

## **Thirty-second SAGE meeting on Covid-19, 1 May 2020**

### **Held via Zoom**

#### **Summary**

1. SAGE discussed the test and trace system in development. It agreed that at least 80% of contacts of an index case would need to be contacted for a system to be effective.
2. SAGE had high confidence that isolation of contacts of individuals who have Covid-19 within 48 hours was desirable (but the practicality of this will be checked against international experience).
3. Ideally, testing should be so rapid that contacts of an index case are only asked to isolate on the back of a positive test result in the index case.
4. There is currently insufficient evidence to determine whether the testing of index case contacts would significantly impact the epidemic compared with isolation alone (nor is it clear when to test to avoid false negatives).

#### **Maximum tolerable time to notification and isolation of contacts**

5. The modelling assumes the index case is immediately isolated.
6. Time periods of 0, 24, 48, and 72 hours to the isolation of contacts were modelled (on top of a 48-hour lag for contact tracing).
7. Modelling using app-based tracing assumes contacts are contacted immediately.
8. Modelling suggests that any delay beyond 48-72 hours total before isolation of contacts, results in a significant impact on R. The sooner it is done the better.
9. There is considerable biological and epidemiological uncertainty which has the potential to impact the model. There is uncertainty around potential for transmission before symptom onset: if this is significant (which we believe it is), then the impact of tracing and isolation is much more sensitive to delay.

#### **Optimal number of contacts and tracing time**

10. The objectives for a test and trace system should be to isolate as many contacts as possible as quickly as possible while minimising false positives (i.e. isolating contacts unnecessarily because the index case does not have Covid-19).
11. SAGE agreed that at least 80% of contacts of an index case would need to isolate for an effective test and trace system.
12. Tracing of contacts should begin as soon as a new suspected case is identified, in parallel to testing. All individuals declaring symptoms should be tested as quickly as practicable.
13. SAGE agreed, with high confidence, that for the test and trace system to be effective, isolation of contacts of individuals with Covid-19 within 48 hours was desirable but recognised that international experience should be studied.

#### **Isolation of contacts linked to testing**

14. SAGE advised that, in the initial phase of the test and trace programme (i.e. over the summer months), contacts should be requested to isolate as soon as they are identified (i.e. based on symptomatic notification), even if test results for the index case are not yet available. Contacts can be released from isolation if the index case tests negative.
15. The aim should be to develop the capability to test index cases in less than 24 hours. When this is possible, contacts could be requested to isolate only when the index case has tested positive.
16. It is considered essential that this testing capability is reached before the autumn/winter flu season when a large number of those reporting symptoms may not have Covid-19.
17. UK test and trace performance and targets should be benchmarked against relevant comparator countries to test the practicability of the proposal against best international experience (e.g. S. Korea, Germany). Final advice on timings will be taken once this information has been reviewed.

18. There are concerns that while the PCR for the test is highly accurate, swabbing – particularly home swabbing – might produce significant false negatives.
19. SAGE advised it is likely that more than one test will be required to confirm that an index case is not positive before contacts can be released, to reduce the risk of releasing potentially infectious people from isolation.
20. A high level of adherence to requests to isolate is required for the system to be effective.
21. Risks include individuals becoming less willing to comply if they are repeatedly asked to isolate and if they are impacted financially from being asked to isolate.
22. The ability to test and release contacts could help mitigate this risk. An accessible offer of financial support to those in need could reduce the risk of non-adherence.
23. The behavioural science opinion was that contact isolation based on a positive test is preferable to contact isolation based on symptoms followed by fast release (<48h) with a negative test.
24. Behavioural scientists also noted that contacts of symptomatically-positive cases could be given different advice to those of test-positive cases to maximise adherence. Over time, both the app and the manual tracing system will be able to stratify risk of infection due to length and nature of contact with an individual who has Covid-19.

### **Testing of contacts**

25. The ability to test and release contacts is desirable from a behavioural (and economic) perspective. However, there is currently insufficient evidence as to how this could be done effectively.
26. For example, the optimal time to test is unclear, given the lag between the point of infection and the replication of the virus to a detectable level. Also unclear is how many tests might be needed to confirm that a contact is not infected.
27. Further evidence is required to establish the relevant parameters. A study should be carried out as soon as the test and trace system is operational.
28. Systematic testing of contacts is therefore not recommended at present but should be reviewed when evidence is available.
29. In the meantime, all contacts should be requested to isolate for 14 days (and be released earlier if the index case is negative). A testing study should be undertaken to determine whether testing can be applied reliably in contacts.
30. There is also a lack of information on modes of transmission in the UK – i.e. how and where people are becoming infected – both in hospitals and in the community. A case-control study is urgently needed.
31. SAGE agreed that backwards contact tracing is part of best practice and should be incorporated into a test and trace strategy.
32. SAGE agreed that ethical issues related to testing and tracing should be examined.

**ACTION: CMO** to liaise with **NIHR** to put out a high-level call for a study on modes of community and hospital-based transmission; **PHE** to conduct a parallel study

**ACTION: CMO** to commission **Moral and Ethical Advisory Group** to produce a paper outlining ethical issues raised by the contact tracing app

**ACTION: FCO/Cabinet Office international group (Alex Ellis)** to produce a paper for SAGE by 7 May comparing international test and trace strategies – including time to test of index case; time to case isolation; whether contacts are isolated after index case tests positive or based on reported symptoms; and protocols for contact release if index case tests negative – and including summaries for key countries such as South Korea and Germany

**ACTION: Imperial** to share its paper on South Korean test and trace strategy for SAGE meeting on 7 May

**ACTION: PHE** to consider how backward contact tracing might be incorporated into the system

**List of Actions**

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**Attendees**

*Scientific experts (19): Patrick Vallance (GCSA), Chris Whitty (CMO), Jonathan Van Tam (dCMO), Andrew Curran (CSA HSE), Angela McLean (CSA MoD), Yvonne Doyle (PHE), Graham Medley (LSHTM), Neil Ferguson (Imperial), John Edmunds (LSHTM), [REDACTED], [REDACTED] James Rubin (King's), Lucy Yardley (Bristol), Peter Horby (Oxford), Ian Diamond (ONS), Ian Young (CMO Northern Ireland), Rob Orford (Health CSA Wales), Sheila Rowan (CSA Scotland), Nicola Steedman (dCMO Scotland), Jeremy Farrar (Wellcome)*

*Observers and Government officials (6): [REDACTED], [REDACTED] Ben Warner (No. 10), Dominic Cummings (No. 10), [REDACTED], [REDACTED]*

*SAGE secretariat [REDACTED], [REDACTED] Simon Whitfield, [REDACTED]*

*Total participants: 34*