 44784427 | Post diphtheria, tetanus and pertussis vaccination fever | Condition | SNOMED | YES | YES | NO |
| 44784429 | Post pertussis vaccination fever | Condition | SNOMED | YES | YES | NO |
| 44782483 | Post tetanus vaccination fever | Condition | SNOMED | YES | YES | NO |
| 43530646 | Post vaccination fever | Condition | SNOMED | YES | YES | NO |
| 4086668 | Postoperative fever | Condition | SNOMED | YES | YES | NO |
| 3197956 | Postoperative fever | Condition | Nebraska Lexicon | YES | YES | NO |
| 4094003 | Postpartum fever | Condition | SNOMED | YES | YES | NO |
| 43530637 | Postprocedural fever | Condition | SNOMED | YES | YES | NO |
| 37017455 | Pyrexia of unknown origin co-occurrent with human immunodeficiency virus infection | Condition | SNOMED | YES | YES | NO |
| 4087629 | Quartan fever | Condition | SNOMED | YES | YES | NO |
| 4150518 | Relapsing fever of Asia AND/OR Africa | Condition | SNOMED | YES | YES | NO |
| 4184347 | Relapsing fever of Central AND/OR South Africa | Condition | SNOMED | YES | YES | NO |
| 4326408 | Relapsing fever of Central AND/OR South America | Condition | SNOMED | YES | YES | NO |
| 4200980 | Relapsing fever of Iberian Peninsula AND/OR Northwest Africa | Condition | SNOMED | YES | YES | NO |
| 4229442 | Relapsing fever of Iran AND/OR Central Asia | Condition | SNOMED | YES | YES | NO |
| 4239624 | Relapsing fever of Southern U.S., Mexico, Central AND/OR South America | Condition | SNOMED | YES | YES | NO |
| 4300533 | Relapsing fever of Western North America | Condition | SNOMED | YES | YES | NO |
| 4308214 | Relapsing fever of Western United States | Condition | SNOMED | YES | YES | NO |
| 4099900 | Relapsing fever of the Caucasus | Condition | SNOMED | YES | YES | NO |
| 4094000 | Reversed diurnal fever | Condition | SNOMED | YES | YES | NO |
| 4087017 | Tertian fever | Condition | SNOMED | YES | YES | NO |
| 438963 | Tick-borne relapsing fever | Condition | SNOMED | YES | YES | NO |
| 4243806 | Transitory fever of newborn | Condition | SNOMED | YES | YES | NO |

**Concept Set:** **[Covid19 V1] Malaise or Fatigue or (Malaise and Fatigue)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 4158491 | C/O - debility - malaise | Condition | SNOMED | YES | YES | NO |
| 37396808 | Cancer-related fatigue | Condition | SNOMED | YES | YES | NO |
| 4219363 | Congenital debility of fetus | Condition | SNOMED | YES | YES | NO |
| 4223659 | Fatigue | Condition | SNOMED | NO | YES | NO |
| 4221911 | Fatigue associated with AIDS | Condition | SNOMED | YES | YES | NO |
| 37205051 | Fatigue due to chemotherapy | Condition | SNOMED | YES | YES | NO |
| 37205052 | Fatigue due to radiation therapy | Condition | SNOMED | YES | YES | NO |
| 45772721 | Fatigue due to treatment | Condition | SNOMED | YES | YES | NO |
| 4272240 | Malaise | Condition | SNOMED | NO | YES | NO |
| 1572255 | Malaise and fatigue | Condition | ICD10CM | NO | YES | NO |
| 439926 | Malaise and fatigue | Condition | SNOMED | NO | YES | NO |
| 44829293 | Malaise and fatigue | Condition | ICD9CM | NO | YES | NO |
| 4225027 | Malaise associated with AIDS | Condition | SNOMED | YES | YES | NO |
| 44823445 | Other malaise and fatigue | Condition | ICD9CM | NO | YES | NO |
| 1572256 | Other malaise and fatigue | Condition | ICD10CM | NO | YES | NO |
| 40484614 | Postexertional fatigue | Condition | SNOMED | YES | YES | NO |
| 4092860 | Rapid fatigue of gait | Condition | SNOMED | YES | YES | NO |
| 4090207 | Senile asthenia | Condition | SNOMED | YES | YES | NO |
| 44782753 | Weakness as a late effect of stroke | Condition | SNOMED | YES | YES | NO |

**Concept Set:** **[COVID19 v1] Myalgia**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 258828 | Eosinophilia myalgia syndrome | Condition | SNOMED | YES | YES | NO |
| 4298555 | Epidemic cervical myalgia | Condition | SNOMED | YES | YES | NO |
| 195464 | Epidemic pleurodynia | Condition | SNOMED | YES | YES | NO |
| 442315 | Fibrositis | Condition | SNOMED | YES | YES | NO |
| 4347181 | Fibrositis and nodular fasciitis | Condition | SNOMED | YES | YES | NO |
| 442774 | Intermittent claudication | Condition | SNOMED | YES | YES | NO |
| 442752 | Muscle pain | Condition | SNOMED | NO | YES | NO |
| 36713056 | Myalgia caused by statin | Condition | SNOMED | YES | YES | NO |
| 37118025 | Myofascial pain syndrome | Condition | SNOMED | YES | YES | NO |
| 4316217 | Primary fibromyalgia syndrome | Condition | SNOMED | YES | YES | NO |
| 37312366 | RSIS - Repetitive strain injury syndrome | Condition | SNOMED | YES | YES | NO |
| 46284893 | Secondary fibromyalgia | Condition | SNOMED | YES | YES | NO |

**Concept Set: [COVID19 v1] Pneumonia**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 45770911 | Acute pneumonia due to coccidioidomycosis | Condition | SNOMED | YES | YES | NO |
| 4001167 | Acute ulcerative gastroenteritis complicating pneumonia | Condition | SNOMED | YES | YES | NO |
| 4050869 | Atypical pneumonia | Condition | SNOMED | NO | YES | NO |
| 4049965 | Fungal pneumonia | Condition | SNOMED | YES | YES | NO |
| 36712839 | Idiopathic pneumonia syndrome | Condition | SNOMED | YES | YES | NO |
| 252552 | Ornithosis with pneumonia | Condition | SNOMED | YES | YES | NO |
| 255848 | Pneumonia | Condition | SNOMED | NO | YES | NO |

**Concept Set: [OHDSI Cov19] Cough**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 254761 | Cough | Condition | SNOMED | NO | YES | NO |
| 4089228 | Sputum finding | Condition | SNOMED | NO | YES | NO |

**Concept Set: [OHDSI Covid19 v1] Inpatient Visit**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Concept Id** | **Concept Name** | **Domain** | **Vocabulary** | **Excluded** | **Descendants** | **Mapped** |
| 262 | Emergency Room and Inpatient Visit | Visit | Visit | NO | YES | NO |
| 9201 | Inpatient Visit | Visit | Visit | NO | YES | NO |

*Note: H1N1 Cohorts contain similar logic to 2014-2019. Additional detail can be found here:*

**[COVID ID7 v1] Persons hospitalized with influenza, broad, w/ prior observation, 2009-2010 season:** <https://atlas.ohdsi.org/#/cohortdefinition/111>

**[COVID ID8 v1] Persons hospitalized with influenza, broad, w/ no prior observation required, 2009-2010 season:** <https://atlas.ohdsi.org/#/cohortdefinition/112>

**[COVID ID5 v1] Persons hospitalized with influenza, narrow, w/ prior observation, 2009-2010 season:** <https://atlas.ohdsi.org/#/cohortdefinition/113>

**[COVID ID6 v1] Persons hospitalized with influenza, narrow, no prior observation required, 2009-2010 season:** <https://atlas.ohdsi.org/#/cohortdefinition/115>