Current understanding of COVID-19 compared with NSRA 2019 Pandemic Influenza planning assumptions

The table below sets out the current scientific understanding of Covid-19, compared to the pandemic influenza planning assumptions. SAGE (Scientific Advisory Group for Emergencies) does not decide what scenario Government should be planning for. That is a decision for Ministers, based on scientific advice from SAGE.

As of January 2020, Ministers are using the pandemic influenza planning assumptions as the basis for HMG contingency planning for Covid-19. The Cabinet Office, Civil Contingencies Secretariat, will advise HMG when they should work to revised planning assumptions.

1st Order Assumptions	Pan Flu reasonable worst case, based on a 2016 UK population, including confidence intervals where possible	COVID-19 key conclusions of SAGE to date, based on a 2016 UK population
Basic Reproductive Rate (R_0) (Number of secondary cases generated on average by one primary case. Suppression of an outbreak requires R to be sustained below 1)	No number included in planning assumptions	2.4 (assumed for the UK)
Doubling Time (Time required for the number of cases to double)	No number included in planning assumptions	4.6 days (assumed for the UK)
Incubation period (Time between exposure to infection and symptom onset)	Short incubation period: 1 to 3 days	Average: 5 days. Range: 1 to 11 days. (assumed for the UK)
Duration of Illness	Assumes normal flu profile – most people back to normal activities in 7 to 10 days	Most cases probably resolve 7 days after symptom start. From symptom onset to hospitalisation: Average of 7 days. From onset of illness to discharge from hospital: Average of 23 days but may include avoidable delay in discharge. From onset of illness to death: Average of 22 days for severe cases, but large variation around this. Longest time so far appears to be 41 days.
Duration of infectivity	Adults are infectious for up to 5 days from the onset of symptoms. Longer periods have been found, particularly in those who are immunosuppressed. Children may be infectious for up to 7 days. Some people can be infected, develop immunity, and have minimal or no symptoms but may still be able to pass on the virus.	Duration of infectivity likely to vary depending on severity of individual cases. 14 days as upper limit. Peak infectivity is probably around the start of symptom onset, average 2 to 6 days, then falling off rapidly.

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<table>
<tr><td>Transmission</td><td>Sustained human-to-human transmission.

Around a third of infected people are asymptomatic.</td><td>Current understanding is that the transmission route is respiratory and via contact. This means that viruses are transmitted via touching an infected person and spray of droplets such as coughing and sneezing.
Human-to-human transmission outside China has occurred but there is as yet no definitive evidence of a sustained outbreak/epidemic elsewhere. Asymptomatic transmission cannot be ruled out and transmission from mildly symptomatic individuals is likely.</td></tr>
<tr><td>Case Fatality Rate (CFR) (fatality rate for identified cases of covid-19)</td><td>2.5% (previously defined as only symptomatically infected)</td><td>2-3% of identified cases only</td></tr>
<tr><td>Infection fatality rate (IFR) (cumulative % of all infected including both symptomatic and asymptomatic infections)</td><td>No number included in planning assumptions</td><td>1% of all infections (both symptomatic and asymptomatic). Age distribution: [To note, there is high confidence for the age distribution data below]
<table>
<tr><th>Age Band</th><th>Proportion of infected that die</th></tr>
<tr><td>0 – 9</td><td>0.01%</td></tr>
<tr><td>10 – 19</td><td>0.01%</td></tr>
<tr><td>20 – 29</td><td>0.04%</td></tr>
<tr><td>30 – 39</td><td>0.09%</td></tr>
<tr><td>40 – 49</td><td>0.15%</td></tr>
<tr><td>50 – 59</td><td>0.69%</td></tr>
<tr><td>60 – 69</td><td>2.21%</td></tr>
<tr><td>70 – 79</td><td>5.92%</td></tr>
<tr><td>80+</td><td>8.76%</td></tr>
</table></td></tr>
<tr><td>Origin</td><td>N/A</td><td>Current evidence suggests single point zoonotic (i.e. animal to human) outbreak, now sustained entirely by human-to-human transmission. No evidence of ongoing zoonotic transmission.</td></tr>
<tr><td>Duration of outbreak and waves</td><td>Single wave spread over 15 weeks</td><td>Single wave with 95% of cases in peak 9 weeks, half of cases in peak 3 weeks (see figure 1 below)</td></tr>
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