Sixty-third SAGE meeting on Covid-19, 22nd October 2020
Held via Zoom

Summary

1. There is some limited evidence that the rate of growth in new infections may have slowed in some parts of the country, however incidence and prevalence across the UK continue to increase exponentially. The latest estimate of R for the UK is 1.2 to 1.4.
2. Estimates from SPI-M suggest that there are between 53,000 and 90,000 new infections per day in England. This represents a significant and growing burden of morbidity and mortality. Even if significant interventions sufficient to bring R below 1 were imposed immediately, the number of deaths would continue to rise for at least two weeks (high confidence).
3. Evidence continues to suggest that super-spreading events may play a very important role in the epidemic. The highest risks of transmission, including those from super-spreading events, are associated with poorly ventilated and crowded indoor settings with increased likelihood of aerosol emission.
4. Mental health factors may impact people's ability and motivation to adhere. More positive approaches to sustaining adherence are needed which should focus on enabling members of the public to engage sustainably with infection control behaviours, rather than seeking to ensure compliance with rules by relying on enforcement.

Situation update

5. The epidemic continues to grow exponentially, and the latest estimate of R for the UK is 1.2 to 1.4. The daily growth rate estimate for new infections is +3% to +6%, which suggests a doubling time for new infections of 14 to 18 days, but it could be faster in some regions and age groups.
6. These estimates rely on lagged data, and mask wide regional variation in the number of new infections and how transmission is changing across the country. They should therefore be treated as an indication of the general trend.
7. The latest estimate of R for England is 1.2 to 1.4, while the daily growth rate estimate is +3% to +5%. R is almost certainly above 1 in all regions of England and in Scotland, Wales and Northern Ireland.
8. There is some limited evidence that the rate of growth in new infections may have slowed in some parts of the country. However, this has not yet been reflected in hospital admission or death data, which although lagged are more reliable. A growth rate that is lower but still positive means the epidemic continues to grow exponentially.
9. Estimates from SPI-M suggest that there are between 53,000 and 90,000 new infections per day in England. This represents a significant and growing burden of morbidity and mortality. Even if significant interventions sufficient to bring R below 1 were imposed immediately, the number of deaths would continue to rise for at least two weeks (high confidence).
10. The latest ONS infection survey estimates that from 10th to 16th October an average of 433,300 people had COVID-19 in the community in England, which is a significant increase on the previous estimate. It is highly likely that incidence and prevalence have continued to grow since. The data do not include people in care homes, hospitals, or university halls of residence.
11. Reports suggest deaths in care homes are starting to rise, especially in regions of England with highest prevalence. Given the lagged data and the exponential rise, it is likely that the outbreaks in these settings are already substantial. Frequent testing in

care homes, even if done with tests with lower sensitivity, has the potential to protect residents.

12. Changing patterns in testing, particularly of younger people, continue to make it hard to interpret changes in confirmed cases.
13. Some universities have reported a large increase in cases, followed by a rapid decline. However, it is not possible to determine whether this is due to changes in incidence, changes in the availability of tests, or the uptake of testing from students. There are substantial differences in the observed pattern of positive test results between institutions.
14. SAGE approved the SPI-M medium-term projections. These are not forecasts or predictions and cannot reflect recent changes in transmission which are not yet reflected in surveillance data such as hospital admissions and deaths.
15. SAGE has previously advised on circuit breakers (see SAGE 59) and noted the difficulties in estimating the conditions in which a circuit break would be most effective. Different approaches could lead to different outcomes across the UK. There are also challenges given differences in the population and regions affected by the current epidemic compared to the first wave.
16. The impact of a circuit breaker is critically dependant on how far R is reduced below 1, which partly depends on public adherence to measures. It is possible that adherence to national and regional circuit breakers would not be the same.

Impact of nosocomial infections

17. SAGE considered the contribution of nosocomial infections (those acquired in hospital) to hospital COVID-19 cases and the overall epidemic from February to July 2020.
18. Understanding this contribution is important for understanding transmission both within hospitals and in the community, including understanding the potential impact of non-pharmaceutical interventions (which will be more effective in managing the epidemic when there are fewer cases linked to healthcare).
19. Some nosocomial infections are likely to have driven onwards community transmission, as has previously been noted. It is likely to have been most significant as a proportion of transmission later in the first wave when community prevalence was low (high confidence).
20. Model estimates show that without nosocomial transmission the duration of the first wave in hospitals may have been shortened, due to fewer COVID-19 admissions in the final quarter of the first wave (medium confidence).
21. As a proportion of the overall number of cases it is relatively small (just over 1%), though it makes up a much more significant proportion of hospitalised cases. As a result, due to the age and frailty of the hospitalised population, the impact in terms of morbidity and mortality may be high (medium confidence).
22. Nosocomial transmission may not necessarily play the same role in a second wave as it did in the first. There has been a significant amount of work in hospitals and elsewhere including better infection prevention and control (IPC) measures, and increased testing; various other factors will also affect how significant nosocomial transmission is.
23. There are varied estimates of the size of the nosocomial infection proportion, reflecting the difficulties of a good case definition. Given the centrality of this issue the paper would benefit from additional views from groups that have looked at this before being finalised.

ACTION: Nosocomial group to review paper 'The contribution of nosocomial infections to the first wave' to consider definition of cases and suspected cases and to incorporate appropriate context, with input from Calum Semple and Susan Hopkins.

Routes of transmission

24. SAGE endorsed the paper 'SARS-COV-2 transmission routes and environments – subject to minor amendments.
25. As previously (see SAGE 40), transmission risk depends on several factors, including contact pattern (duration of contact, proximity, activity), environment (outdoor/indoor, ventilation), and host-related infectivity/susceptibility pattern (severity of illness, age). These risk factors are influenced by socioeconomic factors (i.e. crowded housing, job insecurity, poverty). The highest risks occur when multiple risk factors exist together.
26. SARS-CoV-2 can be transmitted by three main routes: close-range respiratory droplets and aerosols; longer range respiratory aerosols; and direct contact with surfaces contaminated with virus. Close-range transmission is likely to be the most significant but there is insufficient evidence to confidently distinguish the relative importance of the different routes or how they vary between settings (medium confidence).
27. Transmission is strongly associated with proximity and duration of contact in indoor environments (high confidence). It is possible for SARS-CoV-2 to be transmitted at distances of more than 2 metres (medium confidence).
28. There is good evidence that the virus can survive in environments for long periods, however there is little epidemiological evidence of transmission from residual virus in an environment several hours later (medium confidence).
29. As previously advised, the highest risks of transmission, including those from super-spreading events, are associated with poorly ventilated and crowded indoor settings with increased likelihood of aerosol emission (such as loud singing/speech, aerobic activity) and where no face coverings are worn (such as bars/nightclubs, family gatherings, indoor dining, gyms and exercise classes, choirs and churches) (high confidence).
30. Evidence continues to suggest that super-spreading events may play a very important role in the epidemic, with some estimates suggesting that fewer than 20% of infections lead to approximately 80% of secondary cases. This increases the importance of identifying and mitigating those settings where multiple risk factors come together, where large outbreaks are likely to occur.
31. SAGE reiterated that the use of backwards contact tracing to identify where outbreaks occur is an important tool. If done routinely this could provide valuable evidence on the characteristics of transmission settings.
32. The highest viral load is observed during the first week of symptoms (especially day 0-5), declining after that. Pre-symptomatic and asymptomatic transmission occurs and may play a significant role in facilitating transmission (medium confidence).
33. The role of faecal and urinary shedding in SARS-CoV-2 transmission remain to be fully understood, though faecal-oral transmission appears to be limited.
34. Tailored control and recovery measures are required to address the greater needs of disadvantaged people and communities arising from household and occupational risks, such as prolonged working hours in close proximity to others and/or high-risk occupations, use of public transport, and household crowding (high confidence).

Winter modelling and seasonality

35. Several factors are likely to combine to exacerbate the epidemic during winter, including the continued susceptibility of the population; the direct effect of environmental variables (such as temperature and UV light); the indirect effect of poor weather leading to people spending more time indoors; and other seasonal changes in contact rates due to school

opening and seasonal festivals. Changes in susceptibility are likely to have a greater impact on transmission than environmental factors (high confidence).

36. The direct effect of winter environmental conditions on transmission is likely to be small. Winter conditions will increase viral persistence on outdoor surfaces due to reduced temperatures and UV levels; in unheated indoor environments due to lower temperatures; and in day-time outdoor aerosols due to reduced UV levels (high confidence).
37. However, the outdoor environment is not dominant in SARS-CoV-2 transmission, and indoor environmental conditions are more constant.
38. There is limited data to suggest that contacts increase in the winter months (low confidence) and that social contacts may increase towards the end of the year and then fall again in January (low confidence). Individuals appear to spend longer indoors during the winter, when ventilation rates in buildings are lower (medium confidence).
39. The seasonal impact on mental health should be considered when looking at winter risks.
40. Further evidence is needed to assess whether a vitamin D deficiency will impact any seasonal effects of SARS-CoV-2. There are some suggestions that those more likely to self-isolate, and vulnerable groups may have a higher incidence of vitamin D deficiency, potentially increasing the likelihood of adverse risks should they become infected. Other groups have looked at the Vitamin D issues and it is important that views are consistent, or if they are not this is explained.
41. SAGE has previously advised on the risk of co-infection with influenza over winter which is likely to place additional strain on hospital capacity and resources (see SAGE 59). There is no evidence, at present, to suggest that other physiological changes that may occur over winter will affect the severity of disease.

ACTION: NERVTAG to review consistency of advice on Vitamin D with advice from other bodies.

Role of children in transmission of SARS-CoV-2

42. SAGE discussed the paper 'Role of children in transmission of SARS-CoV-2'. This paper has not been endorsed and will be reviewed by the Children's task & finish group before being finalised.
43. Evidence suggests that pre-school and primary school-aged children are not currently playing a driving role in transmission of SARS-CoV-2, however some emerging evidence suggests that their role may be greater than previously thought, particularly within households (low confidence). Older children are likely to play a greater role in transmission than younger children, which could be either for biological or sociological reasons.
44. As children are less likely to be susceptible to symptomatic disease than adults, understanding their role in transmission is best done through population-based serological or swabbing data.
45. The levels of seroprevalence in children (0-17 years age) appears similar to that observed for adults, based on data from May to September. Seroprevalence is lower in pre-school children and probably in primary school-aged children, compared with secondary-school aged children.
46. The role of children in household transmission remains unclear. There is some evidence that children (particularly secondary school children) are more likely to introduce infection into the home than adults and that they are more infectious to other household members

than adults. ONS data indicates that households with school-age children have experienced a more rapid rise in infections over recent weeks when compared to households where all children are of pre-school age.

ACTION: Children's task & finish group to review recent population-based swabbing and serological data and provide an updated consensus view and wording on the role of children in transmission, with input from Russell Viner, Ian Diamond, John Edmunds and Calum Semple. This should differentiate children of different age groups.

ACTION: SAGE participants to provide input to ONS on design of its school's study, if required.

Positive strategies for sustaining adherence to infection control behaviours

47. SAGE endorsed the SPI-B papers on positive strategies for sustaining adherence to infection control behaviours – subject to minor amendments.
48. More positive approaches to sustaining adherence are needed, avoiding blame and focusing on enabling members of the public to engage sustainably with infection control behaviours, rather than seeking to ensure compliance with rules by relying on enforcement.
49. Ways to do this could include providing positive feedback; emphasising that everyone has a role to play; promoting positive alternatives to restricted activities; helping people change their environments and to identify risky situations; focusing on reducing infection risk rather than assessing compliance; and targeting more intensive information and practical support for adherence.
50. The language of 'fatigue' around adherence covers a broad range of considerations, and better understanding can be reached if this is broken down into the specific reasons for non-adherence.
51. Young people are adhering less and have lower trust in government relative to the rest of the population. Mass media and social interventions do not have as large an effect on young people, but interventions in environments may be more useful. Young people are also more likely to trust in messages from non-government sources, such as charities, celebrities, sports clubs and commercial brands.
52. There is evidence that mental health factors may play a greater role among young people, particularly relating to depression, and that this may impact on their capability and motivation to adhere.
53. There is a risk of alienating or stigmatising people or groups by explicitly targeting them, instead communications should only target specific groups when generic communications are not sufficient and care should be taken to avoid these negative outcomes.
54. SAGE noted the benefits of the Community Champions programmes. Community Champions promote behaviour risk communication, support health facilities, identify and facilitate context-specific solutions. They are also more likely to reach isolated or marginalised groups to communicate health messages and offer support.
55. Community Champions are likely to be effective in contexts where trust in government is low and where community engagement is required to build trust, address disinformation, and ensure interventions are appropriate to local contexts. To achieve this, Community Champions need autonomy to secure participation and identify activities that meet the needs of the community.
56. It may be helpful to draw from the positive evidence and examples recent examples from the UK, such as Bolton and Bradford as well as evidence from other outbreaks.

57. For substitution, it would be helpful to have an Appendix which had possible substitutions to supplement the higher level outlining of principles.

ACTION: SPI-B to update paper to include table of substitution approaches that practitioners could use.

List of actions

Nosocomial group to review paper 'The contribution of nosocomial infections to the first wave' to consider definition of cases and suspected cases and to incorporate appropriate context, with input from Calum Semple and Susan Hopkins.

NERVTAG to review consistency of advice on Vitamin D with advice from other bodies.

Children's task & finish group to review recent population-based swabbing and serological data and provide an updated consensus view and wording on the role of children in transmission, with input from Russell Viner, Ian Diamond, John Edmunds and Calum Semple. This should differentiate children of different age groups.

SAGE participants to provide input to ONS on design of its school's study, if required.

SPI-B to update paper to include table of substitution approaches that practitioners could use.

Attendees

Scientific Experts (33): *Chris Whitty (CMO), Jenny Harries (dCMO), Jonathan Van Tam (dCMO), John Aston (HO CSA), Andrew Curran (HSE CSA), Ian Diamond (ONS), Susan Hopkins (PHE/NHS T&T), Ian Young (Health NI CSA), Graham Medley (LSHTM), John Edmunds (LSHTM), Catherine Noakes (Leeds), Jeremy Farrar (Wellcome), Calum Semple (Liverpool), Ian Boyd (St. Andrews), Wendy Barclay (Imperial), Jim McMenamin (Health Protection Scotland), Maria Zambon (PHE), Rob Orford (Health, Wales CSA), Mark Walport (UKRI), Mark Wilcox (Leeds), Lucy Yardley (Bristol and Southampton), Charlotte Watts (DfID CSA), Yvonne Doyle (PHE), Peter Horby (Oxford), Fliss Bennee (Technical Advisory Cell, Wales), Muge Cevic (St. Andrews), Angela McClean (MoD CSA), Nicola Steedman (Scotland), Steve Powis (NHS England), Chris Bonnell (LSHTM), Atiya Kamal (Birmingham), Michael Parker (Oxford).*

Observers (15): [redacted] *Ben Warner (No.10), Julian Fletcher (CO),* [redacted] *Vanessa MacDougall (HMT),* [redacted] *Paul Monks (BEIS CSA), Phil Blythe (DfT CSA), Alan Penn (MHCLG CSA),* [redacted] *Thomas Waite (JBC), David Lamberti (DHSC), Rupert Shute (HO Deputy CSA), Emma Payne (CO),* [redacted] *Dougal Hargreaves (DfE CSA).*

Secretariat (all GO-Science) (15): [redacted] *Simon Whitfield,* [redacted]

Total: 63