SPI-M-O: Consensus Statement on COVID-19

Date: 24th November 2021

Please note that this consensus statement was written prior to the emergence of B.1.1.529 / Omicron and its subsequent designation as a variant of concern.

All probability statements are in line with the framework given in the Annex.

Summary

1. SPI-M-O reviewed research conducted by the London School of Hygiene and Tropical Medicine which suggests that there may be a smaller susceptible population in England compared to other European countries and thus England may have a smaller potential future COVID-19 hospitalisation burden. To gain firmer conclusions relating to these patterns, however, a large-scale age-structured serological study is required. This is also only a snapshot of a highly dynamic system, which will change in future.

2. The festive period is a time when contact patterns are likely to change. SPI-M-O has produced new medium-term scenarios considering different plausible values of R from 6th December for six weeks. During the festive period, there is typically increased mixing between generations and within different networks. Lateral flow testing can be used as a group diagnostic to mitigate risk of SARS-COV-2 transmission into older age groups and more vulnerable individuals. Encouragement of booster vaccination, frequent lateral flow testing, increased ventilation, and use of face masks would be easy and effective interventions that would mitigate transmission risk.

3. SPI-M-O has considered the determinants of COVID-19 endemicity. It will take a long time for COVID-19 to settle to its endemic state, and the path to endemicity will be critically dependent on the rate of waning of immunity and chosen policies on vaccination and boosting.

4. SARS-CoV-2 will continue to be a threat to health system function and require active management, of which vaccination and surveillance are key, for at least the next five years.

Potential COVID-19 burden across Europe

5. Several countries across Europe are currently experiencing significant waves of COVID-19, while the situation in the UK appears to be a continuation of high but stable prevalence.

6. Modellers from the London School of Hygiene and Tropical Medicine (LSHTM) have estimated the number of expected future hospitalisations in 19 European countries if the entire population were to be (re-)exposed now[1]. The key assumptions are that the infection hospitalisation and fatality risks are constant and that immunity to infection does not wane. The estimate for England is significantly lower than for other countries assessed. This is a consequence of widespread vaccination and high prevalence of infection over the course of the epidemic, but specifically since July 2021. They estimate that this low number of susceptible individuals, coupled with fast roll out of booster vaccinations in the most vulnerable implies a smaller potential for further hospitalisation in England in the short-term, compared to many countries across Europe.

7. SPI-M-O views this hypothesis as plausible, with observed patterns of infection and vaccination consistent with a smaller susceptible population in the UK compared with other parts of Europe. The absence of a large-scale, age-structured serological study, however, means this cannot be stated with high confidence. This situation may not remain indefinitely. If the UK's booster rollout slows, immunity wanes faster or to a lower level, or mixing increases dramatically, it is possible the UK could face increases seen elsewhere.

Spatial heterogeneity

8. SPI-M-O continues to monitor the epidemic at a national and local level. Over the past few weeks, there has been much less spatial heterogeneity in the epidemic at lower-tier local authority (LTLA) level in England, compared to previously in the epidemic. While outliers have been observed, these have typically been short-lived.

9. Spatial heterogeneity within the epidemic can provide a signal of new developments, such as the emergence of a new SARS-CoV-2 variant or the accumulation of population immunity. This build-up of immunity may be drawn out over many weeks, with the timing of turnover in cases likely differing across areas due to differences in immunity levels and behaviour. Changing patterns of growth across LTLAs in recent weeks, however, have been highly synchronised.

10. It is possible that heterogeneity in the accumulation of immunity would be better observed at a finer scale than LTLA. Analysis from one SPI-M-O group suggests that the highest

[1] Unexposed populations and potential COVID-19 burden in European countries; pre-print by Chapman *et al*.

number of positive cases are now reported in the least deprived IMD deciles, rather than the most deprived deciles as was the case before September. There are also indications that infections in secondary-school age children may be overtaken by those of primary school age. This would be consistent with the expected pattern in which immunity would accumulate fastest in the highest risk groups.

11. In recent weeks, observed patterns of growth have differed depending on whether the proportion of cases that are positive or the number of positive cases are considered, suggesting there are changes in the patterns of testing behaviour.

12. Although the total number of negative tests are available at an aggregate level by LTLA and age group, further details such as IMD are not included. Having the same level of detail provided for negative tests as for positive tests would allow for hypotheses to be tested, such as changes in testing patterns influencing the observed shift in IMD of cases.

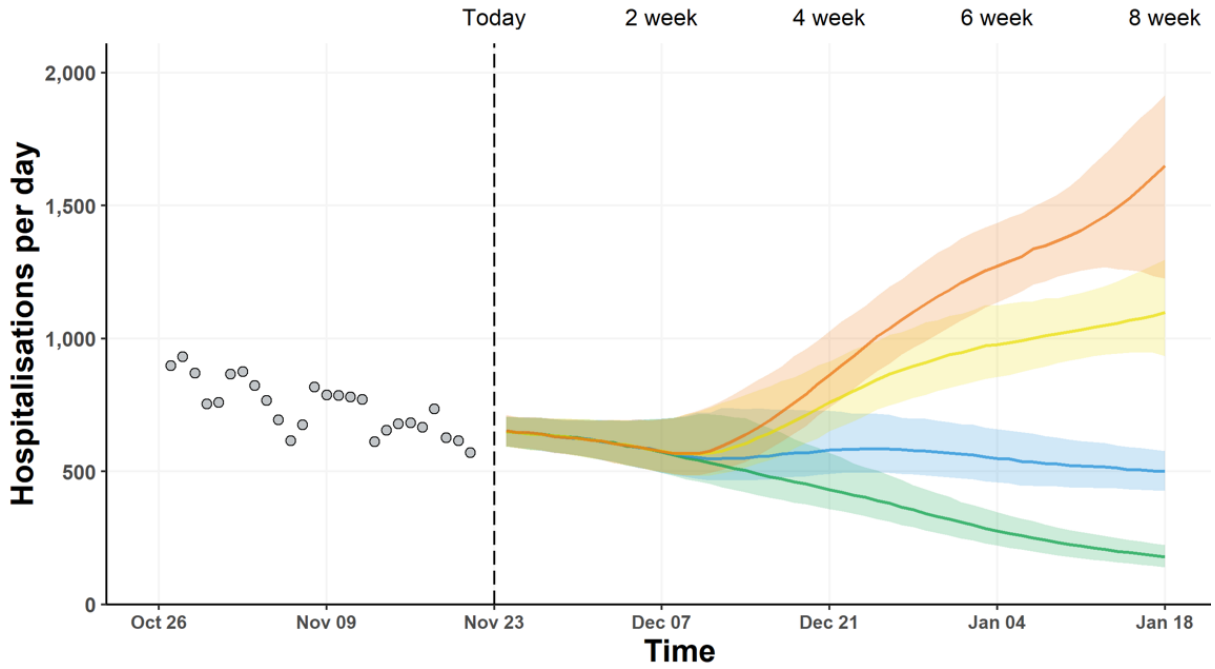
Looking ahead to the festive period

13. Each week, SPI-M-O combine estimates from several independent models to project the trajectory of the epidemic **if no further changes in behaviour or policy take place**. They represent what the trajectory might be if the epidemic continued to follow the trends seen in the latest available data up to 22nd November. **They are not forecasts or predictions** and cannot fully reflect recent changes in transmission that have not yet filtered through into surveillance data. These are released separately as SPI-M-O medium-term projections.

14. Three of these same models have been used to explore the potential impact of a range of scenarios following changes in transmission. These scenarios assume the R value changes to 0.9, 1.1, 1.3, or 1.4 on 6th December[2], and that that behaviour change is constant for a further six weeks. These reflect scenarios that SPI-M-O deem possible given potential changes in behaviour in the lead-up to and over the festive period. These scenarios are shown for daily hospital admissions in England in Figure 1 (R = 0.9 – green; 1.1 – blue; 1.3 – yellow; 1.4 – orange).

[2] In each of these scenarios, the R value will continue to change over time as vaccination and infection reduce the number of people who remain susceptible, or as immunity wanes.

Figure 1: Combined eight-week scenarios for daily hospital admissions in England over a range of R values (0.9 – green; 1.1 – blue; 1.3 – yellow; 1.4 – orange) reflecting the possible impact of changes in behaviour in the lead-up to and over the festive period. All scenarios show interquartile ranges of model combinations as the shaded band.



15. As Figure 1 shows, an increase in R value to 1.3 or 1.4 could still result in a substantial number of hospital admissions. A period with R around 1.1 would result in a similar number of hospital admissions to current levels, the increase in mixing being counter-acted by the ongoing vaccination and booster programme as well as natural infection.

16. It is highly likely that there will be a change in contact patterns over the festive period. It is not necessarily the case that the number of contacts will increase – as schools and workplaces are largely closed over this period, it is more likely that the overall level of contacts in the population falls. During the festive period, however, there is typically increased mixing across generations and between networks that may not normally meet. This is accompanied by activities, such as increased shopping or work parties, as well as increased travel across the country. This may be amplified this winter, given limited opportunities for mixing last December.

17. SPI-M-O agrees that the risk of SARS-COV-2 transmission over the festive period could be reduced through greater use of lateral flow tests (LFTs), both before and after meeting with family and friends. This is particularly important when socialising with older and vulnerable groups, including those in care homes. While the vaccination programme has greatly reduced the risks of COVID-19 relative to last year, these groups remain at high risk of severe outcomes. As immunity will have waned over the past year, booster vaccinations before events will be particularly important for older and vulnerable people.

18. Where possible, LFTs should be treated as a group diagnostic tool within households or following a common exposure event. If each person in a household is tested at the same time before an event, for example, there would be greater confidence in an individual negative test result if everyone in that group tested negative. If, however, at least one person tests positive, then there is a higher likelihood that another person in the group is also infected, despite a negative test result, and the entire household should refrain from going to the event.

19. For those traced as a contact of a positive case, daily LFTs may also help to manage risks and inform decisions on whether to socialise with others or meet older family members. It is possible that such lateral flow testing is more useful and has potentially greater impact when the R value is around 1, as smaller interventions can make the difference between growth and decline than when the R value is high.

20. It is critical that people do not solely rely on LFTs. Other seasonal diseases, such as influenza, remain a risk and it would be prudent for those with symptoms to avoid exposing others to infection, even if they test negative for COVID-19. Reinforcing positive messaging around the impact of other interventions, such as ventilation and face coverings, will also help to reduce transmission risks this winter.

Determinants of endemicity

21. SPI-M-O has also considered the various determinants of COVID-19 endemicity for the longer-term future. These will likely include, but are not limited to, the efficacy and duration of immunity to SARS-CoV-2 (both naturally- and vaccine-acquired), the impact of vaccination and booster programmes, surveillance and control mechanisms and testing regimes, and the emergence of variants.

22. It will take at least a further five years for COVID-19 to settle to a predictable endemic state and the path to endemicity will be critically dependent on the rate of waning of immunity and chosen policies on vaccination and boosting. Assuming no intervention other than vaccinations, if immunity to SARS-CoV-2 wanes quickly, endemicity will be reached faster, but this will also lead to higher prevalence levels once reached and thus a greater burden on health and care services. On the other hand, if immunity wanes more slowly, it is possible that endemic levels of SARS-CoV-2 may settle at lower levels, but over a much longer time frame.

23. Current modelling suggests that the path to endemicity is dependent on how long immunity to SARS-CoV-2 lasts; whether that is different for natural infection (generally longer-lasting) compared with vaccine-induced immunity (generally relatively short-lived); and

what protection booster vaccinations provide (with increasing confidence in the impact of boosters, but with the extent of waning post- boosters unknown). Repeated vaccination may be required to maintain sufficient vaccine-derived immunity for future COVID-19 control. It is a realistic possibility that, over the next five years, there will be epidemics of sufficient size to overwhelm health and care services.

24. Monitoring SARS-CoV-2 infections across age groups over time will be important for understanding immunity and its relationship with endemicity. If several exposures to the virus from a young age are needed to build up sufficient immunity, it is likely that older age groups will remain more vulnerable as their immunity wanes.

25. It is highly likely that continuation of active management of SARS-CoV-2 will be required for the long-term. How much vaccination and boosters, and what other interventions (testing, ventilation, isolation of cases, etc.) are required over the next five to ten years will be driven by factors that are, as yet, unknown. These include the longer-term effectiveness of vaccines and their boosters, the nature and duration of immunity after repeated infection, and the ongoing evolution of the virus.

26. When considering these long timeframes, SPI-M-O agrees that observational cohort studies should be set up / maintained to ensure future decisions can be based on strong evidence. Understanding COVID-19 over a period of several years, where individuals have multiple exposures, infections, vaccinations, etc. and allowing that natural history of infections to be studied, is critical to understanding long term management options.

27. The ONS COVID-19 Infection Study (CIS) is another example of a survey of that SPI-M-O would endorse for continuation or even expansion, for example to include multiplex-PCR tests. It is the most reliable data for surveillance.

28. Testing for SARS-CoV-2 infection will also remain a key data stream, both for surveillance and control purposes. SPI-M-O considered two sorts of tests; LFTs and PCR tests, each of which have uses for both control and surveillance depending on the context or setting.

29. For the control of outbreaks, the identification and isolation of primary cases is key for preventing the spread of disease. In these cases, single or multiple LFTs are more effective than PCR tests, thanks to their fast turnaround times, significantly lower cost, and focus on identifying cases when infectious. This will be the case irrespective of setting, whether within the community or within institutions (such as schools, hospitals, care homes etc.) as the delay between test and result for PCRs can make them ineffective for control, particularly in the community.

30. PCR tests, however, will still be required, both in institutional settings and more generally in the community to allow sequencing to be carried out and thus identification of any new variants of concern (VoCs). If this sort of surveillance is *only* conducted within hospital environments, such a VoC might already be well-established in the community before it is identified and thus be beyond containment and management. A random sampling strategy for positive LFTs that then go on to have a PCR test could reduce costs and burden on any future testing system.

31. Early testing will also be critical for treatment. For example, treatments, such as antivirals or other therapeutics, will require a test early in the infection to confirm SARS-CoV-2 (or a specific variant) is the cause and thus prevent hospitalisation effectively. Careful optimisation of the future testing operations strategy will be needed to ensure these different aspects (surveillance, control, treatment) are covered successfully.

32. SPI-M-O agrees that, while useful and low-intensity, wastewater surveillance is not sufficient alone for wider surveillance of SARS-CoV-2 infections. Its usefulness will likely be in combination with other methods of surveillance.

33. In the absence of a new VoC, SPI-M-O agrees that is it possible for the UK to reach an endemic state of SARS-CoV-2 once sufficient immunity in the UK population has been established, even if this is not the case globally.

Annex: PHIA framework of language for discussing probabilities