



COVID-19 self-isolation changes: scientific summary

Background

On Wednesday 22 December 2021 new guidance for the [public](#) and [health and social care staff](#) was introduced to enable those who test positive for SARS-CoV-2 to reduce their self-isolation period from 10 days to 7 days. This change applies to both vaccinated and unvaccinated individuals.

The self-isolation period for those who test positive for SARS-CoV-2 includes the day their symptoms started, or the date of their positive test if they were asymptomatic (known as day 0), and the next 10 full days. It is now advised that self-isolation can end after 7 days provided the individual has 2 consecutive negative lateral flow device (LFD) antigen tests taken 24 hours apart. The first LFD test should be taken no earlier than 6 days after symptoms started, or a positive test result if asymptomatic.

This paper briefly describes the scientific rationale for the change in guidance.

Reduction in self-isolation period for people who test positive for COVID-19

Synthesis of data from biological studies and international literature reviews addressing periods of infectious virus shedding has been used to inform a recent UKHSA modelling study¹ estimating the impact of different isolation periods.

This study estimated that after 10 full days of self-isolation, 5% of people who tested positive for SARS-CoV-2 are still infectious (Table 1). By comparison, reducing the 10-day isolation period to 7 days with 2 consecutive negative LFD test results from day 6 means an estimated 6% of people are still infectious when ending self-isolation. The proportion of people estimated to remain infectious 5 days after symptom onset or a positive test is 31%, and at 14 days it is 1%.

Other scenarios modelled included 5 days of self-isolation and 5 LFD tests (on days 5-9) with self-isolation ending after a single negative test result. This increased the proportion of people infectious when released from self-isolation from 5% to 15%.

¹ Bays et al. Mitigating isolation: The use of rapid antigen testing to reduce the impact of self-isolation periods. 2021. Pre-print. Accessed <https://www.medrxiv.org/content/10.1101/2021.12.23.21268326v1>

Table 1: Output from the model of the effect of the considered scenarios on disease release into the community

Policy	Released infectious (%)	Mean time (in hours) a released person is infectious for
5-day isolation	31.4% (23.9-38.2)	65.6 (57.7-73.3)
7-day isolation	15.8% (11.9-21.0)	62.3 (56.5-69.2)
10-day isolation	5.1% (3.4-7.6)	59.3 (53.5-65.6)
14-day isolation	1.0% (0.6-1.8)	57.1 (51.4-63.1)
10-day isolation, or 1 negative test from day 7	9.2% (6.5-12.8)	61.1 (55.3-67.5)
10-day isolation, or 2 negative tests from day 6	6.2% (4.2-9.0)	60.0 (53.9-66.3)
14-day isolation, or 2 negative tests from day 6	4.1% (2.6-6.0)	61.3 (55.8-67.7)

Effectiveness of LFD tests to support reduction in isolation period

An independent national evaluation has estimated that LFD tests have a sensitivity of around 70-90%² for detecting SARS-CoV-2 and a temporal association has been identified between LFD reactivity and viral load as measured by plaque forming units on cell culture⁴.

During the course of a SARS-CoV-2 infection, viral load increases from 1 to 2 days before symptom onset, then peaks at symptom onset and in the first 5 days, indicating that this period has highest infectiousness potential³. Individuals who do not develop symptoms have the same viral trajectory but without a clear timeline.

Data from the Assessment of Transmission and Contagiousness of COVID-19 in Contacts (ATTACCC) study⁴ found that SARS-CoV-2 transmission occurs early during infection and is associated with peak viral loads. In the study false negative

² Peto et al. COVID-19: Rapid Antigen detection for SARS-CoV-2 by lateral flow assay: a national systematic evaluation for mass-testing. E Clinical Medicine 2021 May 30;100924. DOI:10.1016/j.eclinm.2021.100924

³ Cevik et al. SARS-CoV-2, SARS-CoV-1 and MERS-CoV viral load dynamics, duration of viral shedding and infectiousness – a living systematic review and meta-analysis. 2020 November. Lancet Microbe. doi: [10.1016/S2666-5247\(20\)30172-5](https://doi.org/10.1016/S2666-5247(20)30172-5)

⁴ DRAFT NERVTAG paper 29th Dec: UKHSA & NIHR ATTACCC study. Publication in preparation.

LFD test results mostly occurred 1 to 2 days **prior** to peak viral load. LFD tests became negative at approximately the same time as viral culture became negative. After peak viral load, LFD tests were significantly more likely to predict a positive culture than PCR, supporting their use in ending isolation. The authors note there will always be outliers in terms of infectiousness, and it is possible that a prolonged positive LFD may represent persistent infectiousness even in immunocompetent individuals.

These data do not include the Omicron variant of SARS-CoV-2 and it is currently not known whether the characteristics of viral shedding differ with the Omicron variant. Early evaluation of 5 LFD tests deployed by NHS Test and Trace have shown a comparable sensitivity for the Omicron variant as with previous variants⁵.

⁵UKHSA. SARS-CoV-2 variants of concern and variants under investigation in England. Technical briefing 32. 2021 December
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1042688/RA_Technical_Briefing_32_DRAFT_17_December_2021_2021_12_17.pdf