

**Fifty-first SAGE meeting on Covid-19, 13th August 2020**  
**Held via Zoom**

**Summary**

1. It is likely that incidence is static or may be increasing slowly, meaning R may be above 1 in England. (Low Confidence)
2. SAGE agreed that more analysis is needed on compliance rates of people self-isolating with confirmed Covid-19 in the UK.
3. The total mass of droplets generated from singing is of a similar order of magnitude to speaking at a comparable volume for the same duration of time. However, singing produces 2-3 times more aerosol mass than speaking at a similar volume, even though due to high variability the difference is not statistically significant. Singing loudly increases aerosol production 20-fold. (High confidence)
4. Some individuals produce a much greater mass of droplets and aerosols than others. (Moderate confidence)

**Situation update**

5. SAGE agreed on the value of bringing together datasets to fully analyse impacts of shielding on the vulnerable, which will help to produce a more holistic view of the impact of shielding's health and societal impacts. This work is currently underway and will be brought to SAGE within 2 weeks.

**ACTION: ICJU** to review international comparators for analysis of impact of shielding on the vulnerable by 27 August.

6. SAGE approved R and growth rate estimates. The latest estimate of R for the UK is 0.8 to 1.0, while the daily growth rate estimate is -4% to -1%. As previously, these estimates mask wide regional variation across the country and should be treated as a guide to the general trend.
7. In England, R is estimated at 0.8 to 1.0, with a daily growth rate of -4% to 0%. However, these estimates of R rely on lagged data (e.g. number of deaths).
8. Analysis of pillar 2 testing data suggests a daily growth rate of around -2% over the past 2 weeks in England. However, this should be treated with caution given changes in population testing, particularly in areas of local intervention where testing volumes have increased.
9. As previously, SAGE does not have confidence that most regional R estimates are sufficiently robust to inform decisions, since they are based on low numbers and/or are dominated by clustered outbreaks.
10. The effectiveness of self-isolation depends on adherence, which differs between areas and different groups of the population. Understanding variations in levels of adherence is important in assessing the likely effectiveness of actions.
11. Further evidence is needed to determine how adherence varies with the length of an isolation period, strategies to test contacts of confirmed cases, and practical incentives for isolation. SAGE reiterated that a test and release strategy could be implemented as per previous papers.
12. SAGE again reiterated the public health benefits of keeping incidence as low as possible.

**ACTION: SPI-B** to offer support to **JBC** to identify ways to understand and improve adherence to self-isolation by 20 August. Test and release strategies have previously been proposed by SAGE.

**ACTION: PHE** to share evidence on effectiveness of local NPIs to SAGE and SPI-M; **dCMO** to consult with SPI-M on the most relevant data by 20 August.

### **Aerosol transmission**

13. SAGE endorsed the SWI consensus paper – subject to amendments to clarify advice on aerosol spread and distance, to provide greater clarity on potential options for action, and noting that some of the work has not yet been completed (e.g. aerosol generation from instruments).
14. The relative contribution to transmission from droplets and aerosols is still unknown. Transmission risk is assumed to be related to mass of droplets and aerosols, but this is not confirmed (moderate confidence).
15. The total mass of droplets generated from singing is of a similar order of magnitude to speaking at a comparable volume for the same duration of time. Droplet deposition onto surfaces from singing and speech did not generally extend beyond 2m from the subject. Droplets were not detected from wind instruments.
16. Singing produces 2-3 times more aerosol mass than speaking at a similar volume (moderate/low confidence), however due to high variability between individuals the difference is not statistically significant. Very loud singing can produce 20-30 times more aerosols than speaking (high confidence). The amount generated is also dependent on numbers of singers. Analysis of aerosol production from wind instruments has still to be completed.
17. Some individuals produce a much greater mass of droplets and aerosols than others to such an extent that breathing from these individuals generates as much material as singing at the loudest volume does by others (moderate confidence).
18. Social distancing measures are important for reducing the risk from both droplets and aerosols. Although risk of transmission from droplets is significantly reduced beyond 2m, aerosols can travel further than droplets and so ventilation is also an important mitigation measure to reduce risk of aerosol transmission. It is unclear over what distance relevant aerosol transmission can occur.
19. The number of performers is also a factor in the mass of aerosols produced.
20. Consideration should be given to the contribution of potential aerosols from audiences and performers, as well as the volume of singing, duration of performance, and size of the audience (for example cheering which may have an impact).

**ACTION: SWI** to update 'Aerosol and Droplet Generation from Singing, Wind Instruments and Performance Activities' paper to reflect clarification on distance and aerosols and give greater information of options for actions by 17 August; when amended **SAGE secretariat** to circulate as endorsed to DCMS and CO.

### **List of actions**

**ICJU** to review international comparators for analysis of impact of shielding on the vulnerable by 27 August.

**SPI-B** to offer support to **JBC** to identify ways to improve understanding and adherence to self-isolation by 20 August.

**PHE** to share evidence on effectiveness of local NPIs to SAGE and SPI-M; **dCMO** to consult with SPI-M on the most relevant data by 20 August.

**SWI** to update 'Aerosol and Droplet Generation from Singing, Wind Instruments and Performance Activities' paper to reflect clarification on distance and aerosols and give greater information of options for actions by 17 August; when amended **SAGE secretariat** to circulate as endorsed to DCMS and CO.

### **Attendees**

**Scientific Experts (18):** Patrick Vallance (GCSA), Chris Whitty (CMO), Andrew Curran (CSA HSE), Charlotte Watts (CSA DfID), Robin Grimes (CSA MoD Nuclear), Tom Rodden (CSA

DCMS), Yvonne Doyle (PHE), Jonathan Van-Tam (dCMO), Jenny Harries (dCMO), Graham Medley (LSHTM), John Edmunds (LSHTM), Lucy Yardley (Bristol/Southampton), Brooke Rogers (KCL), Ian Diamond (ONS), Venki Ramakrishnan (Royal Society), David Crossman (Chief Scientist Scotland), [REDACTED], Shaun Fitzgerald (Cambridge)

**Observers (9):** [REDACTED] Vanessa MacDougall (HMT), [REDACTED]  
[REDACTED]  
Julian Fletcher (CO), Simon Tanner (PHE)

**Secretariat (all GO-Science) (14):** [REDACTED]  
[REDACTED]  
[REDACTED] Simon Whitfield, [REDACTED]

**Total: 41**