



BRIEFING PAPER

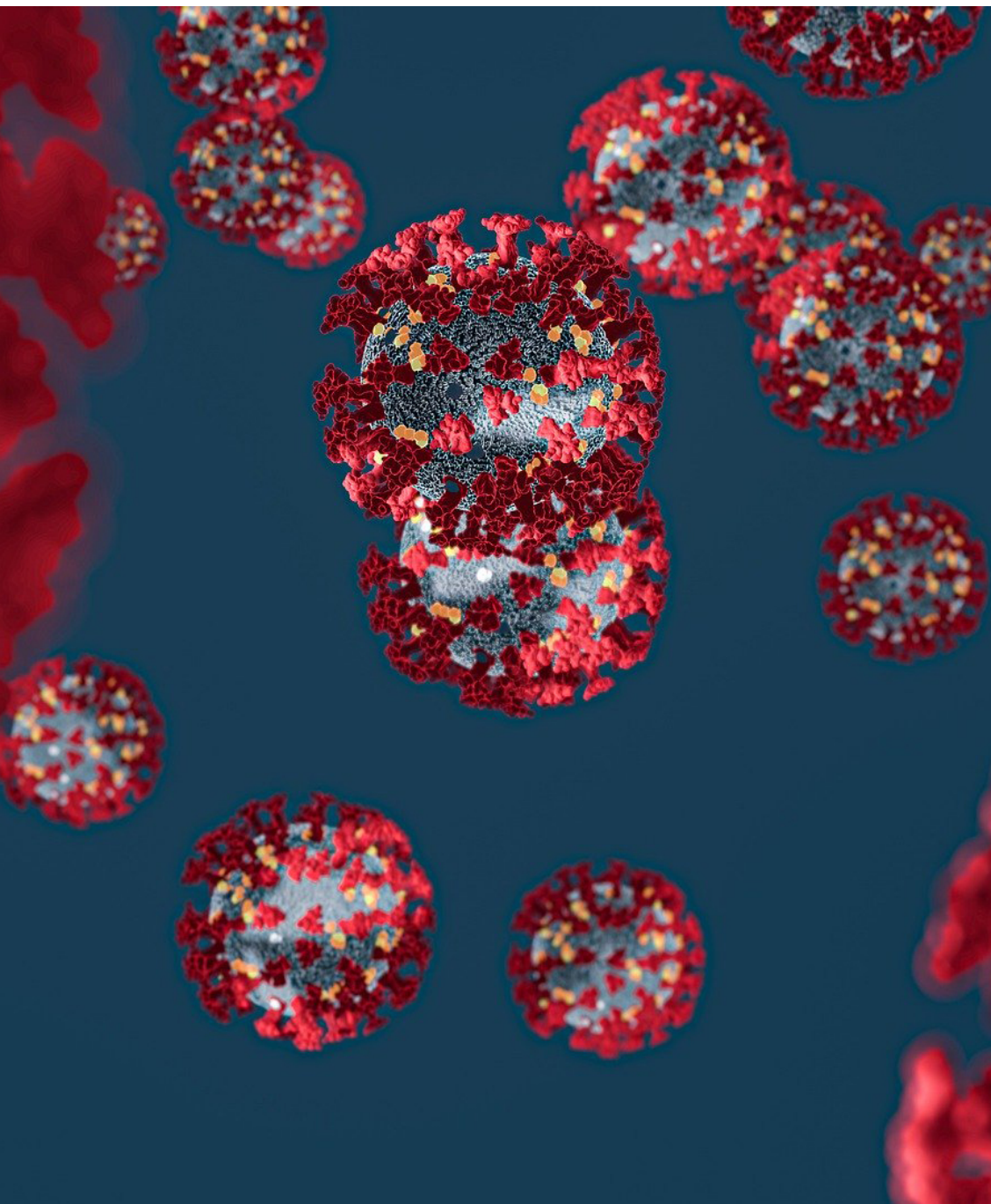
Number CBP 8897, 14 October 2020

Coronavirus: Testing for Covid-19

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Summary

The World Health Organization (WHO) has strongly encouraged countries to test suspected cases of Covid-19 disease to aid efforts to disrupt the transmission of the SARS-CoV-2 virus and slow the rate of infection. Testing can also help support public health efforts to 'characterise' the disease, so that health authorities can understand its severity, prevalence and how it is evolving.

Types of test

The NHS is using an RT-PCR test to identify cases of Covid-19 in the UK. This relies on collecting genetic material (RNA) from the suspected case via a nose and/or throat swab to detect nucleic acid from the virus. The PCR test can only detect the virus while it is present in the person; it cannot tell if the person has had the virus but has since recovered. The test may also not identify those cases where the person is infected but is not showing symptoms.

'Serological tests' for Covid-19 are currently in development. These tests aim to identify whether the individual has previously had the virus – even if they have not shown symptoms – through using a blood or plasma sample to detect if the patient has antibodies to the virus. The Government is reported to have bought options on up to 17.5 million antibody tests, of different types, that could be used 'at home' rather than in a clinical setting. The effectiveness of the 'at home' serological tests is currently being evaluated. To date, they have not performed well, generating both false negatives and false positives. An antibody testing programme for health and social care staff in England has been in place since the end of May 2020. The programme relies on laboratory-based antibody testing rather than home antibody test kits.

Testing capacity

Testing capacity for Covid-19 has increased during the course of the outbreak, rising from 2,000 tests per day on 5 March 2020 to 12,799 by 4 April 2020 and to over 100,000 by 1 May 2020. The approach to testing has also shifted from a centralised system (where tests were processed by Public Health England laboratories) to a more distributed approach that relies on NHS laboratories, private industry and academia/research institutes. On 2 April, the Health Secretary pledged that the UK would carry out 100,000 tests a day by the end of the month; a target which the Government announced it had met, although the inclusion of home testing has been contested. The Government subsequently committed to increase testing capacity to 200,000 tests per day, across the UK, by the end of May and then to 500,000 by the end of October 2020. The Government announced that the 200,000 target had been reached on 30 May 2020, while the Department of Health and Social Care has [reported](#) that the Government is "on track" to meet the 500,000 target.

The Government has been subject to [criticism](#) for not scaling up the UK's testing capacity earlier, and more rapidly, and for failing to prepare sufficiently for the pandemic. Several reasons have been cited as to why testing capacity was not higher during the early stages of the pandemic, including shortages of the key materials that are needed to perform and run the tests. Since late August 2020, there have also been reports that demand for tests in the community has been outstripping supply, with some people unable to access a test close to their home. Limits on laboratory capacity, together with people who are not eligible for a Covid-19 test being tested, have been identified by the Government as two of the causes of the capacity problem.

Criteria for being tested

At the start of the outbreak, the UK pursued a testing and contact tracing policy which aimed to 'contain' the virus and disrupt transmission through testing suspected cases and following up with the close contacts of those who tested positive. As the UK moved from the 'contain' to 'delay' phase of its response to the virus on the 12 March, the criteria for testing narrowed to only the most severe cases. Following [criticism](#) that NHS staff were not being tested, the Government announced on the 27 March that testing would be extended to frontline NHS staff in England. On 15 April, the Government announced that staff working in care homes in England requiring a test would be able to access one and that all symptomatic care home residents will also be tested for Covid-19.

Eligibility for testing was subsequently expanded again on 28 April 2020 to include anyone over the age of 65 with symptoms, anyone with symptoms whose work cannot be done from home as well as social care workers and residents in care homes (with or without symptoms). On 18 May 2020, the Health Secretary announced that everyone aged 5 and over with symptoms of Covid-19 was now eligible to be tested. Regular testing for those who are asymptomatic has since been extended to care home staff and residents and, where capacity permits, to frontline NHS staff.

Contact tracing and testing data

The Government has been developing the UK's contact tracing capabilities and has recruited over 21,000 'manual' contact tracers in England, while also developing an NHS contact tracing app. A 'Test and Trace' system in England was launched on 28 May 2020 without the app component (though the app has since been released). The programme aims to ensure that those with symptoms of the virus can access a test quickly and that, if a person tests positive, those people they have had close contact with can be alerted and given advice on the next steps to take. Concerns have been raised, however, about the speed at which test results have been returned, the number of contacts of positive cases being reached, and the extent to which data about confirmed cases is shared with local authorities and local public health teams.

1. Why test for Covid-19?

The World Health Organization (WHO) has repeatedly advocated for the testing of suspected Covid-19 cases to be an integral part of each country's response to the disease. Speaking on 13 March 2020, the Director General of the WHO, Dr Tedros Adhanom Ghebreyesus, [explained](#) why "aggressive testing and contact tracing combined with social distancing measures and community mobilisation" was vital to curb infections:

You can't fight a virus if you don't know where it is. Find, isolate, test and treat every case to break the chains of transmission. Every case we find and treat limits the expansion of the disease.¹

The WHO Director General [reiterated](#) this "simple message" on the need for testing three days later:

the most effective way to prevent infections and save lives is breaking the chains of transmission. And to do that, you must test and isolate. You cannot fight a fire blindfolded. And we cannot stop this pandemic if we don't know who is infected. We have a simple message for all countries: test, test, test. Test every suspected case. If they test positive, isolate them and find out who they have been in close contact with up to 2 days before they developed symptoms, and test those people too [if they show symptoms of COVID-19].²

Testing (and contact tracing) for Covid-19 among people displaying symptoms of the disease is thus advocated by the WHO for multiple, inter-connected reasons. It is a means to identify who has the disease, so that effective care and isolation measures can be put in place. Such measures can also prevent the infected person coming into contact with, and potentially infecting, others, thereby helping to disrupt the transmission of the virus and slow the rate of infection. Researchers at [Imperial College](#), London, estimated that each case of Covid-19 in Wuhan, China, infected an average of 2.6 other people, prior to control measures being implemented.³ Breaking the cycle of transmission would require a reproduction rate of less than 1.

By slowing the rate of infection in a region or country, the peak number of coronavirus cases is expected to be both lower and spread over a longer period of time. The WHO notes that this should help to avoid a significant surge of critical cases that risk overwhelming health services, an approach sometimes referred to as 'flattening the curve'.⁴ Testing can also help support public health efforts to "characterise the trajectory and severity of the disease", so that health authorities can understand its prevalence and how it is evolving.⁵

¹ World Health Organization, [Covid-19 press conference transcript](#), 13 March 2020

² World Health Organization, [WHO Director-General's opening remarks at the media briefing on COVID-19](#), 16 March 2020

³ MRC Centre for Global Infectious Disease Analysis, [Report 3 - Transmissibility of 2019-nCoV](#), 22 January 2020

⁴ World Health Organization, [WHO Director-General's opening remarks at the media briefing on COVID-19](#), 18 March 2020

⁵ M Lipsitch et al, Defining the Epidemiology of Covid-19 — Studies Needed, [New England Journal of Medicine](#) 2020; 382:1194-1196

1.1 What types of test for Covid-19 are used in the UK?

RT-PCR

The NHS is using an RT-PCR test (reverse transcription polymerase chain reaction) which relies on collecting genetic material (RNA) from the suspected case via a nose and/or throat swab to detect nucleic acid from the virus SARS-CoV-2.⁶ According to the Government, testing in most laboratories currently [takes](#) “24-48 hours from the time a sample arrives [due to] the numbers received and [because] handling the COVID-19 specimens safely involves a complex laboratory process”⁷ (see also section 3.5). The Deputy Chief Medical Officer, Dr Jenny Harries, explained in March that the test “will either say that you are negative or presumed positive, and then there will be a further test that is sent off to a reference laboratory to confirm the test”.⁸

The PCR test, however, can only detect the virus while it is present in the person; it cannot tell if the person has had the virus but has since recovered. The Government Chief Scientific Adviser (GCSA), Sir Patrick Vallance, has also noted that the PCR test may not pick up those cases where the person is infected, but is not showing symptoms. When giving evidence to the Health and Social Care Select Committee, Sir Patrick told Members that these were two important limitations of the PCR test:

all we can do at the moment is detect somebody who has the active virus that they are shedding. There is some evidence that, if you are asymptomatic and you are infected, the test is not at all sensitive, so nobody is able to pick up the asymptomatic people very easily.⁹

Further information about the accuracy of Covid-19 testing can be found in an article published by the Parliamentary Office of Science and Technology (POST) on [Interpreting COVID-19 test accuracy](#) (25 September 2020). The Commons Library also published an ‘Insight’ on the same date on [Covid-19: How reliable are test results?](#)

Rapid point of care testing

At least two fast, point-of-care tests have been developed, and are in use, in the UK.¹⁰ The SAMBA II machine, for example, is currently being used at Addenbrookes Hospital in Cambridge and will shortly be rolled out more widely. According to the team developing the test, it looks for “tiny traces of genetic material belonging to the virus, amplifies it

⁶ G Iacobucci, Covid-19: What is the UK’s testing strategy? *BMJ* 2020; 368; N Subbaraman, Coronavirus tests: researchers chase new diagnostics to fight the pandemic, *Nature*, 23 March 2020; NHS England and NHS Improvement, [Guidance and standard operating procedure. COVID-19 virus testing in NHS laboratories](#), 16 March 2020

⁷ [PQ 30199](#) [on Coronavirus: Screening] 24 March 2020

⁸ Q54 - Health and Social Care Committee, [Oral evidence: Preparations for the Coronavirus](#), HC 36, 5 March 2020,

⁹ Q78 - Health and Social Care Committee, [Oral evidence: Preparations for the Coronavirus](#), HC 36, 17 March 2020

¹⁰ Department of Health and Social Care, [Coronavirus \(COVID-19\) Scaling up our testing programmes](#), 4 April 2020, para 1.19. Point-of-care testing is also known as ‘bedside testing’ or ‘near-patient testing’.

billions of times chemically and is therefore extremely sensitive in the detection of active infections".¹¹ It is able to provide a diagnosis in less than 90 minutes and relies on the patient providing a nasal and throat swab. Ongoing research at Cambridge is also examining whether the SAMBA II machine could identify asymptomatic individuals.¹² A [performance evaluation](#) of the SAMBA II SARS-CoV-2 Test was published as a pre-print (meaning it has not yet been peer reviewed) in early June 2020.¹³

On 3 August 2020, the Government announced that two new tests – both able to detect Covid-19 and other winter viruses such as flu and respiratory syncytial virus (RSV) in approximately 90 minutes – will be made available to NHS hospitals, care homes and laboratories. The Government press release emphasised that the "tests do not require a trained health professional to operate them, meaning they can be rolled out in more non-clinical settings".¹⁴ According to the Government, the rapid "LampORE test", available from w/c 10 August, will be able to process "swab and saliva samples to detect the presence of COVID-19 in 60 to 90 minutes", while 5,000 "DNA 'Nudgebox' machines", supplied by DnaNudge, will be rolled out from September "across NHS hospitals in the UK to analyse DNA in nose swabs, providing a positive or negative result for COVID-19 in 90 minutes, at the point of care".¹⁵ The machines will process "up to 15 tests on the spot each day without the need for a laboratory".¹⁶

1.2 Tests in development

Serological tests

A serological test uses a blood or plasma sample to detect if the patient has antibodies to the virus (namely proteins that are produced by white blood cells that bind to the virus and destroy/disable it).¹⁷ This type of test could tell whether the individual has previously had the virus, even if they had not shown symptoms. As the GCSA explained, "with an antibody test, we would have a much better handle on the proportion

¹¹ [Rapid COVID-19 diagnostic test developed by Cambridge team to be deployed in hospitals](#), University of Cambridge Communications, 2 April 2020; see also D A Collier et al, [Rapid point of care nucleic acid testing for SARS-CoV-2 in hospitalised patients: a clinical trial and implementation study](#), medRxiv, 11 June 2020 <https://doi.org/10.1101/2020.05.31.20114520> (please note this article is a preprint and has not yet been peer-reviewed)

¹² [Rapid COVID-19 diagnostic test developed by Cambridge team to be deployed in hospitals](#), University of Cambridge Communications, 2 April 2020

¹³ S M Assennato et al, [Performance evaluation of the point-of-care SAMBA II SARS-CoV-2 Test for detection of SARS-CoV-2](#), medRxiv, 9 June 2020, <https://doi.org/10.1101/2020.05.24.20100990>

¹⁴ [Press release: Roll-out of 2 new rapid coronavirus tests ahead of winter](#), Department of Health and Social Care, 3 August 2020

¹⁵ [Press release: Roll-out of 2 new rapid coronavirus tests ahead of winter](#), Department of Health and Social Care, 3 August 2020

¹⁶ [Press release: Roll-out of 2 new rapid coronavirus tests ahead of winter](#), Department of Health and Social Care, 3 August 2020

¹⁷ N Subbaraman, Coronavirus tests: researchers chase new diagnostics to fight the pandemic, [Nature](#), 23 March 2020

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of people who are asymptomatic and the true number who have had it in the community already”.¹⁸

Multiple companies are currently developing antibody tests for Covid-19. Overviews can be found here:

- Tony Blair Institute for Global Change, [Covid-19 Testing in the UK: A Primer](#), 30 March 2020
- [What coronavirus tests does the world need to track the pandemic?](#) *Financial Times*, 1 April 2020

On the 24 March 2020, the Health Secretary, Matt Hancock, [announced](#) that the Government had purchased 3.5 million antibody tests.¹⁹ Nine days later, [The Guardian](#) reported that the Government had “bought options on up to 17.5m antibody tests of different types [for use at home] that are currently being tested”.²⁰

Exactly when these tests will be ready for use, and distributed, is currently unclear. Professor Doyle, Medical Director at PHE, described the test on 26 March as “well advanced but not yet ready”, adding that “we need to be absolutely sure that it is a valid test. We expect that to come within a couple of weeks, but I would not want to over-promise on that”.²¹ Speaking on the 2 April, the Health Secretary, Matt Hancock, said the results of many of the early tests had been “poor”, though he was reported to be more hopeful about later ones that had been acquired.²²

On 6 April, the Government stated that none of the ‘at home’ antibody testing kits have so far “been proved to be good enough to be used”.²³ Sir John Bell, Regius Professor of Medicine at the University of Oxford – where a team is evaluating the tests – said:

Sadly, the tests we have looked at to date have not performed well. We see many false negatives (tests where no antibody is detected despite the fact we know it is there) and we also see false positives. None of the tests we have validated would meet the criteria for a good test as agreed with the MHRA [*Medicines and Healthcare products Regulatory Agency*]. This is not a good result for test suppliers or for us.²⁴

Kathy Hall, Director of Covid-19 testing strategy at the Department of Health and Social Care (DHSC), stated on the 8 April that the DHSC was

¹⁸ Q78 - Health and Social Care Committee, [Oral evidence: Preparations for the Coronavirus](#), HC 36, 17 March 2020

¹⁹ [Matt Hancock: 3.5m coronavirus test kits on way to NHS](#), *The Guardian*, 24 March 2020

²⁰ [No 10 seeks to end coronavirus lockdown with 'immunity passports'](#), *The Guardian*, 2 April 2020

²¹ Q197- Health and Social Care Committee, [Oral evidence: Preparations for the Coronavirus](#), HC 36, 26 March 2020

²² [No 10 seeks to end coronavirus lockdown with 'immunity passports'](#), *The Guardian*, 2 April 2020

²³ [UK government admits Covid-19 antibody tests don't work](#), *Financial Times*, 6 April 2020

²⁴ J Bell, [Trouble in testing land](#), University of Oxford Research 5 April 2020

now working “with companies to cancel the orders [for the antibody tests] and get our money back where possible”.²⁵

More general concerns about the diagnostic accuracy of antibody tests have been raised, particularly following a Cochrane review on this topic, published in June 2020. The review reported that antibody tests were “likely to have a useful role for detecting previous SARS-CoV-2 infection if used 15 or more days after the onset of symptoms” but that the “design, execution and reporting of studies of the accuracy of COVID-19 tests requires considerable improvement”.²⁶ An overview of the Cochrane review can be found in:

- [Why covid-19 antibody tests are not the game changer the UK government claims](#), *British Medical Journal* 2020;369:m2469, published 24 June 2020

Antibody testing programme for health and social care staff

While the early ‘at home’ antibody test kits had not performed well, *The Times* reported that antibody tests processed in laboratories, using “a standard laboratory diagnostic tool”, have proved to be accurate and that they are currently being used in a research programme to improve our understanding of the spread of the virus.²⁷ The President of the Royal College of Pathologists, Professor Jo Martin, has been asked to work with NHS laboratories to see whether similar tests — known as enzyme-linked immunosorbent assays (Elisa) — could be used to increase testing capacity in local hospitals.²⁸

Multiple media outlets reported on 14 May 2020 that Public Health England had “approved” an antibody test – the [Elecsys Anti-SARS-CoV-2](#) serology test – made by the pharmaceutical company Roche.²⁹ This followed an evaluation of the test by PHE at its Porton Down facilities which concluded that it had correctly identified the presence of antibodies in 100% of the affected blood samples, making it “highly specific” (able to identify negative cases correctly).³⁰ The test had already been approved for use in the United States by the US Food and Drug Administration.

The test is different from the 3.5 million finger-prick blood tests bought by the Government in March 2020. Professor John Newton, national coordinator of the UK coronavirus testing programme, said that the test

²⁵ Q167 - Commons Science and Technology Committee, [Oral evidence, UK Science, Research and Technology Capability and Influence in Global Disease Outbreaks](#), HC 136, 8 April 2020

²⁶ J J Deeks et al, [Antibody tests for identification of current and past infection with SARS-CoV-2](#), *Cochrane Systematic Review - Diagnostic Version* published: 25 June 2020

²⁷ [NHS labs will help boost virus antibody tests to 90,000 a day](#), *The Times*, 9 April 2020

²⁸ [NHS labs will help boost virus antibody tests to 90,000 a day](#), *The Times*, 9 April 2020

²⁹ [Public Health England gives green light to coronavirus antibody test](#), *Financial Times*, 14 May 2020; [Public Health England approves Roche test for coronavirus antibodies](#), *The Guardian*, 14 May 2020; [Coronavirus antibody test a 'positive development'](#), *BBC News Online*, 14 May 2020

³⁰ [Public Health England gives green light to coronavirus antibody test](#), *Financial Times*, 14 May 2020

was a “very positive development because such a highly specific antibody test is a very reliable marker of past infection”.³¹

The Government announced on 21 May 2020 that it had signed contracts with the companies Roche and Abbott to supply over 10 million laboratory-based antibody tests.³² The [antibody testing programme](#) in England began the following week. It prioritises those NHS and care home staff who “would like to be tested”, while clinicians are also able to “request the tests for patients in both hospital and social care settings if they think it’s appropriate”.³³ According to the DHSC guidance, the value of antibody tests is:

currently limited to answering the question of whether someone has had the virus or not, and providing data and a greater understanding on the spread of the virus.³⁴

The NHS continues to emphasise that “home antibody test kits are not currently recommended” on the grounds that it has “not been confirmed if they’re safe and reliable yet”.³⁵ The assessment of home antibody test kits, however, is taking place (see, for example, the work of Imperial College, London and its “[REACT-2](#)” study).³⁶ There are also reports that the Government purchased 1 million home antibody tests from the UK Rapid Test Consortium in October 2020. According to the *gov.uk* press release, the home antibody tests will be used as part of the Government’s Covid-19 surveillance studies “to help build a picture of how the virus has spread across the country and further develop our understanding of how antibodies work”. The test has been evaluated by Public Health England and the press release emphasises that the:

test uses a finger-prick device and provides a result within 20 minutes, without the need to be sent to a lab for analysis and therefore has no impact on testing lab capacity.³⁷

It should also be noted that it is not yet clear if testing positive for antibodies will mean that a person is immune to Covid-19 (see Box 1).

Further information on tests in development can be found in the Parliamentary Office of Science and Technology (POST) publication on [The latest in COVID-19 testing: developing new technologies](#), published 9 October 2020.

Immunity passports

It has been suggested that information from serological tests could be used to help determine whether individuals could return to normal social interaction without risking picking up, or passing on, the virus.

³¹ [Public Health England gives green light to coronavirus antibody test](#), *Financial Times*, 14 May 2020

³² [Press release: Government to offer antibody tests to health and social care staff and patients in England](#), Department of Health and Social Care, 21 May 2020

³³ Department of Health and Social Care, [Guidance: Coronavirus \(COVID-19\): antibody tests](#), 22 May 2020

³⁴ *ibid*

³⁵ NHS, [Antibody test to check if you've had coronavirus](#), 17 July 2020

³⁶ [News: Antibody testing research to track coronavirus infection rates](#), Imperial College Healthcare NHS Trust, 9 July 2020; <https://www.reactstudy.org/>

³⁷ [Press release: Government invests in UK-developed antibody tests from UK Rapid Test Consortium](#), Department of Health and Social Care, 6 October 2020

Professor Yvonne Doyle, Medical Director at Public Health England, described antibody tests as “the game changer” on the grounds that they will:

tell us who [...] is highly unlikely to transmit infection, which is important because it allows people to get back to some form of normality, including work.³⁸

The Government has previously raised the idea of issuing [‘immunity certificates’](#) to those who have had and recovered from the virus.³⁹

There are, however, challenges associated with using serological tests as a means to ‘screen’ a population. These are linked both to the accuracy of the test – namely its sensitivity (ability to identify positive cases correctly) and its specificity (ability to identify negative cases correctly) – but also the prevalence of the disease throughout the population. An overview can be found in the following article:

- [Why it’s too early to start giving out “immunity passports”](#), *MIT Technology Review*, 9 April 2020

More recently, the Government has emphasised that, to understand the potential of any “certification” or immunity passport, it first needs:

to improve our understanding of how the immune system responds to infection with the COVID-19 virus. COVID-19 is a new disease and the science around ‘immunity’ to the virus remains uncertain. We do not, for example, know how long an antibody response to the virus lasts nor whether having antibodies means one does not transmit the virus to others.⁴⁰

The World Health Organization has also raised concerns that there is currently insufficient evidence about antibody-mediated immunity to guarantee the accuracy of an “immunity passport” or “risk-free certificate.” It added that immunity passports may “increase the risks of continued transmission” on the grounds that “people who assume that they are immune to a second infection because they have received a positive test result may ignore public health advice”.⁴¹

The Government has published some of the advice it had received on antibody testing, and the ability of the tests to help facilitate a return to work, from a Scientific Advisory Group for Emergencies (SAGE) subgroup – the ‘Scientific Pandemic Influenza Group on Behaviours’ (SPI-B). SPI-B identified some of the ‘behavioural’ risks that may arise. These include:

- those who have tested ‘antibody positive’ may fail to recognise and respond to symptoms of COVID-19, if they “believe they have no chance of becoming infected with COVID19 in the future”, increasing the likelihood that they will transmit the infection.

³⁸ Q234 - Health and Social Care Committee, [Oral evidence: Preparations for the Coronavirus](#), HC 36, 26 March 2020

³⁹ [No 10 seeks to end coronavirus lockdown with ‘immunity passports’](#), *The Guardian*, 2 April 2020

⁴⁰ [PQ 60783](#) [on Coronavirus: Disease Control], 25 June 2020

⁴¹ World Health Organization, [Scientific Brief: “Immunity passports” in the context of COVID-19](#), 24 April 2020

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- They may also display “reduced adherence to transmission-reducing behaviours” such as good hand hygiene.⁴²

Box 1: Is it possible to have Covid-19 disease more than once?

Immunity to the SARS-CoV-2 virus is not yet well understood. At present, it is not clear if patients who recover from Covid-19 are immune to the disease and, if so, for how long. Peter Openshaw, Professor of Experimental Medicine at Imperial College London, told the *New Scientist* that because the virus is so new:

we do not yet know how long any protection generated through infection will last. We urgently need more research looking at the immune responses of people who have recovered from infection to be sure.⁴³

The overall health of the individual may also have a role to play. Vineet Menachery, a virologist at the University of Texas Medical Branch, told *Time* magazine that the degree of immunity could also differ from person to person:

depending on the strength of the patient’s antibody response. Younger, healthier people will likely generate a more robust antibody response, giving them more protection against the virus in future.⁴⁴

Daniel M Davis, Professor of Immunology, and Sheena Cruickshank, Professor in Biomedical Sciences, both at the University of Manchester, similarly note that “because every person’s immune system is configured slightly differently – from a combination of our genetic inheritance, the diseases we’ve previously had and any number of lifestyle factors – each person’s immunity to COVID-19 will almost certainly vary”.⁴⁵

The World Health Organization has also emphasised that there is currently a lack of evidence regarding immunity to Covid-19. Speaking on 17 April, Dr Maria van Kerkhove, head of the WHO’s emerging diseases and zoonosis unit, said:

Right now, we have no evidence that the use of a serological test can show that an individual has immunity or is protected from reinfection [...] These antibody tests will be able to measure that level of seroprevalence – [the] level of antibodies.⁴⁶

Dr van Kerkhove added that the presence of antibodies “does not mean that [...] they are immune”.⁴⁷

Public Health England has received approval from the National Institute for Health Research for a study - known as ‘SIREN’ - to investigate whether producing antibodies in response to having COVID-19 means that you are immune to future infection and how long any protection may last. The study aims to recruit up to 100,000 healthcare workers, with 10,000 set as the initial target to be recruited through NHS Trusts by September 2020.⁴⁸

In late August 2020, researchers in Hong Kong reported the case of a 33 year old man who was treated in hospital for Covid-19 in March 2020 and was subsequently found to have the virus again - but without symptoms - when he was routinely tested at Hong Kong airport.⁴⁹ While this case has been seen as evidence that it is possible to have Covid-19 more than once, scientists have urged caution when interpreting the finding. The vaccines alliance, Gavi, notes that “over 24 million cases of COVID-19 have been reported worldwide, and this is just one confirmed case of reinfection. Studies with a

⁴² Scientific Pandemic Influenza Group on Behaviours (SPI-B), [Pre-empting possible negative behavioural responses to COVID-19 antibody testing to realise their potential benefits: SPI-B Note](#) dated 13 April 2020, published 5 May 2020

⁴³ [Can you catch the coronavirus twice? We don't know yet](#), *New Scientist*, 25 March 2020

⁴⁴ [Can You Be Re-Infected After Recovering From Coronavirus? Here's What We Know About COVID-19 Immunity](#), *Time Magazine*, 3 April 2020

⁴⁵ D M Davis and S Cruickshank, [Coronavirus: we must step up research to harness immense power of the immune system](#), University of Manchester News, 11 May 2020

⁴⁶ [Coronavirus: Double warning over antibody tests](#), *BBC News Online*, 18 April 2020

⁴⁷ *ibid*

⁴⁸ Public Health England, [Blog: Public health matters. Duncan Selbie's Friday Message - 26 June 2020](#)

⁴⁹ Kelvin Kai-Wang To et al, [COVID-19 re-infection by a phylogenetically distinct SARS-coronavirus-2 strain confirmed by whole genome sequencing](#), *Clinical Infectious Diseases*, 25 August 2020

much bigger sample size would be needed before we can make any predictions about what this could mean for the future of the pandemic".⁵⁰

The European Centre for Disease Prevention and Control published a briefing on [Reinfection with SARS-CoV-2: considerations for public health response](#) in September 2020. This highlights several cases across the world where reinfection is suspected to have occurred and outlines issues which, it states, need to be considered in relation to reinfection.⁵¹

⁵⁰ [Is it possible to get COVID-19 more than once?](#), *Gavi*, 28 August 2020

⁵¹ European Centre for Disease Prevention and Control, [Reinfection with SARS-CoV-2: considerations for public health response](#), 21 September 2020

2. Testing capacity

Testing capacity refers to the number of tests that can be run, and results processed, at any one time. At the start of the pandemic, a centralised approach was pursued, with Covid-19 testing undertaken by Public Health England (PHE), initially in its Colindale facility and subsequently in its regional laboratories. The Deputy CMO told the Health and Social Care Select Committee on 5 March 2020 that PHE’s “eight sites [could] do 2,000 tests a day”.⁵²

A more distributed approach to testing was subsequently developed to increase capacity. On 11 March 2020, [NHS England](#) announced that it was working with PHE to increase the number of samples that could be analysed to 10,000 a day:

the NHS is now scaling up tests by 500%, with NHS England asking expert NHS laboratory services across the country to bring new capacity online, and other labs to begin checks, enabling 8,000 more samples to be analysed every day of the week [...] The additional resource to process more tests will mean local hospital labs will join specialist services, including those already provided by PHE, in being able to accurately detect the presence of the new virus, with learning and technology shared across NHS services nationwide.⁵³

[BBC News Online](#) reported that by mid-March, 40 NHS labs across the UK were running Covid-19 tests.

On 17 March, the Prime Minister [stated](#) that capacity would increase to 25,000 a day in two weeks. Following continued criticism that insufficient tests were being conducted, especially on NHS staff,⁵⁴ the Health Secretary [announced](#) that the NHS would carry out 100,000 tests a day by the end of April 2020 through relying on a network including private industry, academia, and the NHS (see Section 3.3 for further detail).⁵⁵

By the beginning of April, several ['local' initiatives](#) had led to the Francis Crick Institute in London, Cancer Research UK units in Glasgow, Manchester and Cambridge, and laboratories at leading universities, being transformed into diagnostic facilities for Covid-19.⁵⁶

On the 4 April 2020, [testing capacity](#) for inpatient care in England stood at 12,799, though not all that capacity was being used; a total of 11,085 tests were carried out for 8,651 people on 4 April. The Department of Health and Social Care noted that some people may

⁵² Q54 - Health and Social Care Committee, [Oral evidence: Preparations for the Coronavirus](#), HC 36, 5 March 2020,

⁵³ [News: NHS to ramp up coronavirus testing labs](#), NHS England, 11 March 2020

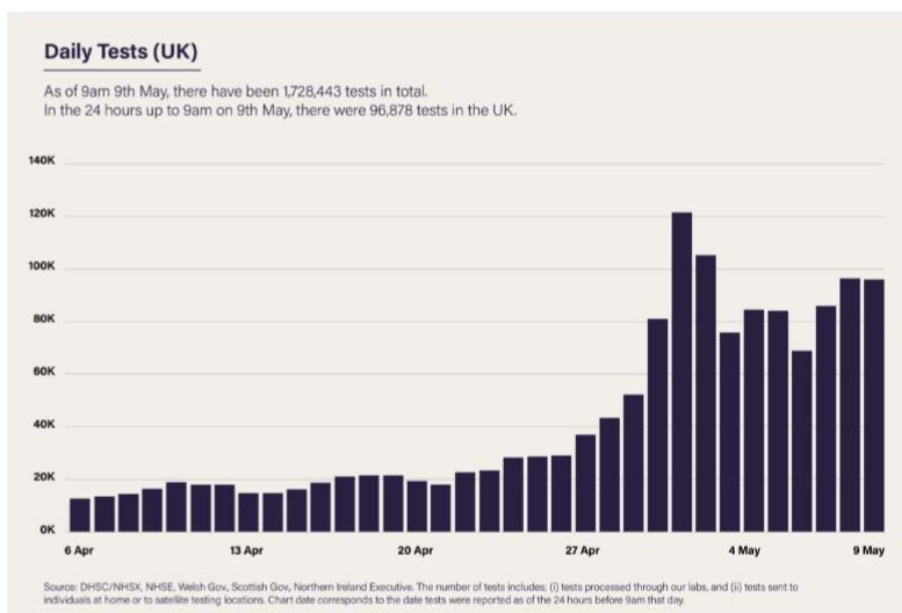
⁵⁴ [Coronavirus: just 2,000 NHS frontline workers tested so far](#), *The Guardian*, 1 April 2020

⁵⁵ [News story: Testing for coronavirus \(COVID-19\) will increase to 25,000 a day](#), Department of Health and Social Care, 18 March 2020; [Press release: Health Secretary sets out plan to carry out 100,000 coronavirus tests a day](#) Department of Health and Social Care, 2 April 2020

⁵⁶ [Small laboratories join coronavirus testing effort after 'precious time wasted'](#), *The Guardian*, 2 April 2020

require multiple tests, following an inconclusive first result or to check a negative test.⁵⁷

Almost a month later, the Health Secretary, Matt Hancock, announced that on the 30 April 2020 there had been 122,347 tests, though the exact testing capacity was not given.⁵⁸ The announcement was subject to criticism that the figure included home testing kits which had been sent out, but not yet returned for analysis (see section 3.3). This figure subsequently fell below 100,000; on 4 May, for example, 84,806 tests had been conducted, though the number rose to 126,064 tests, carried out for 71,644 people, on 13 May 2020.⁵⁹ The Government published the following graph in its '[COVID-19 Recovery Strategy](#)' presenting the number of daily tests in the UK carried out between 6 April and 9 May 2020.



Source: HM Government, [Our Plan to Rebuild, The UK Government's COVID-19 recovery strategy](#), May 2020, CP 239, p9

A new target was set by the Government of increasing testing capacity to 200,000 tests a day by the end of May.⁶⁰ This was subsequently increased to over 500,000 tests a day by the end of October 2020.⁶¹ The Government announced on 31 May 2020 that it had met the 200,000 target on the previous day.⁶² Concerns raised by the UK Statistics Authority and others about the presentation and publication of data on Covid-19 testing is outlined in section 4 of the briefing. Further details of the 100,000 target are in section 3.3.

⁵⁷ Twitter: Department of Health and Social Care, [Testing update for 4 April](#), posted 5 April 2020

⁵⁸ Department of Health and Social Care, [Speech: Health and Social Care Secretary's statement on coronavirus \(COVID-19\)](#), 1 May 2020, 1 May 2020

⁵⁹ Department of Health and Social Care and Public Health England, [Guidance: Number of coronavirus \(COVID-19\) cases and risk in the UK, 4 May](#), published on 5 May 2020, *ibid* 13 May, published on 14 May 2020

⁶⁰ [HC Deb 6 May 2020](#).

⁶¹ Department of Health and Social Care, [Next stages in the NHS Test and Trace plan](#), 20 July 2020

⁶² [Press release: UK reaches 200,000 coronavirus testing capacity target a day early](#), Department of Health and Social Care, 31 May 2020

Box 2: Testing capacity in other countries

Germany has been identified in the [media](#) as a European country that has 'led the way' with large-scale testing of the population.⁶³ Data from the [Robert Koch Institute](#) in Germany (which is coordinating its public health response to the pandemic) shows that between 22 and 28 March 2020, a total of 354,521 tests were performed by 143 laboratories.⁶⁴

It has also been suggested that certain Asian countries - such as South Korea which, as of 6 April 2020 had [conducted](#) over 466,000 tests for Covid-19 since the outbreak began - have applied their experience of both Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS) to address Covid-19 effectively.⁶⁵

The Department for Health and Social Care has subsequently acknowledged that both Germany and South Korea have "higher testing rates than the UK", and that "Germany has been able to take advantage of the existing technology and infrastructure in its large diagnostics industry, with over 100 cutting edge testing labs".⁶⁶

At the daily Covid-19 press briefing on 7 April 2020, the Chief Medical Officer, Professor Chris Whitty, highlighted Germany's approach to testing, stating "we all know that Germany got ahead in terms of its ability to do testing for the virus and there's a lot to learn from that and we've been trying to learn the lessons from that."⁶⁷

2.1 Why was testing capacity in the UK not higher in March and April 2020?

Several reasons have been put forward to explain why the UK's testing capacity was not higher in March and April 2020. They include:

Under-preparation

The Government has been criticised for failing to prepare sufficiently for the pandemic and for not increasing manufacturing or imports of testing kits earlier. An article in [Buzzfeed](#), for example, noted that imports of testing kits were "extremely difficult as other nations seek more than ever to keep them for their own use", while the [The Guardian](#) reported "critics" as saying that "a better pandemic preparedness plan might have foreseen the surge in demand for testing materials and arranged to act swiftly".⁶⁸ Richard Horton, editor of the medical journal *The Lancet*, wrote that the severity of the situation in China in January 2020 should have prompted preparedness plans to be readied:

February should have been used to expand coronavirus testing capacity, ensure the distribution of WHO-approved PPE, and establish training programmes and guidelines to protect NHS

⁶³ [Germany conducting more than 50,000 coronavirus tests a day](#), *Financial Times*, 2 April 2020

⁶⁴ [Coronavirus Disease 2019 \(COVID-19\) Daily Situation Report of the Robert Koch Institute](#), 2 April 2020

⁶⁵ [What Prepares a Country for a Pandemic? An Epidemic Helps](#), *Bloomberg Opinion*, 18 March 2020

⁶⁶ Department of Health and Social Care, [Coronavirus \(COVID-19\) Scaling up our testing programmes](#), 4 April 2020

⁶⁷ [UK looks to learn from German mass tests in quest to end lockdown](#), *Financial Times*, 7 April 2020

⁶⁸ [Even The US Is Doing More Coronavirus Tests Than The UK. Here Are The Reasons Why](#), *Buzzfeed*, 31 March 2020; [UK coronavirus testing: what ministers said and what has happened](#), *The Guardian*, 1 April 2020

staff. They didn't take any of those actions. The result has been chaos and panic across the NHS. Patients will die unnecessarily. NHS staff will die unnecessarily. It is, indeed, as one health worker wrote last week, "a national scandal".⁶⁹

In response to Dr Horton's editorial, a spokesperson from the Department of Health and Social Care stated on 28 March 2020 that the Government had "acted swiftly to contain the spread of the virus and [its] world-class surveillance, including intensive contact tracing and quarantining of early cases, helped to slow it significantly – and targeted contact-tracing continues".⁷⁰

Others, however, have pointed to constraints in the country's existing testing system that have made it difficult to scale up testing capacity, as well as supply chain problems and shortages of key materials, as discussed below.

Scaling up testing capacity

Professor Neil Ferguson, Director of the MRC Centre for Global Infectious Disease Analysis at Imperial College London, has modelled the likely impact of public health measures on slowing and suppressing the spread of coronavirus. He was also a member of the Covid-19 [Scientific Advisory Group for Emergencies](#) (SAGE) which provides scientific and technical advice to support government decision making during emergencies.⁷¹ Professor Ferguson told the Commons Science and Technology Committee on 25 March that increasing testing capacity "was not included in [his] initial modelling". This, he explained, was because:

the projections by PHE of how quickly this country could ramp up testing capacity [...] If we are talking about back in January/February/early March, it was very clear from messages from Public Health England that we would have nowhere near enough testing capacity to adopt that strategy [of widespread testing and contact tracing].⁷²

The Deputy Chief Medical Officer for England, Dr Jenny Harries, made a similar point when giving evidence to the Health and Social Care Committee on 5 May 2020:

if we had had unlimited capacity and ongoing support beyond that, we perhaps would choose a slightly different approach, but with the resources that we had [...] it is appropriate that that capacity was maximised to save lives, as well as considering the spread of disease.⁷³

⁶⁹ R Horton, [Offline: COVID-19 and the NHS—"a national scandal"](#), *The Lancet*, vol 395(10229), p1022, 28 March 2020

⁷⁰ ['Chaos and panic': Lancet editor says NHS was left unprepared for Covid-19](#), *The Guardian*, 28 March 2020

⁷¹ Q4 – Commons Science and Technology Committee ,Oral evidence: [UK science, research and technology capability and influence in global disease outbreaks](#), HC 136, 25 March 2020

⁷² Q20 – Commons Science and Technology Committee ,Oral evidence: [UK science, research and technology capability and influence in global disease outbreaks](#), HC 136, 25 March 2020

⁷³ Q416 – Health and Social Care Committee, Oral evidence: [Preparations for the Coronavirus](#), HC 36, 5 May 2020

Laboratory space

Earlier in the pandemic, questions were raised about whether the UK had sufficient, suitable laboratory space for Covid-19 testing. [David Farren](#), a consultant in medical microbiology and an infection control doctor in Northern Ireland, and [Paul Hunter](#), a professor in medicine at the University of East Anglia, both noted that in the early to mid 2000s, laboratories were closed or consolidated following a [review of laboratory capacity in 2006](#):

Many of the laboratories in the old network were shut down, taken over by local hospitals or merged into a smaller number of regional laboratories. So even if it did have enough kits, the UK would no longer have the capacity, equipment or biomedical scientists to match the testing capacity of its European neighbours.⁷⁴

Giving evidence to the Commons [Science and Technology Select Committee](#), Professor Sharon Peacock, Interim Director of the National Infection Service at PHE, confirmed that “laboratories [...] have largely been merged”, leading to “a smaller number of larger laboratories”. Professor Peacock, however, did not see this as problematic:

the alternative is to have a single large testing site. From my perspective, it is more efficient to have a bigger testing site than dissipating our efforts into a lot of laboratories around the country.⁷⁵

Professor John Newton, the Government’s advisor on increasing Covid-19 testing capacity, later told the same Committee that, at least initially, only particular types of laboratories were designated as suitable for handling the disease:

What is often not appreciated is that, to begin with, testing for coronavirus was designated as something that could be carried out only in a category 3 safe laboratory because of the infectious nature of the disease. There are not that many category 3 laboratories outside Public Health England and a relatively small number of universities, and they actually have quite small capacity. It was only at the beginning of March that the relevant authorities—that was not Public Health England, by the way—recategorised the virus down to category 2, and that of course opened up the possibility of a whole lot more laboratories undertaking testing. In fact, that change occurred at the request of Public Health England.⁷⁶

Availability of key materials: reagent and testing kit shortages

There were reports during the early stages of the pandemic that some of the chemicals, or reagents, required for Covid-19 testing were in short supply (see Box 3). On 3 April 2020, the [Institute of Biomedical Science](#) (IBMS) issued a press release on testing capacity. It stated that it

⁷⁴ [Why the UK failed to get coronavirus testing up to speed](#), *The Guardian*, 1 April 2020

⁷⁵ Q122- Commons Science and Technology Committee ,Oral evidence: [UK science, research and technology capability and influence in global disease outbreaks](#), HC 136, 25 March 2020

⁷⁶ Q172 - Commons Science and Technology Committee ,Oral evidence: [UK science, research and technology capability and influence in global disease outbreaks](#), HC 136, 8 April 2020

was the poor availability of key materials that was holding back testing in the UK, and not lack a of facilities or trained staff:

laboratory staff in the NHS are running a 24-hour service that is using all the materials that they have at their disposal but their skills are underutilised due to supply problems. There is a huge gap between testing equipment capacity and material availability.⁷⁷

Similarly, on 1 April 2020, Professor [Stephen Baker](#) in the Department of Medicine at the University of Cambridge, said: “There is a massive demand for raw materials and commercial kits, this is not unique to the UK, and many places no longer have stock of essential reagents”.⁷⁸

Box 3: Why are reagents needed in the RT-PCR test?

Robin May, Professor of Infectious Disease and Director of the Institute of Microbiology and Infection, University of Birmingham, explained how the RT-PCR test works and why reagents are needed:

SARS-COV-2 is an RNA virus, which means that its genome is based not on DNA, but on RNA (a closely-related molecule). Detecting the virus relies on specifically detecting a ‘sequence’ of RNA that is unique to this virus, converting it into DNA and then amplifying that DNA (essentially, making copies of it) via a process called PCR (polymerase chain reaction). The conversion of RNA to DNA requires one enzyme (reverse transcriptase) and then amplifying the DNA requires another (polymerase).

Both of these enzymes are biological molecules that have to be produced (typically in bacteria), then purified, usually only in small scale. Normally, demand for these enzymes is very steady and relatively low, so scaling up to the massive quantities that are required for COVID19 testing takes time. In addition, it is critical to ensure ‘quality control’ of the extraordinarily large number of kits that must be produced, to minimise the risk of false positive/negatives. Tackling all of these rate-limiting steps together to eliminate all of the bottlenecks is the primary reason why testing has been relatively slow to roll-out so far.⁷⁹

Allan Wilson, President of the IBMS, told *The Guardian* that there were shortages of both the test kits as well as:

some very basic reagents, such as the virology transport medium that we need to put the swabs in. The actual swabs are in short supply – effectively they are rationed in my patch in Scotland but I know there are problems in England as well.” The lysis buffer, used in extracting the RNA of the virus, was “in very, very short supply”, he said. So are precision plastics – “the little tubes and pipettes, so each test gets its own individual tube”. Those will not be available until mid-May.⁸⁰

The reagents also have to be compatible with the machines that they will be used in. [According to Professor Doyle](#), medical director at PHE “the reagents are generally produced by the manufacturers of the machines and so the reagents that work best are those that work with the machines that they’re intended for, that’s the most efficient”.⁸¹

⁷⁷ Institute of Biomedical Science, [We are ready to test – give us what we need](#), 3 April 2020

⁷⁸ Science Media Centre, [Expert comments about reagents needed for COVID-19 swab PCR testing](#), 1 April 2020

⁷⁹ Science Media Centre, [Expert comments about reagents needed for COVID-19 swab PCR testing](#), 1 April 2020

⁸⁰ [UK ministers struggle to keep promise of 100k coronavirus tests by end of April](#), *The Guardian*, 3 April 2020

⁸¹ [Coronavirus testing plans in chaos](#), *The Times*, 2 April 2020

The UK trade body the Chemical Industry Association, however, had questioned what exactly was in short supply:

While there is of course an escalating demand, there are reagents being manufactured and delivered to the NHS. Every business here in the UK and globally is looking at what they can do to help meet the demand as a matter of urgency. To clarify the exact NHS need and meet it, all relevant UK industries are continuing to work closely with Government [...] We are here to help if Government tells us what is needed.⁸²

Logistical challenges

Even when supplies of vital reagents were secured from overseas, there were reports that distribution – physically getting the supplies into the UK – was challenging due to the large number of aircraft that were grounded. Professor Charlie Swanton, Chief Clinician at Cancer Research UK, told *The Guardian* that “to make matters worse, because all the airlines have grounded their planes, there is no cargo space” to have testing kits and reagents delivered.⁸³

2.2 Demand and capacity for Covid-19 tests in September 2020

From late August 2020 onwards, there have been reports in the media of people unable to access Covid-19 testing in their local community because no testing appointments were available. In some instances, people have been offered testing appointments but in locations hundreds of miles away from their home. Giving evidence to the Commons Science and Technology Select Committee on 17 September 2020, the Head of NHS Test and Trace, Baroness Harding, stated that the level of demand was “three to four times the number of tests we currently have available”.⁸⁴ Two days earlier in the Commons, the Health Secretary stated that the:

vast majority of people who use our testing service get a test that is close to home, and the average distance travelled to a test site is now just 5.8 miles —down from 6.4 miles last week; but the whole House knows that there are operational challenges, and we are working hard to fix them.⁸⁵

A range of ‘operational challenges’ have been identified as affecting testing capacity.

Demand for tests

One reason cited by the Health Secretary, and the Head of NHS Test and Trace, for the shortage of tests is that people who are not eligible for a test are being tested. Speaking on *BBC Breakfast* on 9 September, the Health Secretary stated that while there was a “record number” of tests available, there had been a “rise in the number of people who are not

⁸² Chemical Industries Association, [Covid-19: Chemical Businesses](#), not dated

⁸³ [UK ministers struggle to keep promise of 100k coronavirus tests by end of April](#), *The Guardian*, 3 April 2020

⁸⁴ Q1302 - Commons Science and Technology Committee, [Oral evidence: UK science, research and technology capability and influence in global disease outbreaks](#), HC 136, 17 September 2020

⁸⁵ [HC Deb, 15 September 2020](#), c181

eligible for a test coming forward and getting those tests".⁸⁶ Responding to the Health Secretary's comments, the Shadow Health Secretary, Jonathan Ashworth, stated that it:

beggars belief that after weeks of encouraging people to have a test if feeling unwell, ministers are seeking to blame people for simply doing what they were advised. With children returning to school and thousands returning to the office, it's obvious extra testing capacity would be needed. The fact ministers failed to plan is yet more staggering incompetence.⁸⁷

Baroness Harding subsequently told the Commons Science and Technology Committee that up to a quarter of people presenting for Covid-19 testing do not have any symptoms:

We know from surveys in our testing sites that up to 20% or 25% of people coming forward for a test do not have any symptoms [...] After they have registered and turned up at the testing site, we have asked people whether or not they actually have symptoms. We surveyed 24,000 people at 25 regional and local testing sites between 1 and 4 September—the Secretary of State referred to this earlier today, and the data will be published online—and 27% said they were there because they had been in contact with someone who had tested positive, but they did not have symptoms themselves.⁸⁸

She added that the increase in demand for tests had not been predicted:

I do not think anybody was expecting to see the really sizeable increase in demand that we have seen over the last few weeks. In none of the modelling was that expected.⁸⁹

Laboratory capacity

Laboratory capacity – the ability of laboratories to process rapidly the number of tests they are receiving – has been identified by the Government, and the director of testing at NHS Test and Trace, as the "critical pinch-point" in the testing system.⁹⁰ Speaking in the Commons on 15 September, the Health Secretary explained that the capacity constraint was:

in the labs, rather than the centres. We have the [test] centres available to be able to process a huge amount of tests. We have record capacity in the labs, but it is in the labs where there is the constraint.⁹¹

The Sunday Times reported on 13 September 2020 that, according to leaked documents, the testing programme had "a backlog of 185,000 swabs and is so overstretched that it is sending tests to laboratories in

⁸⁶ [Matt Hancock accused of blaming public for Covid test shortages](#), *The Guardian*, 9 September 2020

⁸⁷ [Matt Hancock accused of blaming public for Covid test shortages](#), *The Guardian*, 9 September 2020

⁸⁸ Q1304-06 - Commons Science and Technology Committee, [Oral evidence: UK science, research and technology capability and influence in global disease outbreaks](#), HC 136, 17 September 2020

⁸⁹ Ibid Q1326

⁹⁰ Coronavirus: Government apologises over tests shortage, BBC News Online, 8 September 2020

⁹¹ HC Deb, 15 September 2020, c197

Italy and Germany”.⁹² An article in *The Guardian* newspaper indicated that capacity problems were particularly pronounced at the ‘Lighthouse Laboratories’ which process ‘Pillar 2’ tests (namely those undertaken in the community, rather than in a hospital), although exactly what was causing the capacity problems was unclear.⁹³

The network of seven Lighthouse Laboratories across the UK was developed through a partnership with the Department of Health and Social Care, the Medicines Discovery Catapult, UK Biocentre and the University of Glasgow, GSK, AstraZeneca, the University of Cambridge and PerkinElmer. Deloitte is responsible for the coordination of the labs. Concerns have been voiced that the Lighthouse Laboratories operate separately from NHS labs and that setting up a new national diagnostic lab network has “bypass[ed] the [existing] NHS and the public health network”.⁹⁴ The British Medical Association noted that:

A former director at the World Health Organization, Anthony Costello, said the 44 NHS labs were left ‘under used’ and major centres such as the Francis Crick Institute and Oxford University were ignored when offering expertise and resources.⁹⁵

Logistical problems

Other reports indicate that logistical problems are slowing down the processing of samples. Dr Mike Skinner, who worked in a Lighthouse Laboratory, told *BBC Radio 4* that the staff in the laboratory had to deal with handling issues related to the test samples, such as “barcoding, leaks”:

We actually had to remove the swabs from the tubes so they didn’t gum-up some of the robots down the line. It really is very much about logistics.

Dr Skinner added that unwrapping samples to run the tests also delayed the process:

To be handled safely through the distributors, like Royal Mail, those samples are multiply wrapped. We spent a lot of time safely unwrapping those, removing all the plastic and getting those samples ready. That’s a big complication of the process.⁹⁶

MPs have also highlighted the “huge numbers of voided tests across the commercial labs”, namely the disposal of used tests (before a result is obtained) due to human or technical error.⁹⁷ The *Financial Times* reported on 14 September that leaked Government documents “indicated that there was a significant problem with tests being

⁹² [Leaked figures reveal scale of coronavirus test shortage](#), *The Sunday Times*, 13 September 2020

⁹³ [Private labs unable to process all Covid tests. NHS email reveals](#), *The Guardian*, 15 September 2020.

⁹⁴ [Private labs unable to process all Covid tests, NHS email reveals](#), *The Guardian*, 15 September 2020.

⁹⁵ [Outsourced and undermined: the COVID-19 windfall for private providers](#), *British Medical Association News*, 8 September 2020

⁹⁶ [Covid testing: From website glitches to lab capacity, here’s why there are problems with the Government’s strategy](#), *inews*, 16 September 2020

⁹⁷ [HC Deb, 17 September 2020, c509](#), see also [HC Deb, 21 September 2020, c634 and c639](#)

“voided”, with 4.3 per cent of tests facing this fate, mostly due to “leaked samples””.⁹⁸

In addition, there have been some reports that capacity problems have been exacerbated by staff shortages as students and academics who were previously working in the labs return to their ‘day jobs’. Allan Wilson, president of the Institute of Biomedical Science (IBMS), was quoted in *The Telegraph* as stating that labs “are trying to recruit biomedical scientists, but they are in short supply and the NHS is also looking. It is a competitive market”.⁹⁹

Shortages of key materials

A separate issue, with the potential to affect testing capacity further, emerged in early October 2020, when the pharmaceutical company Roche reported a disruption to its supply chains. Roche supplies chemicals and other equipment used to process both Covid-19 tests and other common blood tests. The *Financial Times* reported that the problem was linked to “an issue at a new ‘automated warehouse’ which had caused ‘a very significant drop’” in the processing capacity of Roche.¹⁰⁰ At present, it is unclear when the problem will be resolved.

⁹⁸ [UK faces backlog of nearly 200,000 Covid-19 tests in government labs](#), *Financial Times*, 14 September 2020

⁹⁹ [Staff shortages, hazardous samples, and physically gruelling tasks ... inside the secretive Lighthouse labs](#), *The Telegraph*, 18 September 2020

¹⁰⁰ [NHS labs hit by shortage of vital kit and chemicals for Covid tests](#), *Financial Times*, 6 October 2020

3. Criteria for being tested

3.1 Early stages of the outbreak

At the start of the outbreak, until 12 March, the UK pursued a testing policy which aimed to “contain” the virus and “disrupt transmission”.¹⁰¹ The [Government's Coronavirus Action Plan](#) explained that, to contain the virus, it would seek to “detect early cases, follow up close contacts, and prevent the disease taking hold in this country for as long as is reasonably possible”.¹⁰² Professor Doyle told the Health and Social Care Committee that, during this period, PHE contacted “almost 4,000 people [...] from about 590 positive tests” but that they subsequently started to see community transmission:

At a point before we stopped that intensive contact tracing, it became clear to us that there were what I call dead ends of contacts where you had a case, you tried to find the contact, and it just was not possible, because that gave us the indication that there was sustained community transmission. Nevertheless [...] we kept going until mid-March, until we were absolutely sure that contact tracing in that way would not work.¹⁰³

As the UK [moved](#) from the ‘contain’ to ‘delay’ phase of its response to the virus on the 12 March, the criteria for testing narrowed to only the most severe cases.¹⁰⁴ A response to a Parliamentary Question ([PQ](#)) on the matter stated that the Chief Medical Officer had advised that it was necessary “to prioritise testing to those who have the greatest clinical need” with tests primarily given to:

1. all patients in critical care for pneumonia, acute respiratory distress syndrome (ARDS) or flu like illness;
2. all other patients requiring admission to hospital for pneumonia, ARDS or flu like illness; and
3. where an outbreak has occurred in a residential or care setting, for example long-term care facility prisons.¹⁰⁵

The Government Chief Scientific Adviser, Sir Patrick Vallance, indicated that the revised testing criteria reflected the UK's limited testing capacity:

We need to use the testing in the right place at the moment. We simply do not have mass testing available for the population now. There is a big effort going on to try to get it in place as quickly as possible to be able to manage this.¹⁰⁶

¹⁰¹ Q198 - Health and Social Care Committee, [Oral evidence: Preparations for the Coronavirus](#), HC 36, 26 March 2020

¹⁰² Department of Health and Social Care, [Policy paper: Coronavirus action plan: a guide to what you can expect across the UK](#), 3 March 2020

¹⁰³ Q198 - Health and Social Care Committee, [Oral evidence: Preparations for the Coronavirus](#), HC 36, 26 March 2020

¹⁰⁴ [Speech: PM statement on coronavirus](#), gov.uk, 12 March 2020

¹⁰⁵ [PQ 30157](#) [on Coronavirus: Screening], 24 March 2020

¹⁰⁶ Q83 -Health and Social Care Committee, [Oral evidence: Preparations for the Coronavirus](#), HC 36, 17 March 2020

3.2 Testing NHS staff

On the 27 March, the Government announced that Covid-19 testing would be extended to frontline NHS staff in England. The Minister for the Cabinet Office, Michael Gove, [stated](#) that “hundreds” of tests would “take place by the end of the weekend - dramatically scaling up next week”, [beginning](#) with critical care doctors and nurses and other intensive care staff, as well as those in emergency departments, ambulance services and GPs.¹⁰⁷ The [Government](#) confirmed that those who test negative for Covid-19 “will be able to return to work - enhancing the capacity of the NHS and social care to treat patients and care for those in community settings”.¹⁰⁸

The Department of Health and Social Care explained that the expansion in testing would be delivered through a new partnership between “Thermo Fisher Scientific, Amazon, Boots, Royal Mail and Randox, alongside the Wellcome Trust” and universities, to create a network of new labs and testing sites across the UK.¹⁰⁹ These include three new ‘hub laboratories’ – which will be set up for the duration of the crisis – together with “over 50 regional test centres around the country by the end of April”.¹¹⁰ In addition, Randox has developed and produced sample self-collection kits, to be “distributed through Amazon, to enable testing of critical key workers throughout the UK whilst they remain at home”.¹¹¹

The British Medical Association (BMA) and others had repeatedly called for NHS staff to be tested. The Chair of the BMA, Dr Chaand Nagpaul, told the Health and Social Care Committee that, when the announcement was first made to stop testing and contact tracing and to self-isolate instead, he had raised the issue of the impact it would have on the NHS workforce:

Literally the day after, we saw large numbers of NHS staff not coming into work [...] The staff themselves who were self-isolating were telling us that many of them felt able to work but were following the guidance. If they were able to be tested, they would come back to work. We made that point right at the outset, and it seems counter-intuitive that we are reducing our NHS workforce at a time when we need them the most.¹¹²

On 8 April 2020, Professor John Newton, the Government’s advisor on increasing Covid-19 testing capacity, stated that a total of 20,000 NHS

¹⁰⁷ [Coronavirus: Health workers on frontline to be tested in England](#), *BBC News Online*, 27 March 2020; [Frontline NHS staff first to receive new Covid-19 antigen tests](#), *The Guardian*, 27 March 2020

¹⁰⁸ [Press release: Government launches new drive on coronavirus tests for frontline NHS staff](#), Department of Health and Social Care, 27 March 2020

¹⁰⁹ [Press release: Government launches new drive on coronavirus tests for frontline NHS staff](#), Department of Health and Social Care, 27 March 2020

¹¹⁰ Department of Health and Social Care, [Coronavirus \(COVID-19\) Scaling up our testing programmes](#), 4 April 2020, para 1.17

¹¹¹ Department of Health and Social Care, [Coronavirus \(COVID-19\) Scaling up our testing programmes](#), 4 April 2020, para 1.18

¹¹² Q203 - Health and Social Care Committee, [Oral evidence: Preparations for the Coronavirus](#), HC 36, 26 March 2020

staff had been tested for Covid-19.¹¹³ The National Medical Director at NHS England, Professor Stephen Powis, clarified the testing criteria for NHS staff when giving evidence to the Commons Science and Technology Committee. He told Members that the scientific evidence did not support testing all NHS workers and that, instead, testing (at the time) was focused on:

those workers who are absent from work, either because a member of their family is unwell and has symptoms, and therefore they are in 14 days of home quarantine as per Government instructions, or they are symptomatic themselves and are therefore self-isolating for seven days [...] it is then the member of the household who is symptomatic who is tested; it is not the NHS staff member, because they are clearly in quarantine because somebody else is symptomatic.¹¹⁴

[Guidance](#) on 'coronavirus testing for critical workers who are self-isolating' was published on 15 April.¹¹⁵ The guidance has since been updated, see section 3.5 below.

3.3 100,000 tests

Five days after the announcement that testing was being extended to NHS staff, the Government faced renewed [criticism](#) after it became apparent that by 1 April, 2,000 NHS frontline workers had so far been tested, out of approximately 500,000.¹¹⁶ The following day, the Health Secretary, Matt Hancock, [pledged](#) that the UK would "carry out 100,000 tests for coronavirus every day by the end of this month" and set out a new 5-pillar plan to help realise that goal:

- Scale up swab testing in PHE labs and NHS hospitals for those with a medical need and the most critical workers to 25,000 a day in England by mid to late April, with the aligned testing strategies of the NHS in the Devolved Administrations benefiting from PHE's partnership with Roche through a central UK allocation mechanism;
- Deliver increased commercial swab testing for critical key workers in the NHS across the UK, before then expanding to key workers in other sectors;
- Develop blood testing to help know if people across the UK have the right antibodies and so have high levels of immunity to coronavirus;
- Conduct UK-wide surveillance testing to learn more about the spread of the disease and help develop new tests and treatments; and

¹¹³ Q142 - Commons Science and Technology Committee, [Oral evidence, UK Science, Research and Technology Capability and Influence in Global Disease Outbreaks](#), HC 136, 8 April 2020

¹¹⁴ Q146 - Commons Science and Technology Committee, [Oral evidence, UK Science, Research and Technology Capability and Influence in Global Disease Outbreaks](#), HC 136, 8 April 2020

¹¹⁵ Department of Health and Social Care, [Guidance on coronavirus testing for critical workers who are self-isolating](#), 15 April 2020

¹¹⁶ [Coronavirus: just 2,000 NHS frontline workers tested so far](#), *The Guardian*, 1 April 2020

- Create a new National Effort for testing, to build a mass-testing capacity for the UK at a completely new scale.¹¹⁷

The pledge was met with scepticism by some. Allan Wilson, President of the IBMS, told *The Times* that NHS labs did not have enough test kits, were struggling to source both kits and reagents and that he would, therefore, be “surprised” if the 100,000 target was met by the end of April.¹¹⁸ Testing manufacturers were also reported to be “blindsided” by the announcement.¹¹⁹ Doris-Ann Williams, chief executive of the British In Vitro Diagnostics Association (BIVDA), said:

The target is his target that he set without any consultation with industry [...] So while we'll do everything we can to help meet it because it's in our interest as part of the UK population, we can't make any promises.¹²⁰

A pilot of an ‘at home’ testing service, relying on logistics provided by Amazon, was reported by *The Times* to be beginning the week commencing 20 April, as part of the Government’s efforts to reach the 100,000 target. The approach was said to rely on swabs being sent to people’s homes. The individual uses the swab to take a sample from their throat, before it is collected. The scheme is separate from attempts to provide an ‘at home’ antibody test kit.¹²¹ A limited home testing service has since been rolled out, see section 3.5 for further details.

Meeting the target?

On Friday 1 May, the Health Secretary announced that the 100,000 target had been met:

I can announce that we have met our goal. The number of tests, yesterday, on the last day of April, was 122,347. This unprecedented expansion in British testing capability is an incredible achievement.¹²²

The Government was subsequently criticised for including in the figure approximately 39,000 tests that had been ‘mailed out’ to households and satellite testing centres, but which had not yet been returned. The Shadow Health Secretary, Jonathan Ashworth, said:

Many would have expected the 100,000 promise to have been met by actually carrying out testing, not simply because 39,000 kits had been mailed out [...] This headline figure shouldn't count tests that hadn't been used or indeed might never be used.

¹¹⁷ Press release: [Health Secretary sets out plan to carry out 100,000 coronavirus tests a day](#), Department of Health and Social Care, 2 April 2020; see also Department of Health and Social Care, [Coronavirus \(COVID-19\) Scaling up our testing programmes](#), 4 April 2020

¹¹⁸ [We'll struggle to hit 100,000 coronavirus tests a day, say firms](#), *The Times*, 4 April 2020

¹¹⁹ [We'll struggle to hit 100,000 coronavirus tests a day, say firms](#), *The Times*, 4 April 2020

¹²⁰ [Coronavirus latest: Matt Hancock 'didn't consult' with manufacturers on 100,000-a-day testing target](#), *inews*, 4 April 2020

¹²¹ [Home tests for Covid-19 delivered by Amazon](#), *The Times*, 17 April 2020

¹²² Department of Health and Social Care, [Speech: Health and Social Care Secretary's statement on coronavirus \(COVID-19\)](#): 1 May 2020, 1 May 2020

Ministers promised us transparency, the public and NHS deserve clarity.¹²³

The *Health Service Journal* reported the testing figures for the 30 April as follows:

39,573 tests were completed at NHS and Public Health England laboratories, while another 39,153 were completed at drive-through sites. Along with the 27,497 home kits distributed by Amazon and the Royal Mail on behalf of the government – a further 12,872 tests were delivered to “satellite centres” which can be NHS hospitals or other places in need of tests.¹²⁴

Since Sunday 3 May, the number of daily tests had fallen to below 100,000, though it rose to 126,064 on 13 May 2020.¹²⁵ At Prime Minister’s Question Time on 6 May 2020, the Prime Minister stated that “the ambition [...] is to get up to 200,000 a day by the end of this month, and then to go even higher”.¹²⁶ The Government announced on 31 May 2020 that it had met the 200,000 target.¹²⁷ A subsequent target of establishing testing capacity for 500,000 tests a day by the end of October 2020 was outlined by the Health Secretary on 20 July 2020.¹²⁸

Concerns raised by the UK Statistics Authority and others about the presentation and publication of data on Covid-19 testing is outlined in section 4 of this briefing.

3.4 Care homes

Data published by the Office for National Statistics (ONS) for England and Wales show that, since the start of 2020, 8,312 deaths involving Covid-19 have occurred in care homes, with a further 386 deaths in hospices, compared to 22,873 in hospitals.¹²⁹ The ONS figures cover the period up to week ending 1 May 2020.¹³⁰ The most recent statistics available show that, between the period 2 March to 12 June 2020:

there were 66,112 deaths of care home residents (wherever the death occurred); of these, 19,394 involved COVID-19, which is 29.3% of all deaths of care home residents.¹³¹

¹²³ [Hancock says UK hit 100,000 tests amid claims tally is artificially boosted](#), *The Guardian*, 1 May 2020

¹²⁴ [Government counts mailouts to hit 100,000 testing target](#), *Health Service Journal*, 1 May 2020

¹²⁵ Department of Health and Social Care and Public Health England, [Guidance: Number of coronavirus \(COVID-19\) cases and risk in the UK](#), 13 May 2020, published on 14 May 2020

¹²⁶ [HC Deb 6 May 2020](#). The Government’s Covid-19 Recovery Strategy, published on 11 May 2020, subsequently clarified that the 200,000 figure referred to testing capacity, rather than tests.

¹²⁷ [Press release: UK reaches 200,000 coronavirus testing capacity target a day early](#), Department of Health and Social Care, 31 May 2020

¹²⁸ Department of Health and Social Care, [Next stages in the NHS Test and Trace plan](#), 20 July 2020

¹²⁹ Office for National Statistics, [Deaths registered weekly in England and Wales, provisional: week ending 1 May 2020](#), published 12 May 2020

¹³⁰ Office for National Statistics, [Deaths registered weekly in England and Wales, provisional: week ending 1 May 2020](#), published 12 May 2020

¹³¹ Office for National Statistics, [Deaths involving COVID-19 in the care sector, England and Wales: deaths occurring up to 12 June 2020 and registered up to 20 June 2020 \(provisional\)](#), 3 July 2020

The Leader of the Opposition, Keir Starmer, has called attention to what he described as “additional and unexplained care home deaths” occurring in April 2020:

The Office for National Statistics records the average number of deaths in care homes each month. For the past five years, the average for April has been just over 8,000. This year, the number of deaths in care homes in April was a staggering 26,000. That is three times the average and an additional 18,000 deaths. Using the Government’s figures, only 8,000 are recorded as covid deaths, leaving 10,000 additional and unexplained care home deaths this April.¹³²

The Prime Minister responded that “since the care homes action plan began we are seeing an appreciable and substantial reduction not just in the number of outbreaks, but in the number of deaths”.¹³³

The [COVID-19: Our Action Plan for Adult Social Care](#), to which the Prime Minister referred, was published on 15 April 2020. The Government [pledged](#) on this date that all staff working in social care settings who required a test would now be able to access one. The DHSC reported that, in mid-April 2020, over 3,000 social care workers had been referred to local testing centres.¹³⁴ In addition, the Government stated that all patients discharged from hospital into a care home would be tested before being moved. All care home residents with symptoms of the disease would also be tested; previously, testing was limited to the first five residents who were symptomatic.¹³⁵

Eligibility for testing in care homes has since been expanded further; the [UK Government’s COVID-19 Recovery Strategy](#) states that it is “offering a COVID-19 test to every staff member and resident in every care home in England, whether symptomatic or not” and that “by 6 June, every care home for the over 65s will have been offered testing for residents and staff”¹³⁶ (see section 3.5). The Prime Minister has also announced “a further £600 million [...] for infection control in care homes”.¹³⁷

While the pledge has been welcomed, concerns have been raised regarding the “logistical challenges” associated with testing residents and staff in care homes.¹³⁸ This is partly linked to the number of care homes in England. *BBC News Online* reported that while England has approximately 200 hospitals there are “more than 400,000 frail and vulnerable people [...] spread across more than 15,000 locations in England”, potentially making it “difficult [...] to get out to homes to carry out the tests and [to] process them quickly enough”.¹³⁹ The

¹³² [HC Deb 13 May 2020](#), c241. See also [Covid-19: “Staggering number” of extra deaths in community is not explained by covid-19](#), *BMJ* 2020: 369, published 13 May 2020

¹³³ [HC Deb 13 May 2020](#), c241

¹³⁴ Department of Health and Social Care, [COVID-19: Our Action Plan for Adult Social Care](#), 15 April 2020, para 2.8

¹³⁵ Press release: [Government to offer testing for “everyone who needs one” in social care settings](#), Department of Health and Social Care, 15 April 2020

¹³⁶ Cabinet Office, [Guidance: Our plan to rebuild: The UK Government’s COVID-19 recovery strategy](#), last updated 12 May 2020

¹³⁷ [HC Deb 13 May 2020](#) c240

¹³⁸ [Coronavirus: More tests promised for care homes](#), *BBC News Online*, 15 April 2020

¹³⁹ [Coronavirus: More tests promised for care homes](#), *BBC News Online*, 15 April 2020

Association of Directors of Adult Social Services has also reportedly stated that testing care workers “appears to be being rolled out without being given thought to who is going to be tested and what we are going to do with the result”.¹⁴⁰

The National Audit Office published a report on 12 June 2020 on [Readying the NHS and adult social care in England for COVID-19](#) which examines, among other things, care home testing.

Further information is available in the Library briefing on [Coronavirus: Adult social care key issues and sources](#), published on 7 October 2020.

3.5 Expanding eligibility for testing

The eligibility criteria for testing in England were broadened again on 28 April 2020. The Health Secretary explained that because the Government had “been able to expand capacity” it could thus “expand access further”.¹⁴¹ While emphasising that its priority was “testing patients to inform their clinical diagnosis”, the guidance explained that the following people were now also eligible for testing:

- all essential workers including NHS and social care workers with symptoms (see the full list of [essential workers](#))
- anyone over 65 with symptoms
- anyone with symptoms whose work cannot be done from home (for example, construction workers, shop workers, emergency plumbers and delivery drivers)
- anyone who has symptoms of coronavirus and lives with any of those identified above
- social care workers and residents in care homes (with or without symptoms) both to investigate outbreaks and, following successful pilots, as part of a rolling programme to test all care homes
- NHS workers and patients without symptoms, in line with NHS England guidance.¹⁴²

To accompany the expansion in eligibility for testing, the Government introduced an online ‘self-referral’ route (in addition to the ‘employer referral’ route) to book a test and provided different ways to access testing. Tests can be currently be performed in:

- regional drive-through test centres;
- mobile testing units that travel to places such as care homes and prisons;
- home test kits are available to be delivered to a person's door, though the Government notes that the availability of the kits is currently limited;

¹⁴⁰ [Coronavirus: Social care concerns revealed in leaked letter](#), *BBC News Online*, 16 April 2020

¹⁴¹ Department of Health and Social Care, [Speech: Health and Social Care Secretary's statement on coronavirus \(COVID-19\): 28 April 2020](#), published 30 April 2020

¹⁴² Department of Health and Social Care, [Guidance: Coronavirus \(COVID-19\): getting tested](#), 4 May 2020

- NHS facilities.¹⁴³

Further detail was provided in the [Government's Covid-19 Recovery Strategy](#), published on 11 May 2020, particularly regarding testing for those living and working in care homes. The Government states that as part of its aim to test "every staff member and resident in every care home in England, whether symptomatic or not", every care home for the over 65s "will have been offered testing for residents and staff" by the "6 June".¹⁴⁴

In a statement to the Commons on Coronavirus on 18 May 2020, the Health Secretary announced that eligibility for Covid-19 testing was being expanded again:

Today, I can announce to the House that everyone aged five and over with symptoms is now eligible for a test. That applies right across the UK, in all four nations, from now.¹⁴⁵

The Health Secretary explained that tests could be booked online, or via a dedicated telephone number, and that access to tests for "NHS and social care, patients, residents and staff" would continue to be prioritised.¹⁴⁶

The vast majority of Covid-19 testing is for people who are displaying symptoms of the virus. As of 6 July 2020, however, weekly testing is also available for asymptomatic staff in care homes, while residents of care homes can be tested every 28 days. The Government stated that repeat testing will be "initially prioritised for care homes primarily looking after over 65s or those with dementia before being rolled out to all adult care homes".¹⁴⁷ It is estimated that providing testing to all care homes for the over 65s will take 4 weeks.¹⁴⁸

Both the Shadow Secretary of State for Health, Jonathan Ashworth, and the Chair of the Health and Social Care Select Committee, Jeremy Hunt, have called on the Government to introduce weekly, routine testing of NHS staff.¹⁴⁹ Initially, the Government advised NHS Trusts to "routinely test asymptomatic frontline staff [but] only on a strategic basis to reduce infection risk where there is reason for concern".¹⁵⁰ In mid-October 2020, the National Medical Director for NHS England, Professor Stephen Powis, announced that regular testing for NHS staff in "high-risk areas" would be introduced, including for those who do not have

¹⁴³ Department of Health and Social Care, [Guidance: Coronavirus \(COVID-19\): getting tested](#), 4 May 2020

¹⁴⁴ Cabinet Office, [Guidance: Our plan to rebuild: The UK Government's COVID-19 recovery strategy](#), last updated 12 May 2020

¹⁴⁵ [HC Deb 18 May 2020, c380](#)

¹⁴⁶ *ibid*

¹⁴⁷ [Press release: Regular retesting rolled out for care home staff and residents](#), Department of Health and Social Care, 3 July 2020

¹⁴⁸ Department of Health and Social Care, [Guidance: Coronavirus \(COVID-19\): getting tested](#), last updated 20 July 2020

¹⁴⁹ [HC Deb 24 June 2020 c1370: We must commit to weekly tests of NHS staff to prevent a second spike](#), *The Daily Telegraph*, 24 June 2020; Health and Social Care Committee, [Delivering core NHS and care services during the pandemic and beyond](#), 1 October 2020, HC 320 2019–21, para 121

¹⁵⁰ [Calls for weekly Covid-19 tests for all NHS staff](#), *Pulse*, 18 June 2020

symptoms.¹⁵¹ The *Health Service Journal*, however, reported that there is a disagreement between NHS England and NHS Test and Trace as to who is responsible for this additional testing:

NHS trust labs don't have enough capacity to test all their staff; and there is not enough spare in "pillar two" commercial labs to carry out hundreds of thousands of additional tests. National bodies are said to be in disagreement over who should do it. NHSE believes they should be provided by T&T, and T&T says NHS labs should expand their capacity to carry them out themselves, HSJ has been told.¹⁵²

Receiving test results

Some MPs reported in May 2020 that their constituents have faced delays in receiving their Covid-19 test results. Sir Robert Neill MP told the Health Secretary that test results were "taking five to seven days to come back, rather than the estimated 72 hours".¹⁵³ *The Times* also reported on 7 May 2020 that people who had been tested at drive through test centres, and via home test kits, were being told to wait up to ten days to receive a result.¹⁵⁴

During Prime Minister's questions on 3 June 2020, the Chair of the Health and Social Care Select Committee, Jeremy Hunt, asked how many tests for Covid-19 were "currently being turned around within 24 hours and whether he would be willing to publish that number on a regular basis?" The Prime Minister replied:

The answer is that we already turn around 90% of tests within 48 hours. The tests conducted at the 199 testing centres, as well as the mobile test centres, are all done within 24 hours, and I can undertake to him now to get all tests turned around in 24 hours by the end of June, except for difficulties with postal tests or insuperable problems like that.¹⁵⁵

The Department of Health and Social Care publishes [weekly statistics for NHS Test and Trace \(England\) and coronavirus testing \(UK\)](#), which includes information about turnaround times to receive Covid-19 test results. At the time of writing, the most recent data published was for the week 24 – 30 September 2020. The information below is directly quoted from the data release:

- 51,475 people tested positive for coronavirus (COVID-19) for the first time¹ in England between 24 September and 30 September, a 56% increase compared to the previous week.
- Between 24 September and 30 September, 86.8% of pillar 1 test results were made available within 24 hours.
- For in-person tests (local test sites, mobile testing units and regional test sites), 25.7% were received within 24 hours compared to 38% in the previous week.

¹⁵¹ [UK coronavirus: Chris Whitty warns tier 3 measures alone 'not enough to get on top' of spread — as it happened](#), *The Guardian*, 12 October 2020

¹⁵² [Exclusive: NHS England at loggerheads with Test and Trace over staff testing](#), *Health Service Journal*, 13 October 2020

¹⁵³ [HC Deb 5 May 2020, c484](#)

¹⁵⁴ [People told to wait ten days for coronavirus test results](#), *The Times*, 7 May 2020

¹⁵⁵ [HC Deb 3 June 2020 c 839](#)

- 23.1% of test results were received within 48 hours for home test kits and satellite test centres, compared to 19% in the previous week.
- Between 24 September and 30 September, the median time taken to receive a test result at regional test sites increased to 29 hours from 25 hours in the previous week. Similarly, local test sites increased to 31 hours from 29 hours, whilst mobile testing units increased slightly to 27 hours from 26 hours during the same period.¹⁵⁶

Complaints have also been raised that GPs have been unable to access the Covid-19 test results of their patients. One article, published in the *British Medical Journal* in May 2020, indicated that the problem was particularly linked to tests undertaken at ‘drive-through’ testing centres.¹⁵⁷ According to the *BMJ* article, the Department for Health and Social Care said:

data from the drive-through testing programme had been shared with Public Health England. It said it was working on a solution for local authorities to access data and to get covid-19 test results into individual general practice records in England accurately and in a way that minimised any risks to clinical safety.¹⁵⁸

A similar point was raised by the Shadow Health Secretary, Jonathan Ashworth:

We have a situation in which GPs cannot carry out tests, book tests or refer patients for tests. If someone goes to one of the Deloitte drive-through testing centres, or one of the centres where that role has been subcontracted to someone else, there is no requirement for the results to be sent back to their GP. GPs do not know who in their local area has been tested positive, because that is not going on their health records.¹⁵⁹

In response to a June PQ on “whether GPs will be informed by the NHS of which patients have been tested for Covid-19”, the Junior Health Minister, Jo Churchill, replied:

We are actively planning to get COVID-19 test results into individual general practitioner (GP) records in England. NHS Digital are leading, working closely with the Royal College of GPs and the British Medical Association. This needs to be carefully done to minimise any clinical safety risks and ensure it is done accurately. We are expecting this to start within the next couple of weeks. Scotland, Wales and Northern Ireland will have their own processes relating to healthcare records.¹⁶⁰

¹⁵⁶ Department of Health and Social Care, NHS Test and Trace, [Weekly statistics for NHS Test and Trace \(England\) and coronavirus testing \(UK\): 24 September to 30 September](#), published 8 October 2020

¹⁵⁷ [Covid-19: GPs can't get results of tests carried out at drive-through centres](#), *BMJ* 2020; 369, 11 May 2020

¹⁵⁸ *ibid*

¹⁵⁹ [HC Deb 24 June 2020 c 1374](#)

¹⁶⁰ [PO 48330](#) [on Coronavirus: Screening], 9 June 2020

NHS Digital reported on 20 July 2020 that Covid-19 test results are “now being automatically sent to GP systems as well as being communicated to the individual”.¹⁶¹

3.6 Prioritising swab tests for Covid-19 in England

In response to demand for Covid-19 testing outstripping capacity (see section 2.2), the Health Secretary announced on 15 September 2020 that access to testing would be prioritised according to need:

We have seen a sharp rise in people coming forward for a test, including those who are not eligible. Throughout this pandemic, we have prioritised testing according to need. Over the summer when demand was low, we were able to meet all requirements for testing, whether priorities or not, but as demand has risen we are having to prioritise once again.¹⁶²

A list of how and where tests were being prioritised was subsequently published by the Department of Health and Social Care on 21 September 2020:

Today, we have published our list of where tests are being prioritised, setting out how we will make sure tests are allocated where they are needed most: first, to support acute clinical care; second, to support and protect people in care homes; third, NHS staff, including GPs and pharmacists; fourth, targeted testing for outbreak management and surveillance studies; fifth, testing for teaching staff with symptoms, so we can keep schools and classes open; and then the general public when they have symptoms, prioritising those in areas of high incidence. I want to reinforce this important point: the system relies on people coming forward for tests if—and only if—they have symptoms of coronavirus or have been specifically advised to by a health professional.¹⁶³

The Shadow Health Secretary welcomed what “the Secretary of State said about prioritising NHS staff, care workers and teachers” but was concerned about testing in care homes, and reports that “care homes have had to wait over two weeks for their test results”, with “data from Public Health England [showing] that more than 200 care homes have had an outbreak of covid in the last two weeks”.¹⁶⁴

3.7 Contact tracing

Contact tracing rests on those who test positive for Covid-19 giving information to tracers about who they have been in ‘close contact’ with during the time that they were infectious. The Department of Health and Social Care defines a close contact as:

- having face-to-face contact with someone (less than 1 metre away);

¹⁶¹ [News: Coronavirus test results now visible to GPs](#), *NHS Digital*, 20 July 2020

¹⁶² [HC Deb, 15 September 2020, c181](#)

¹⁶³ [HC Deb, 21 September 2020, c624](#); Department of Health and Social Care, [Policy paper: Allocation of COVID-19 swab tests in England](#), 21 September 2020

¹⁶⁴ [HC Deb, 21 September 2020, c626](#)

- spending more than 15 minutes within 2 metres of someone;
- travelling in a car or other small vehicle with someone (even on a short journey) or close to them on a plane;
- if you work in – or have recently visited – a setting with other people (for example, a GP surgery, a school or a workplace).¹⁶⁵

If a contact is deemed to be at higher risk of infection, they are asked to self-isolate for 14 days; if they subsequently become unwell and develop symptoms, they are tested for Covid-19.¹⁶⁶ The overarching aim of contact tracing is to contain ‘pockets’ of infection, to help prevent the spread of the virus.¹⁶⁷

Tracers are often public, or environmental, health professionals. A response to a [PQ](#) on 6 May 2020 explained that the DHSC was, at that point in time, “in the process of recruiting 18,000 staff” to assist with contact tracing.¹⁶⁸ The UK, however, has also trialled, and subsequently introduced, a form of contact tracing that relies on a tracing ‘app’. This approach has also been pursued in Singapore, South Korea and some EU countries. Professor Fraser from the University of Oxford Big Data Institute gave evidence to the Commons Science and Technology Committee on 28 April 2020 on how ‘digital’ contact tracing can work in practice. He explained to Members why he thought a tracing app was needed:

what differentiates Covid is that it is transmitted before people become symptomatic [...] we concluded that manual contact tracing would be unlikely to be quick enough to get the message to people who were infected before they became infectious. There was a limit, and you could not get ahead of the epidemic. The app solves the problem of how you get the message to the person who might be infected before they become infectious and symptomatic.¹⁶⁹

NHS Contact tracing app

The *Financial Times* described the Government as taking a “dual-track” approach to contact tracing that was reliant on increasing the number of human contact tracers working for Public Health England from under 300 to approximately 18,000 and by developing:

an app that will allow members of the public to request a testing kit and automatically alert others they have come into contact with that they may also be infected.¹⁷⁰

¹⁶⁵ Department of Health and Social Care, [Guidance: NHS test and trace: how it works](#), 31 July 2020

¹⁶⁶ Department of Health and Social Care, [Guidance: NHS test and trace: how it works](#), 31 July 2020

¹⁶⁷ [Coronavirus \(COVID-19\) Expert interview: What is contact tracing?](#) Public Health Matters Blog, Public Health England, 13 February 2020

¹⁶⁸ [PQ 42052](#) [on Local Government: Coronavirus], 6 May 2020

¹⁶⁹ Q335 – Commons Science and Technology Committee, [Oral evidence. UK Science. Research and Technology Capability and Influence in Global Disease Outbreaks](#), HC 136, 28 April 2020

¹⁷⁰ [How will the UK’s new contact tracing programme work?.](#) *Financial Times*, 24 April 2020

Responding to a question at the Government's daily Covid-19 briefing on 28 April, the Health Secretary said that he expected the 18,000 contact tracers to be "in place before or at the time the [NHS contact tracing] app goes live", which was anticipated to be mid-May.¹⁷¹ The Health Secretary subsequently announced on 18 May 2020 that "21,000 contact tracers had been recruited in England" including "7,500 healthcare professionals who will provide [...] call handlers with expert clinical advice".¹⁷²

An NHS Covid-19 contact tracing app was published to Apple and Google's app stores on the 4 May 2020 and was being piloted on the Isle of Wight.¹⁷³ On 18 June, the UK Government announced that it would be changing the trialled app to make use of a software interface released by Apple and Google in May.¹⁷⁴ Giving evidence to the Commons Science and Technology Committee, the junior health Minister, Lord Bethell, told Members that the UK app was unlikely to be released before the "winter":

Apps around the world have been challenging—I note that the Norwegians, Singaporeans, French and others have all been working on their app releases—and we are seeking to get something going for the winter, but it is not the priority for us at the moment.¹⁷⁵

The [NHS Covid-19 Contact Tracing App](#) was subsequently rolled out on 24 September 2020. David Williams (Second Permanent Secretary, Department of Health and Social Care) told the Public Accounts Committee on 17 September 2020 that the cost of both developing the app and its running costs for the 2020/21 financial year was estimated to be "around £25 million".¹⁷⁶

An *gov.uk* press release accompanying the launch of the app provides an overview of how it works:

The contact tracing element of the app works by using low-energy Bluetooth to log the amount of time you spend near other app users, and the distance between you, so it can alert you if someone you have been close to later tests positive for COVID-19 – even if you don't know each other.

The app will advise you to self-isolate if you have been in close contact with a confirmed case. It will also enable you to check symptoms, book a free test if needed and get your test results.¹⁷⁷

The Department of Health and Social Care has said that using the app is "entirely voluntary" and that advice from the app to get a test, or to

¹⁷¹ [UK sets new target to recruit 18,000 contact tracers by mid-May](#), *New Scientist*, 28 April 2020

¹⁷² [HC Deb 18 May 2020, c380](#)

¹⁷³ [Coronavirus: UK contact-tracing app is ready for Isle of Wight downloads](#), *BBC News Online*, 4 May 2020

¹⁷⁴ [Press release: Next phase of NHS coronavirus \(COVID-19\) app announced](#), Department of Health and Social Care, 18 June 2020

¹⁷⁵ [Science and Technology Committee, Oral evidence: Commercial Genomics](#), HC 140, 17 June 2020, Q94

¹⁷⁶ Q29 - Public Accounts Committee [Oral evidence: Digital transformation in the NHS](#), HC 680, 17 September 2020

¹⁷⁷ [Press release: NHS COVID-19 app launches across England and Wales](#), Department of Health and Social Care, 24 September 2020

self-isolate, cannot be enforced.¹⁷⁸ Initial reports indicated that app users were unable to record a positive test result if it had not been booked through the app (e.g. if the test had taken place in a hospital), though the Government has reportedly since fixed the problem.¹⁷⁹ The Department of Health and Social Care reported that, by 27 September, over 10 million people had downloaded the app.¹⁸⁰

For further information about contact tracing apps, see Parliamentary Office of Science and Technology, [Contact tracing apps for COVID-19](#), September Update, 24 September 2020

Test and Trace Programme in England

In a Written Statement on 5 May 2020, the Health Secretary confirmed that the NHS Covid-19 app was part of the “first phase” in the development and roll-out of a national “test and trace” programme which would “bring together the app, expanded web and phone-based contact tracing, and swab testing for those with potential Covid-19 symptoms”.¹⁸¹ Additional details were set out in the Government’s Covid-19 Recovery Strategy, published on 11 May 2020:

This [test and trace] programme will ensure that, when someone develops COVID-19-like symptoms, they can rapidly have a test to find out if they have the virus – and people who they’ve had recent close contact with can be alerted and provided with advice. This will:

- identify who is infected more precisely, to reduce the number of people who are self-isolating with symptoms but who are not actually infected, and to ensure those who are infected continue to take stringent self-isolation measures; and
- ensure those who have been in recent close contact with an infected person receive rapid advice and, if necessary, self-isolate, quickly breaking the transmission chain.¹⁸²

The Strategy document explains that the following systems need to be built and “successfully integrated” for the test and trace programme to work:

- widespread swab testing with rapid turn-around time, digitally-enabled to order the test and securely receive the result certification;
- local authority public health services to bring a valuable local dimension to testing, contact tracing and support to people who need to self-isolate;
- automated, app-based contact-tracing through the new NHS COVID-19 app to (anonymously) alert users when they have been in close contact with someone identified as having been infected; and

¹⁷⁸ *ibid*

¹⁷⁹ [NHS Covid-19: App issue fixed for people who test positive](#), *BBC News Online*, 28 September 2020

¹⁸⁰ [Press release: NHS COVID-19 app has been downloaded over 10 million times](#), Department of Health and Social Care, 27 September 2020

¹⁸¹ [HC Deb 5 May 2020 c36WS](#)

¹⁸² Cabinet Office, [Guidance: Our plan to rebuild: The UK Government’s COVID-19 recovery strategy](#), last updated 12 May 2020

- online and phone-based contact tracing, staffed by health professionals and call handlers and working closely with local government, both to get additional information from people reporting symptoms about their recent contacts and places they have visited, and to give appropriate advice to those contacts, working alongside the app and the testing system.¹⁸³

The Test and Trace system in England was launched on 28 May 2020. Information subsequently published by HM Treasury stated that it approved “£10 billion” for the programme.¹⁸⁴ Guidance from the Department of Health and Social Care explains that if you test positive for coronavirus:

the NHS test and trace service will send you a text or email alert or call you with instructions of how to share details of people with whom you have had close, recent contact and places you have visited [...] You will be told to do this online via a secure website or you will be called by one of our contract tracers.¹⁸⁵

For those contacted by the NHS test and trace service - either by text, email or phone call - because they been in close contact with someone who has tested positive for coronavirus, they will be:

told to begin self-isolation for 14 days from your last contact with the person who has tested positive [...] Your household doesn't need to self-isolate with you, if you do not have symptoms [...] if you develop symptoms of coronavirus, other members of your household must self-isolate immediately at home for 14 days and you must book a test.¹⁸⁶

Further, detailed information about Test and Trace is available from the Department of Health and Social Care: [Guidance: NHS test and trace: how it works](#), last updated 23 September 2020. There is separate guidance for the contact tracing systems in operation in [Northern Ireland](#), [Scotland](#) and [Wales](#).¹⁸⁷

From 28 September 2020, people in England will be required by law, under [The Health Protection \(Coronavirus, Restrictions\) \(Self-Isolation\) \(England\) Regulations 2020](#), to self-isolate if they test positive or are contacted by NHS Test and Trace. Contravening the requirement to self-isolate may result in a fixed penalty notice being issued of £1,000 in the first instance.

Questions about the readiness of the test and trace system in England have been raised since its launch. [The Guardian](#) reported on the 4 June 2020 that the Chief Operating Officer of NHS Test and Trace, Tony Prestedge, had told staff that:

I am sure when Dido [Harding, chief executive of scheme] announces this service later she will make clear that it is an

¹⁸³ ibid

¹⁸⁴ HM Treasury, [Plan for Jobs](#), CP 261, July 2020, para 3.34

¹⁸⁵ Department of Health and Social Care, [Guidance: NHS test and trace: how it works](#), last updated 23 September 2020

¹⁸⁶ ibid

¹⁸⁷ NI Direct Government Services, [Coronavirus \(COVID-19\): testing and contact tracing](#), not dated, Scottish Government, [Coronavirus \(COVID-19\): Test and Protect](#), last updated 30 July 2020, Welsh Government, [Test Trace Protect](#), last updated 4 June 2020

imperfect service at launch that we will improve over time and make it world-class by the time that we are moving towards the September or October time.¹⁸⁸

The Scientific Advisory Group for Emergencies (SAGE) considered the development of the Test and Trace System, and the parameters within which it would need to operate, at its meeting on 1 May 2020. It made the following recommendations:

- 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 they index case does not have Covid-19)
- SAGE agreed that at least 80% of contacts of an index case would need to isolate for an effective test and trace system.
- 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.
- 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.

The Chair of the Health and Social Care Committee, Jeremy Hunt, raised concerns in June 2020 with the Chief Executive of NHS Test and Trace, Dido Harding, that if Covid-19 test results were taking 48 hours to be returned, contact tracing could not begin within the requisite 48 hours stipulated by SAGE.¹⁸⁹ He asked what percentage of test results were returned within 24 hours, to which Baroness Harding replied:

I can give you broad averages. They have not yet been validated. I am sorry to keep giving the caveat. As we stand at the moment, over 90% of all tests come back to the individual within 48 hours.¹⁹⁰

In a paper on the [effectiveness and harms of different non-pharmaceutical interventions](#), dated 21 September 2020, SAGE has since commented on the operation of NHS Test and Trace to date:

An effective test, trace and isolate (TTI) system is important to reduce the incidence of infections in the community. Estimates of the effectiveness of this system on R are difficult to ascertain. The relatively low levels of engagement with the system (comparing ONS incidence estimates with NHS Test and Trace numbers) coupled with testing delays and likely poor rates of adherence with self-isolation suggests that this system is having a marginal impact on transmission at the moment. Unless the system grows at the same rate as the epidemic, and support is given to people to enable them to adhere to self-isolation, it is likely that the

¹⁸⁸ [NHS test-and-trace system 'not fully operational until September'](#), *The Guardian*, 4 June 2020

¹⁸⁹ Q528 - Health and Social Care Committee, [Oral evidence: Management of the Coronavirus Outbreak](#), HC 36, 3 June 2020

¹⁹⁰ *ibid*

impact of Test, Trace and Isolate will further decline in the future.¹⁹¹

Others have drawn attention to the centralised set up of the contact tracing system in England. The 'Independent SAGE', a group of scientists overseen by the former Chief Scientific Adviser Sir David King (which has no formal role in advising the Government and is different to the SAGE referenced above), states that contact tracing would normally:

be undertaken by local public health teams, for example in the event of an outbreak of meningitis in a school. The centralised system, in England at least, is untested and is being operated by companies with no previous experience in this area, albeit with input from trained public health staff.¹⁹²

Writing an opinion piece in the *British Medical Journal* in July 2020, Professor Khunti at Leicester General Hospital and colleagues indicated why a local dimension to test and trace was important:

A FTTIS [Find, test, trace, isolate and support] programme must have a locally embedded infrastructure with involvement of public health and infectious disease specialists, primary care, schools, community and religious groups and a network of locally based volunteer sector organisations. These groups have the local knowledge of their populations, can speak different languages, and will be culturally aware.¹⁹³

Changes to the operation of the NHS Test and Trace system, to "extend its partnership with local authorities", have since been announced. A *gov.uk* press release on 10 August explained that local areas would be given "dedicated ring-fenced teams from the national service" and that these teams would "focus their work on specific areas, alongside the relevant local public health officials to provide a more tailored service".¹⁹⁴ The same press release also reported a reduction to the number of contact tracers, with the "national [Test and Trace] service [moving] from 18,000 to 12,000 contact tracers on 24 August with remaining teams to be deployed as part of dedicated local Test and Trace teams".¹⁹⁵

Data publication for NHS Test and Trace

A weekly test and trace data bulletin is published by the Department of Health and Social Care. The most recently available data at the time of writing was for the week 24-30 September 2020. The headline figures are directly quoted below from the data release:

- 51,475 people tested positive for coronavirus (COVID-19) for the first time¹ in England between 24 September and

¹⁹¹ Scientific Advisory Group for Emergencies, [Summary of the effectiveness and harms of different non-pharmaceutical interventions](#), dated 21 September 2020, published online 12 September 2020

¹⁹² The Independent Scientific Advisory Group for Emergencies (SAGE), [Towards an Integrated Find, Test, Trace, Isolate, Support \(FTTIS\) response to the Pandemic](#), The Independent SAGE Report 4, 9 June 2020

¹⁹³ [Find, test, trace, isolate and support programmes need to be localised and culturally tailored to reach ethnic minority populations](#), BMJ Opinion, 21 July 2020

¹⁹⁴ [Press release: NHS Test and Trace service to strengthen regional contact tracing](#), Department of Health and Social Care, 10 August 2020

¹⁹⁵ *ibid*

30 September, a 56% increase compared to the previous week.

- 588,895 people were tested for the first time, consistent with the previous 3 weeks but an increase of 27% compared to the end of August. A total of 7,654,018 people have been tested for COVID-19 at least once since test and trace began.
- Turnaround times for pillar 2 (swab testing for the wide population) have become longer for all in-person testing routes compared to the previous week. In the most recent week, 60.8% of in-person tests results were received the next day after the test was taken compared to 70.6% in the previous week. Turnaround times for satellite/home tests have become notably shorter over the past 3 weeks.
- 34,494 people were transferred to the contact tracing system between 24 September and 30 September, an increase of 19% compared to the previous week.
- Of those transferred to the contact tracing system between 24 September and 30 September, 74% were reached and asked to provide information about their contacts. This has declined slightly from 74.6% in the previous week and the percentage of people reached has returned to similar proportions seen when Test and Trace launched.
- 101,782 people were identified as coming into close contact with someone who had tested positive between 24 September and 30 September. The number of contacts identified increased by 11% compared to the previous week and is more than 3 times higher than the end of August. For those where communication details were available, 82.2% were reached and asked to self-isolate. Taking into account all contacts identified, 68.6% were reached..¹⁹⁶

There have been reports that the national figures obscure regional differences in the number of contacts being reached. *The Guardian*, for example, reported that, in areas with the highest infection rates in England:

the proportion of close contacts of infected people being reached is far below 80% [...] More than 5,500 people in four areas with the highest infection rates in England were not contacted when they should have been told to self-isolate, the Guardian has learned. These included 3,340 people in Leicester, 984 in Kirklees, 759 in Rochdale and 448 in Blackburn with Darwen.¹⁹⁷

There has also been an instance where the details of thousands of people who tested positive for Covid-19 in England were not passed on to the contact tracing system or reported in the public Covid-19 case statistics between 25 September and 2 October 2020.

On 5 October, the Health Secretary told the Commons that, on Friday 2 October, Public Health England had “identified that over the previous

¹⁹⁶ Department of Health and Social Care, [NHS Test and Trace. Weekly statistics for NHS Test and Trace \(England\) and coronavirus testing \(UK\): 24 September to 30 September](#), published 8 October 2020

¹⁹⁷ [Test and trace failing to contact thousands in England's worst-hit areas](#), *The Guardian*, 23 July 2020

eight days, 15,841 positive test results were not included in the reported daily cases [...] due to a failure in the automated transfer of files from the labs to PHE's data systems".¹⁹⁸ The Health Secretary explained that "every single person who tested positive was told that result in the normal way and in the normal timeframe" and that as of 5 October, "51% of the cases" had now "been contacted a second time for contact tracing purposes".¹⁹⁹ The source of the problem, according to the Health Secretary, was a "PHE legacy [IT] system".²⁰⁰ He added that work on an "upgrade" was already "underway". *BBC News Online* reported that the IT issue was caused by the "ill-thought-out use of Microsoft's Excel software":

The issue was caused by the way the agency brought together logs produced by the commercial firms paid to carry out swab tests for the virus. They filed their results in the form of text-based lists, without issue. PHE had set up an automatic process to pull this data together into Excel templates so that it could then be uploaded to a central system and made available to the NHS Test and Trace team as well as other government computer dashboards.

The problem is that the PHE developers picked an old file format to do this - known as XLS. As a consequence, each template could handle only about 65,000 rows of data rather than the one million-plus rows that Excel is actually capable of. And since each test result created several rows of data, in practice it meant that each template was limited to about 1,400 cases. When that total was reached, further cases were simply left off.²⁰¹

The Shadow Health Secretary, Jonathan Ashworth, said that the failure to pass on the positive test results to the contact tracing system had put "lives at risk" and that "as many as 48,000 contacts have not been traced and are not isolating" because "almost 16,000 positive cases went unreported for a week".²⁰²

¹⁹⁸ [HC Deb 5 October 2020, c625](#)

¹⁹⁹ *ibid*

²⁰⁰ [HC Deb, 5 October 2020, c628](#)

²⁰¹ [Covid: Test error 'should never have happened' - Hancock](#), *BBC News Online*, 5 October 2020

²⁰² [HC Deb, 5 October 2020, c627](#)

4. Testing data

4.1 Presentation of testing data

The need for improvements in the presentation and publication of data on Covid-19 testing has been raised by the UK Statistics Authority. Sir David Norgrove, Chair of the UK Statistics Authority, wrote an open letter to the Health Secretary on 11 May 2020 asking for further clarity on whether the goal to carry out 100,000 Covid-19 tests a day – and 200,000 tests a day by the end of May – was intended to reflect:

- testing capacity;
- tests that have been administered;
- test results received; or
- the number of people tested.²⁰³

Sir David also commented that there was “limited detail about the nature and types of testing”, adding that it “would support trustworthiness for the testing data to be more straightforward to find, with detailed breakdowns and richer commentary”.²⁰⁴

The Secretary of State for Health and Social Care, Matt Hancock, responded to Sir David, outlining the steps that the Department was taking to improve the testing data, including:

- publishing a clear definition of how our target of capacity to perform 200,000 tests a day by the end of May will be measured and reported;
- reducing the volume of detailed technical comment each day but [complementing] this with a detailed note on methods that will also detail any revisions or updates to the figures;
- publishing a time-series of data, with more detail than our current daily totals, setting out clearly how this has grown over time and making it clear when new strands of testing were added in.²⁰⁵

A [methodology note](#) on Covid-19 testing data has since been published by the DHSC.²⁰⁶

Sir David wrote again to the Health Secretary on 2 June 2020. While welcoming the additions to the official data on Covid-19 tests, he stated that the figures were “still far from complete and comprehensible”, adding that the “testing statistics still fall well short of [...] expectations”.²⁰⁷ He called particular attention to the following, ongoing issues:

²⁰³ [Letter from Sir David Norgrove, Chair, UK Statistics Authority to Rt Hon Matt Hancock MP, Secretary of State for Health and Social Care](#), dated 11 May 2020.

²⁰⁴ *ibid*

²⁰⁵ Department of Health and Social Care, [Correspondence: Matt Hancock’s response to Sir David Norgrove’s letter about COVID-19 testing](#), 27 May 2020

²⁰⁶ Department of Health and Social Care, [Guidance: COVID-19 testing data: methodology note](#), updated 4 July 2020

²⁰⁷ UK Statistics Authority, [Sir David Norgrove response to Matt Hancock regarding the Government’s COVID-19 testing data](#), 2 June 2020

- the headline total of tests adds together tests carried out with tests posted out. This distinction is too often elided during the presentation at the daily press conference, where the relevant figure may misleadingly be described simply as the number of tests carried out. There are no data on how many of the tests posted out are in fact then successfully completed;
- the notes to the daily slides rightly say that some people may be tested more than once [...] but it is not clear from the published data how often that is the case;
- more generally the testing figures are presented in a way that is difficult to understand. Many of the key numbers make little sense without recourse to the technical notes which are themselves sometimes hard to follow.²⁰⁸

The Health Secretary's response to Sir David's second letter emphasised that NHS Test and Trace would be "publishing a weekly release which will set out core metrics on its operational performance" and that there would be closer working between the Office for National Statistics, Public Health England, DHSC and the NHS Test and Trace programme.²⁰⁹

On 23 May 2020, the Government stopped reporting how many people were tested daily in the community due to "technical difficulties".²¹⁰ It confirmed on 6 July 2020 that it would not resume publishing this daily data.²¹¹ The Department of Health and Social Care stated that the 'people tested' measure was "initially used to avoid counting one person tested several times in a short space of time" but that it now:

no longer usefully reflects the volume of tests carried out as, for example, a healthcare worker receiving their second, third or fourth test since the start of the pandemic would not be counted as they have been tested once before. Therefore, the people tested figure will be published on a weekly basis within the NHS Test and Trace statistics rather than daily.²¹²

A time series of testing statistics is published by the Government [here](#) and updated daily.²¹³ This details the number of tests at a national level. Please note that it includes tests posted out which may not be returned.

4.2 Accessing local testing data

On 29 June 2020, Leicester became the first city in the UK subject to a 'local lockdown', with local councils subsequently setting out other areas of Leicestershire that were included in the restrictions.²¹⁴ Around this time, concerns were repeatedly raised in the media about the ability

²⁰⁸ *ibid*

²⁰⁹ UK Statistics Authority, [Matt Hancock response to Sir David Norgrove](#), 12 June 2020

²¹⁰ [Coronavirus - Daily Update](#), Department of Health and Social Care, 23 May 2020, posted on Twitter

²¹¹ [UK calls halt to daily data on number of people tested for Covid-19](#), *The Guardian*, 6 July 2020

²¹² Department of Health and Social Care and Public Health England, [Guidance: Coronavirus cases in the UK: daily updated statistics](#), last updated 22 July 2020

²¹³ Department of Health and Social Care and Public Health England, [Guidance: Coronavirus cases in the UK: daily updated statistics](#)

²¹⁴ [News story: Leicestershire coronavirus lockdown: areas and changes](#), Department of Health and Social Care, 30 June 2020

of councils, local public health teams, and other local bodies to access sub-national Covid-19 testing data in order to manage localised outbreaks.

Data on Covid-19 tests – namely the number of tests carried out – is only available at a national level. Data on *positive test results* for Covid-19 (confirmed cases) has been available to local authorities throughout the pandemic though there have been debates about both the geographical level at which the data is provided and its timeliness.

Before July 2020, Public Health England published full data of confirmed Covid-19 cases for England's nine main regions with a two-week delay. The *Financial Times* reported that the regional 'areas' were "too big to give local authorities a useful picture of the situation in their communities".²¹⁵ An article published in the *BMJ* on 25 June 2020 emphasised that "full postcodes, and age and sex of suspected and confirmed cases are essential for monitoring outbreaks in a local authority area and identifying clusters".²¹⁶ At that time, however, it reported that local authorities did "not have live access to this information and are instead sent aggregated data".²¹⁷ Giving oral evidence to the Housing, Communities and Local Government Select Committee on 15 June 2020, the Director of Public Health for Sheffield, Greg Fell, stated that "person-level data" was "not nice-to-know data" but rather was "necessary for the public health response in an emergency".²¹⁸

In addition to concerns about the geographical specificity, and timeliness, of published confirmed Covid-19 case data, questions were also raised about the extent to which the published data is complete at the subnational level. The *Financial Times* reported on 30 June 2020 that while the Government publishes "a UK-wide figure for Covid-19 cases every day that includes tests from hospitals and those processed by commercial laboratories, including samples taken at home", the same is not true at the subnational level, where the "total of new daily cases contains only hospital tests".²¹⁹ In short, 'Pillar 2' data – confirmed cases identified through testing in the community (eg at drive through test centres) – was not available at the subnational level on a daily basis.

A similar point was made at Prime Minister's Questions on 1 July 2020, when the Leader of the Opposition, Keir Starmer, stated that one of the problems facing Leicester was:

the local authority had only half the data. It had data for pillar 1 covid tests—NHS and care worker tests, and tests in hospitals—but not for pillar 2 tests, which are the wider tests in the community. That may sound technical, but it meant that the local authority thought there were 80 positive tests in the last fortnight

²¹⁵ [Lack of local Covid-19 testing data hinders UK's outbreak response](#), *Financial Times*, 30 June 2020

²¹⁶ P Roderick et al, [Getting back on track: control of covid-19 outbreaks in the community](#), *BMJ* 2020;369:m2484

²¹⁷ *ibid*

²¹⁸ Q134 - [Housing, Communities and Local Government Committee, Oral evidence: Work of the Department](#), HC 302, 15 June 2020

²¹⁹ [Lack of local Covid-19 testing data hinders UK's outbreak response](#), *Financial Times*, 30 June 2020

when the real figure was 944. The local authority was given the real figure only last Thursday, so there was a lost week while the virus was spreading.²²⁰

Since 2 July 2020, Pillar 2 data has been reported separately by all 4 nations. In England:

Cases are aggregated to Region, Upper Tier Local Authority (UTLA) and Lower Tier Local Authority (LTLA) level [...] UTLAs include Counties, Unitary Authorities, Metropolitan Districts and London Boroughs. LTLAs include County Districts (Non-Metropolitan Districts), Unitary Authorities, Metropolitan Districts and London Boroughs.²²¹

A Government press release on 17 July 2020 stated that the number of positive cases at both an upper and lower-tier local authority level are published daily on gov.uk and that, as of 16 July, the “data was broken down even further to local areas of 5,000 to 15,000 people, which will be published weekly”.²²²

One of the reasons cited for not sharing more granular-level data sooner on Covid-19 was data protection laws. Councillor Ian Hudspeth, Chairman of the Local Government Association Community Wellbeing Board, was quoted as saying “Public Health England have the data but they haven’t got the protocols in place to make sure there is that ability to share”.²²³ A subsequent editorial in the *BMJ* reported that “data sharing agreements have now been signed”.²²⁴

In response to a question on 14 July 2020 about access to household-level information, the Health Secretary responded that following:

a request from directors of public health right across the country, we have extended a huge amount of data to them. Those who have signed data protection agreements in upper-tier local authorities and who have the statutory responsibilities for dealing with this have got the data down to the personal details that she requests.²²⁵

Further information about data sharing between local authorities and Public Health England has been set out by the Department of Health & Social Care in [COVID-19 contain framework: a guide for local decision-makers](#), published on 17 July 2020. Covid-19 case data is published on the Government’s new dashboard, at this link: <https://coronavirus-staging.data.gov.uk/cases>

²²⁰ [HC Deb 1 July 2020 c317-318](#)

²²¹ [Coronavirus \(COVID-19\) cases in the UK: About the data](#), 2 July 2020, gov.uk

²²² [Press release: New powers and framework to help contain coronavirus \(COVID-19\) locally](#), Department of Health and Social Care, 17 July 2020

²²³ [Whitehall not sharing Covid-19 data on local outbreaks, say councils](#), *The Guardian*, 23 June 2020

²²⁴ M Gill et al, [Lessons from Leicester: a covid-19 testing system that’s not fit for purpose](#), *BMJ* 2020;370:m2690

²²⁵ [HC Deb 14 July 2020 c1402](#)

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