SPI-M-O: Consensus Statement on 2019 Novel Coronavirus (2019-nCoV)

Date: 3rd February 2020. Final version

Number of cases

1. The number of confirmed cases of 2019-nCoV in China is estimated to be at least 10 times higher than the number currently confirmed.

2. Cases of 2019-nCoV are infections that fulfil the case definition and are therefore symptomatic. Asymptomatic infections (sometimes called asymptomatic cases) do not have clinical signs.

Reproduction number and doubling time

3. The basic reproduction number (R_0) is the average number of secondary infections produced by a single infected individual in an otherwise entirely susceptible population. This is a measure of the epidemic potential of an infection. The critical issue is whether R_0 is greater than one. The doubling time is the time it takes for the number of cases to double in size.

4. Both the reproduction number and doubling time are dependent on the characteristics of the population so may be different in the UK, and may be different in different groupings within the UK.

5. The reproduction number seen in the city of Wuhan in the early stages of the outbreak are estimated to be in the region of 2–3. It is not yet clear how this has changed in the last two weeks, or what the reproduction number is in other parts of China. There is insufficient data available to determine whether there is sustained transmission outside of the province of Hubei, but it is likely to be the case.

6. The doubling time in Hubei is estimated to be 3–5 days.

7. It is unclear whether outbreaks can be contained by isolation and contract tracing. If a high proportion of asymptomatic cases are infectious, then containment is unlikely via these policies. Countries with less effective health care systems are less likely to be able to contain sustained outbreaks.

8. Population-wide reduction in contact rates, for example through the mass closure of schools, will impact transmission regardless of the importance of asymptomatic transmission but the potential effectiveness of such measures is unclear.

Case Fatality Ratio (CFR)

9. The CFR is the proportion of people with clinical infections who die. It is not homogenous across groups and will likely depend on several factors such as an individual's age and co-morbidities. It will also vary between countries, especially depending on the effectiveness of healthcare.

10. Precise estimates of the CFR in China are not possible because of both under-ascertainment of cases and the time lag between clinical cases and deaths (the average time between symptom onset and death in early cases from China has been 15 days, with wide variation). The average CFR is very unlikely to be higher than 3%.

11. The CFR is determined by the average mortality across all clinical cases (regardless of their severity) but mortality rates in different groups could vary greatly. Current estimates of the mortality rates amongst hospitalised cases with pneumonia in China are around 13%.

12. Limited evidence from China suggests that severe cases are more common in older age groups and those with other health conditions. It is unclear how 2019-nCoV affects children and children's role in transmission.

Hospitalisation rate

13. The hospitalisation rate is currently unknown and greatly influenced by access to health-care.

Serial interval

14. The serial interval is the average time between symptom onset in primary and secondary cases. Current estimates of the average serial interval vary from 3–8 days.

Incubation period

15. The incubation period is the delay between an individual becoming infected and developing symptoms. Current estimates give an average incubation period of 5 days (range 1–11 days). This is approximately twice as long as for influenza. The maximum incubation period is used to define the period required for isolation, currently believed to be 14 days.

16. The long incubation period means isolation of contacts of cases would need to be lengthy and that entry screening is likely to be ineffective.

Operational considerations

17. Real-time forecasting models rely on deriving information on the epidemic from surveillance. If transmission is established in the UK there will necessarily be a delay before sufficiently accurate forecasts in the UK are available.

18. Preliminary forecasts and accurate estimates of epidemiological parameters will likely be available in the order of weeks and not days following widespread outbreaks in the UK (or a similar country). While some estimates may be available before this time their accuracy will be much more limited.

19. The UK hospitalisation rate and CFR will be very important for operational planning and will be estimated over a similar timeframe. They may take longer depending on the availability of data.

Annex: Reasonable Worst Case

20. On 27th January 2020, SPI-M-O concluded that while there wasn't sufficient evidence to estimate a reasonable worst case scenario (RWC) for 2019-nCoV, the RWC for pandemic influenza would be an appropriate planning scenario at that point. SPI-M-O will keep updating their assessment of the reasonable worst case as the outbreak progresses.

21. For reference, the pandemic influenza RWC can be found in the SPI-M Modelling Summary available at https://www.gov.uk/government/publications/spi-m-publish-updated-modelling-summary.