Impact of COVID-19
Theoretical modelling of how the health system can respond
Purpose of modelling

• Theoretical scenarios to help plan our responses
• Working with University of Melbourne (Doherty Institute) pandemic modelling team – linked with international experts
• Uses international data, not Australian data

What we are showing today

• **Not predictions** of what will actually occur in Australia
• Some early work to be published on health system capacity modelling – with a focus on ICU capacity
• **Capacity modelling** - proof that we have **tools that work** to manage a pandemic
• Also publishing regional risk assessment modelling
Where we are now

We are flattening the curve

Daily percentage change in confirmed COVID-19 cases by notification date in rolling 3 day averages
As at 1600 6 April 2020 (updated once per day)

Cumulative cases count – log scale (post-100 cases): as at 0700hrs 7 April 2020

Source: Data provided by Department of Health. Data annotations done by PM&C.
Note: Changes in social practices could take a number of days to flow through to reduced case numbers, given the WHO estimate the COVID-19 incubation period to range between 1 to 14 days.
Modelled uncontrolled pandemic

Scenario - widespread outbreak at the same time

- Artificial – not a prediction
- Doesn’t reflect current state in Australia
- Assumes diffuse infection of 89% (>23 million)
- Impossible to meet ICU capacity
Modelled measures to flatten the curve*

*Not based on Australian case data.
Measures to flatten the curve – modelling comparison

<table>
<thead>
<tr>
<th></th>
<th>Scenario 1: no mitigation</th>
<th>Scenario 2: quarantine and isolation</th>
<th>Scenario 3: quarantine, isolation and social distancing (25%)</th>
<th>Scenario 4: quarantine, isolation and social distancing (33%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection rate</td>
<td>89.1%</td>
<td>67.5%</td>
<td>37.7%</td>
<td>11.6%</td>
</tr>
<tr>
<td>Hospitalisation rate</td>
<td>5.4%</td>
<td>4%</td>
<td>2.2%</td>
<td>0.8%</td>
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<tr>
<td>Proportion who can access ICU beds</td>
<td>15%</td>
<td>30%</td>
<td>80%</td>
<td>100%</td>
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More realistic models and plans

- Focus of future modelling is based on real world Australian data
- **Focal** outbreaks, **early** indications that we are gaining control.
- Current case rate <0.025%, low ICU utilisation, death rate 0.7%, but ongoing **community transmission**
- Consideration of other variables:
  - Continued fall in returned travellers
  - Testing and public health capacity to quarantine and isolate
  - Impact of distancing and general hygiene measures
- **We know we have tools that work and can scale them as needed** – *models help*