

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

*Date: 26<sup>th</sup> January 2022*

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

## Considerations for medium- to longer-term epidemiological patterns of SARS-CoV-2

1. SPI-M-O previously considered the potential determinants of endemicity for COVID-19<sup>1</sup>. In terms of epidemiological dynamics for both the next few months and future years, SPI-M-O has identified three key aspects to consider over the medium- to longer-term, which are:
  - The emergence of new viral variants;
  - The replenishment of the pool of susceptible people through births, the waning of immunity after vaccination, and the waning of immunity after infection; and
  - Temporal changes in contacts' mixing patterns or seasonality.
2. Waning of protection and seasonality are intrinsic to the periodicity of any future epidemic waves of infection whereas the emergence of variants of concern (VoCs), due to antigenic evolution and their impact on disease dynamics, will occur more randomly and be much harder to predict. SPI-M-O believes that future waves are almost certain.
3. The emergence of new **viral variants** is currently the dominant driver and is the biggest unknown of these three. It is not possible to predict how a future variant may present in terms of severity, growth advantage, or how it might interact with the immune landscape and, thus what waves of infections, hospitalisations, or deaths may result. To date, there have been clear differences in transmissibility and pathogenicity between the alpha, delta, and omicron variants, and no assumptions can be made about those characteristics for any potential novel variant or any resulting wave. Strong surveillance systems, including widespread testing, would need to be in place to ensure such a variant was detected early and subsequently investigated before hospitalisations began. It is fortunate that, so far, each successive infection wave in the UK has alternated in S-gene status allowing S-gene target failure (SGTF) to provide an early warning signal; there are no guarantees this would happen again. There is currently no evidence to suggest that future variants will be intrinsically less severe. There is also the potential for co-circulation of multiple variants.
4. The seasonal patterns of other respiratory viruses (most notably influenza) are global. Any pattern in the UK should be regarded as temporary until the global epidemiology of SARS-CoV-2 has settled, which might take a decade or more depending on vaccination usage and return to travel patterns.

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<sup>1</sup> [SPI-M-O: Consensus statement on COVID-19, 24 November 2021](#); SAGE 97 29 November 2021

5. As yet, understanding of **waning of immune protection** is necessarily limited. For example, the precise half-lives of decay, the levels to which protection falls, differences between protection against infection versus severe disease, etc. are still only partially characterised as data accrue with the passing of time and the emergence of new variants. These parameters may be different for those individuals who have been infected only, infected and vaccinated, vaccinated only, had multiple infections (especially for those exposed to different variants), and according to what vaccines they have received, etc. In the shorter term, however, the timing of waning may occur in quite a synchronised manner, after the recent mass booster programme, and may have implications for the timing of the next wave; the more synchronised such waning, the greater the capacity for larger waves.
6. The **population distribution of susceptible individuals** – among whom SARS-CoV-2 infections will be able to circulate – will take time to resolve over the next few years. This susceptible pool will increase accordingly through antigenic evolution (i.e. emergence of new viral variants) and waning of both natural and vaccine-induced immune protection. This is highly likely to differ by age, with particular concern as older people lose immune capacity. Different population vaccination strategies will also affect which groups experience transmission over time; for example, if all adults are vaccinated, infections will naturally predominate in children, whereas vaccination in only those who are older and more vulnerable will lead to infections circulating amongst unvaccinated age groups who mix with others and have more contacts (such as children and younger adults). If mass vaccination of children continues, they will play a smaller role in transmission and school holidays will consequentially have less of an impact in reducing infections.
7. Both the alpha and omicron waves in the UK began at the end of the year but it is likely these waves gathered pace as a result of each variant's advantage at that time, rather than any intrinsic seasonality; in contrast, delta established in the UK in spring during a prolonged period of non-pharmaceutical interventions and vaccination roll out. Nevertheless, there is likely to be decreased transmission in summer months with less mixing happening in both workplaces and schools as people take holidays and any contacts likely happening in less enclosed settings. This **intrinsic seasonality** means there may be natural fluctuations in transmission that lead to a higher probability for waves in the autumn and winter than in the summer, as seen for many respiratory viruses. The dynamics that happen over the course of one season will also likely create effects that mean that same pattern repeats again; the natural rhythm of such waves will take time to settle. It is likely that such seasonality will not be the main driving factor of future epidemic waves for some years; repeated vaccination of large numbers of individuals annually, for example, and novel variants arising globally likely dominate the medium-term.
8. The potential for interaction between respiratory pathogens and its importance for determining seasonality is not well understood. If and when influenza recommences, large waves may impact SARS-CoV-2 patterns.
9. The interactions between these three factors means that the **next few years will be highly uncertain**, and future outbreaks and waves will likely be noisy as things settle down. A

steady, predictable pattern (as seen for respiratory syncytial virus) may be many years away. The scale of epidemic potential in the system means large future waves of infection that need active management to prevent detrimental pressure on the health and care sector are, at least, a realistic possibility (high confidence) or likely (medium confidence). To enable preparation for and early identification of such a wave, monitoring and surveillance, such as community testing and the ONS COVID-19 Infection Survey, need to be maintained to support future decision making.

### Annex: PHIA framework of language for discussing probabilities

