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

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Disclaimer

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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.

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
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.

Inclusion Period
(1 year)
1 Dec 19 – 1 Dec 20

Short term outcome
(6 months)
30 June 21

Medium term outcome
(6 -12 months)
1 Dec 21
Study Subjects - Summary

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

<table>
<thead>
<tr>
<th>Datasets</th>
<th>Target</th>
<th>Comparator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Subjects</td>
<td>follow-up years</td>
</tr>
<tr>
<td>France LPD</td>
<td>52,790</td>
<td>44,137</td>
</tr>
<tr>
<td>Italy LPD</td>
<td>16,841</td>
<td>13,948</td>
</tr>
<tr>
<td>HK HA</td>
<td>290</td>
<td>262</td>
</tr>
<tr>
<td>Overall</td>
<td>69,921</td>
<td>58,348</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Adverse outcomes</th>
<th>Hazard ratio</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encephalitis and encephalomyelitis</td>
<td>2.32</td>
<td>0.85 - 5.69</td>
</tr>
<tr>
<td>Bell’s Palsy</td>
<td>0.88</td>
<td>0.30 - 2.11</td>
</tr>
<tr>
<td>Guillain Barre Syndrome</td>
<td>0.59</td>
<td>0.03 - 3.56</td>
</tr>
<tr>
<td>Ischemic stroke</td>
<td>1.12</td>
<td>0.64 - 1.83</td>
</tr>
</tbody>
</table>

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

<table>
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<tr>
<th>Adverse outcomes</th>
<th>Hazard ratio</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myocarditis and Pericarditis</td>
<td>3.14</td>
<td>1.53  -  6.17</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>1.52</td>
<td>1.12  -  2.02</td>
</tr>
<tr>
<td>Pulmonary Embolism</td>
<td>3.04</td>
<td>2.38  -  3.85</td>
</tr>
<tr>
<td>Immune and idiopathic thrombocytopenia</td>
<td>3.32</td>
<td>1.21  -  8.37</td>
</tr>
</tbody>
</table>

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
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Thank you!