# OHDSI APAC Study: Comparison of mortality, morbidities & healthcare resources utilisation between patients with and without a diagnosis of COVID-19

Celine SL Chui
Assistant Professor
School of Nursing and School of Public Health
The university of Hong Kong

# Disclaimer


- This work was supported by the Research Grants Council of Hong Kong under the Collaborative Research Fund Scheme (C7154-20G).
- I have received grants from the Food and Health Bureau of the Hong Kong Government, Hong Kong Research Grant Council, Hong Kong Innovation and Technology Commission, Pfizer, IQVIA, MSD, and Amgen; and personal fees from PrimeVigilance; outside the submitted work.

# Background and rationale

- Since the outbreak of the COVID-19 pandemic in late 2019, there have been 2.8 billion confirmed cases with over 5.4 million deaths worldwide (Dec 2021).
- COVID-19 infection is associated with a wide range of acute severe adverse outcomes beyond the acute respiratory-related illness[1, 2].
- There is urgent need for evidence and knowledge on the medium-term (3-12 months since diagnosis) and long-term (beyond one year since diagnosis) outcomes following COVID-19 infection.
- Findings from this study may be used to aid the future planning of healthcare resources allocation.


1. *Crook H, Raza S, Nowell J, Young M, Edison P. Long covid-mechanisms, risk factors, and management. BMJ. Jul 26 2021;374:n1648. doi:10.1136/bmj.n1648*
2. *Leung TYM, Chan AYL, Chan EW, et al. Short- and potential long-term adverse health outcomes of COVID-19: a rapid review. Emerg Microbes Infect. Dec 2020;9(1):2190-2199.*

# Objectives

1. To monitor and evaluate the short-, medium-, and long-term mortality and morbidities following COVID-19 infection.
2. To monitor and evaluate the short-, medium-, and long-term healthcare resources utilisation following COVID-19 infection.
3. To investigate adverse outcome of COVID-19 post-infection in specific populations, including children, elderly and people with multi-morbidities.

# Research Plan and Methodology

## Study design

- Cohort studies using multinational healthcare data

## Data source

- Multinational healthcare databases
- We are calling for your collaborations!

## Study population

- Subjects with COVID-19 and without COVID-19 during the study period.

## Follow-up duration:

- **Short** (Up to 6 months),
- **Medium** (6 months to 1 year)
- **Long term** (1 to 3 years)

# Progress

1. Package development
   – Initial package developed with the help from IQVIA
2. Preliminary data obtained from selected outcomes and databases
   - France LPD
   - Italy LPD
   - Hong Kong Hospital Authority (HA)
3. HKU team are finalising the definitions and settings within the package for the pilot study

# Pilot study-Timeline

COVID-19 Cohort:

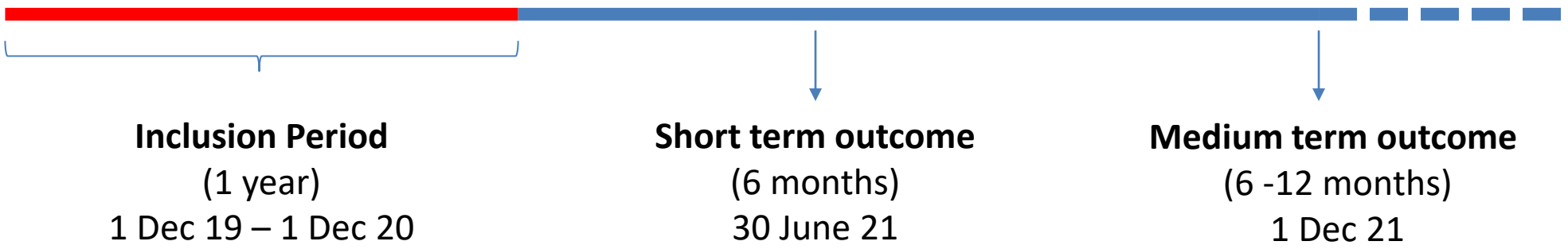
- Have a record of a first positive test or diagnosis for COVID-19 or during the inclusion period
- Index date will be defined the date of positive test or diagnosis of COVID-19

Non COVID-19 (Comparator) Cohort:

- Do not have a record of a COVID-19 test or a positive test for COVID-19 during the inclusion period
- Matched to subjects from the COVID-19 cohort

Follow-up period:

Follow-up until the outcome event, mortality, censoring for lost to follow-up and end of study period. For non COVID-19 group, people will be censored if they got COVID-19 infection.



# Study Subjects - Summary

Table 1. Number of subjects, follow-up time (person years) in target and comparator after propensity score matching

| Datasets | Target | | Comparator | |
|---|---|---|---|---|
| | Subjects | follow-up years | Subjects | follow-up years |
| France LPD | 52,790 | 44,137 | 366,275 | 286,216 |
| Italy LPD | 16,841 | 13,948 | 123,820 | 102,765 |
| HK HA | 290 | 262 | 2,610 | 2,466 |
| **Overall** | **69,921** | **58,348** | **492,705** | **391,448** |

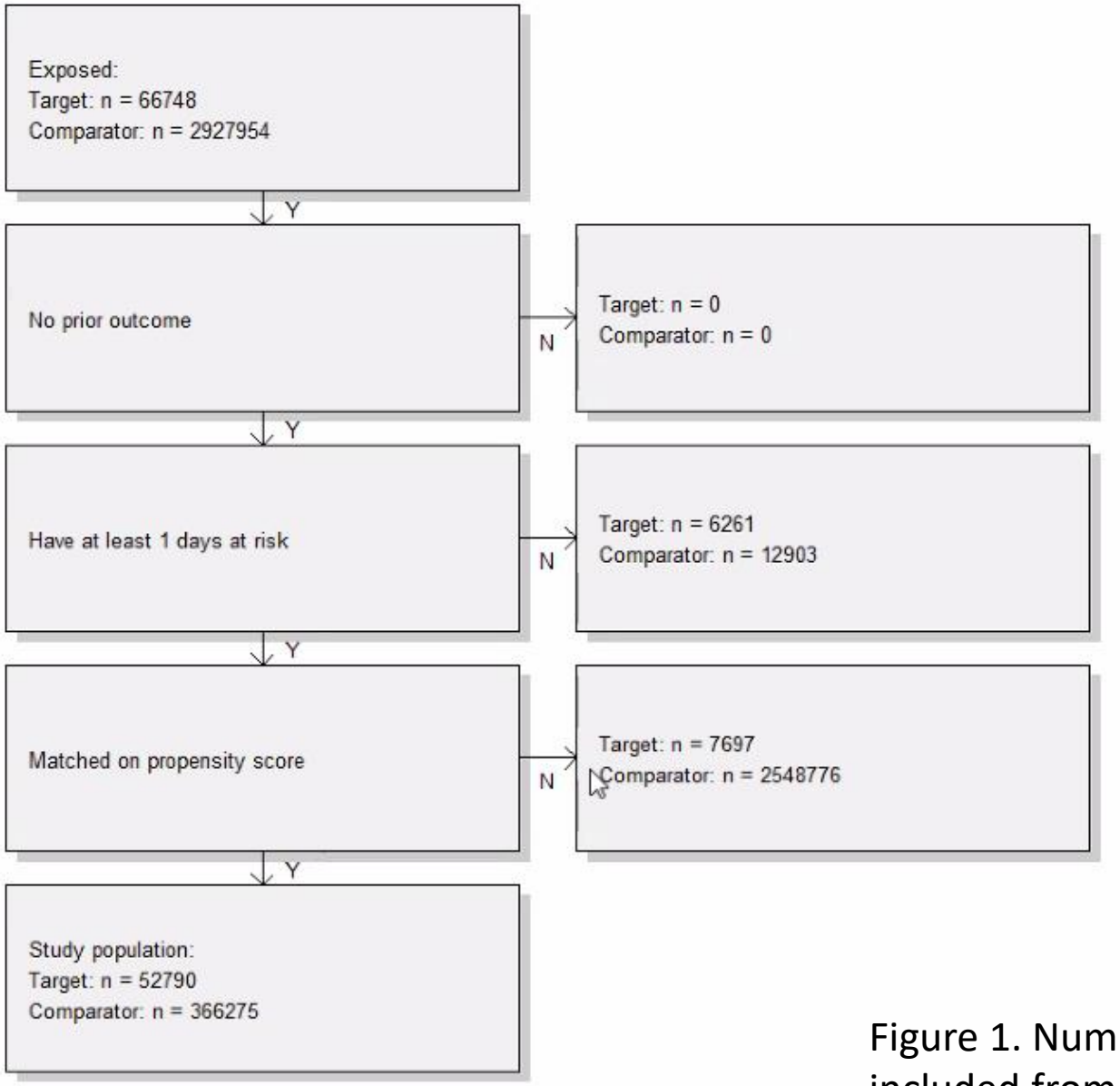



Figure 1. Number of target and comparators subject included from the France LPD dataset for follow-up

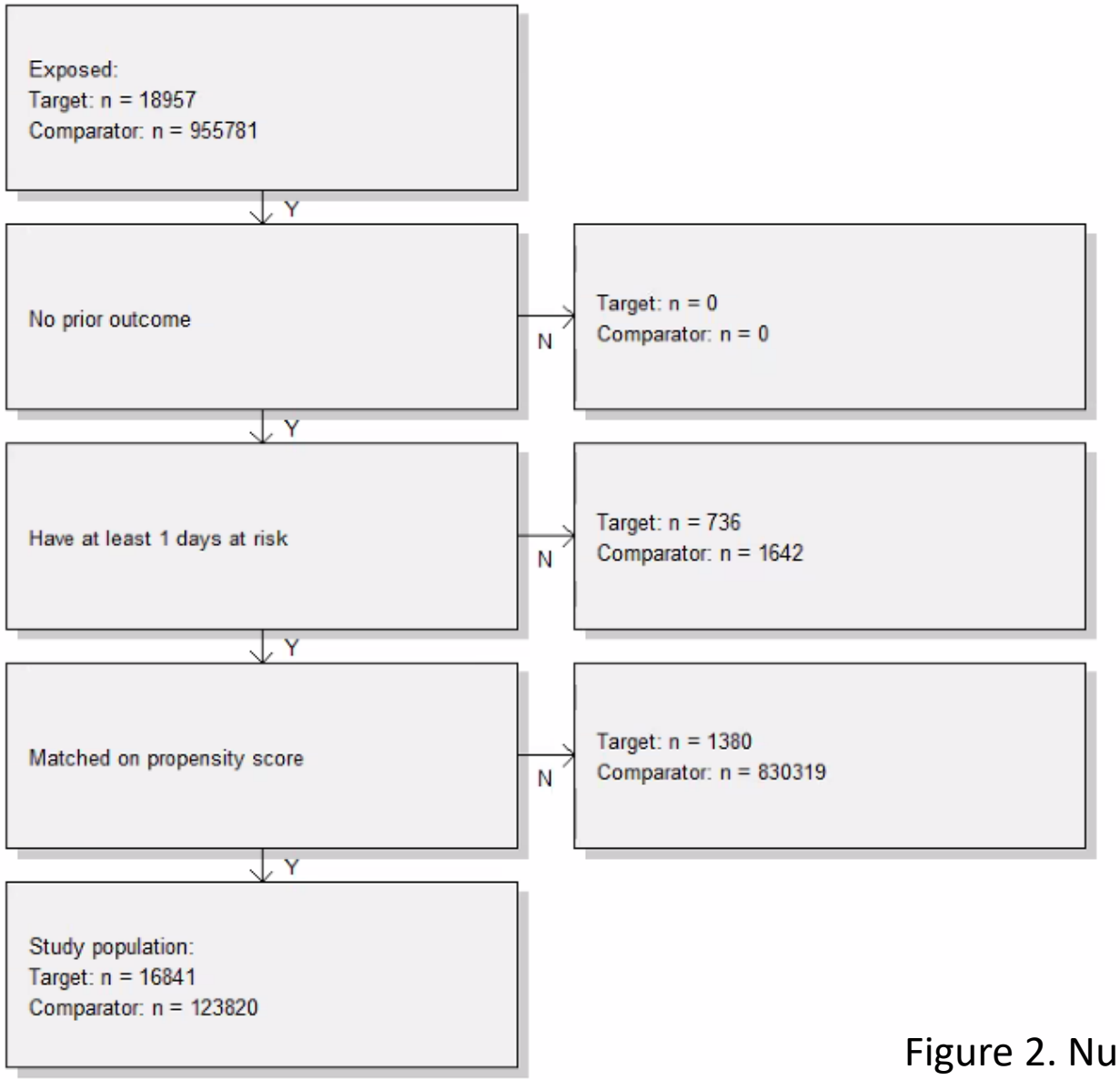



Figure 2. Number of target and comparators subject included from the Italy LPD dataset for follow-up

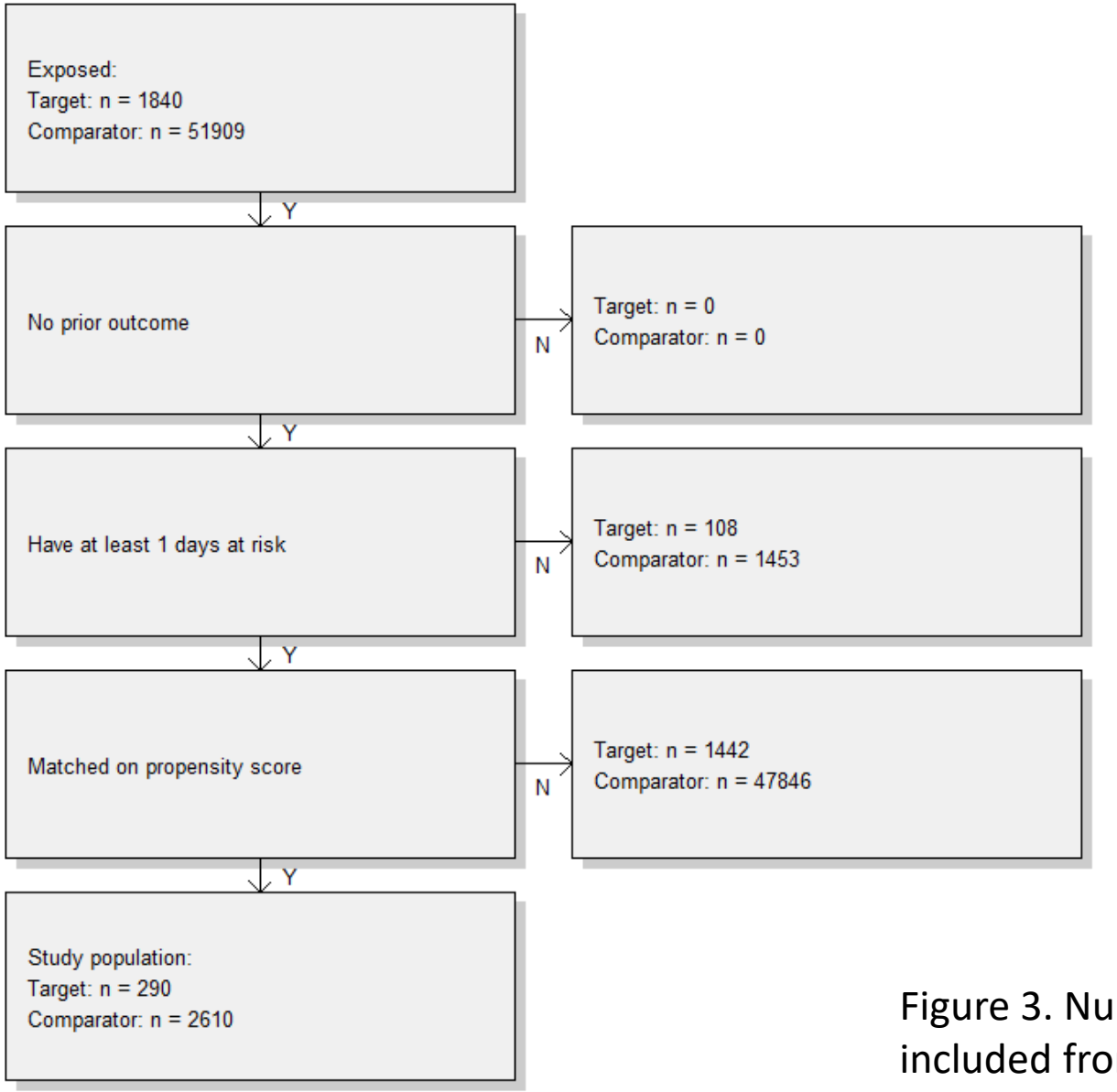



Figure 3. Number of target and comparators subject included from the HK Hospital Authority dataset for follow-up

# Preliminary Results

| Adverse outcomes | Hazard ratio | 95% Confidence Interval | |
|---|---|---|---|
| Encephalitis and encephalomyelitis | 2.32 | 0.85 | 5.69 |
| Bell's Palsy | 0.88 | 0.30 | 2.11 |
| Guillain Barre Syndrome | 0.59 | 0.03 | 3.56 |
| Ischemic stroke | 1.12 | 0.64 | 1.83 |

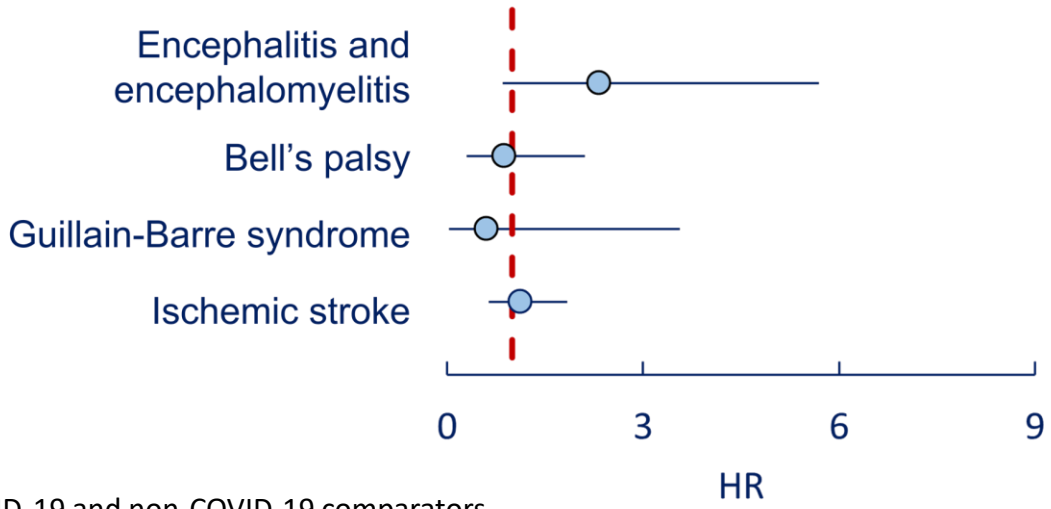



Table 2 and Figure 4. The hazard ratio and 95% confidence interval (CI) of adverse outcomes between COVID-19 and non-COVID-19 comparators

# Preliminary Results

| Adverse outcomes | Hazard ratio | 95% Confidence Interval | |
|---|---|---|---|
| Myocarditis and Pericarditis | 3.14 | 1.53 | 6.17 |
| Myocardial infarction | 1.52 | 1.12 | 2.02 |
| Pulmonary Embolism | 3.04 | 2.38 | 3.85 |
| Immune and idiopathic thrombocytopenia | 3.32 | 1.21 | 8.37 |

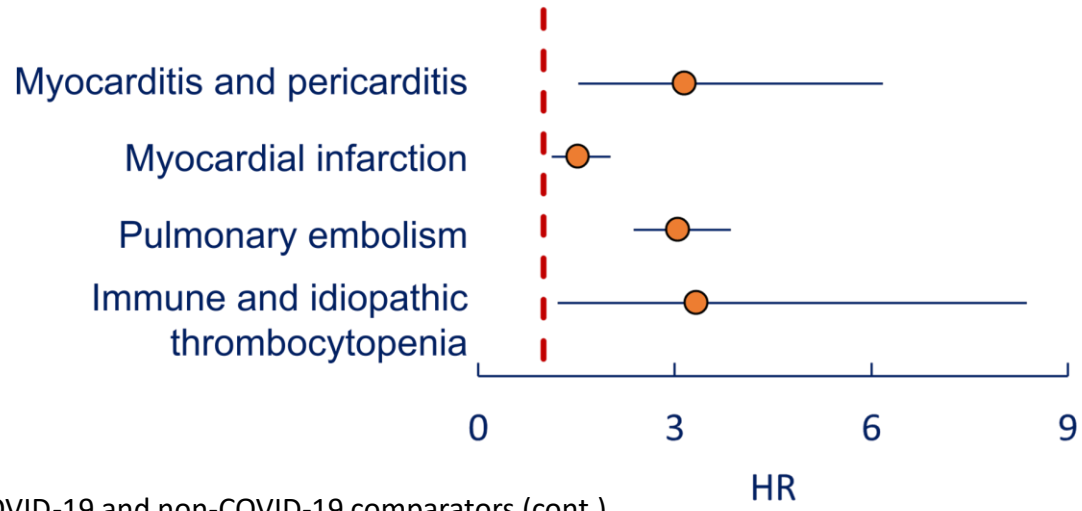



Table 3 and Figure 5. The hazard ratio and 95% confidence interval (CI) of adverse outcomes between COVID-19 and non-COVID-19 comparators (cont.)

# Upcoming plans

1. Revise definitions and update study outcomes
2. Finalize details and settings of study package
   - Subgroup analysis (age group and sex)

- 3. Include the following databases
  - IQVIA: Germany DA, UK IMRD, US Open claim
  - OHDSI Collaborators: South Korean HIRA


# OHDSI APAC Study: Comparison of mortality, morbidities & healthcare resources utilisation between patients with and without a diagnosis of COVID-19

Thank you!