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CHANGE

# Staying Ahead of the Covid Curve

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## The UK Must Get Back Ahead of the Covid Curve

While the rollout of mass testing and the early stages of the vaccination programme put the UK in a strong position, the arrival of Omicron has placed renewed pressure on our defences against the virus.

The pressures Omicron poses are acute. It is a highly transmissible variant, with cases currently doubling every two days.<sup>1</sup> In recent days the total number of UK Covid cases has increased to more than 90,000 per day (although true figures may be much higher), with this likely to grow significantly over the next few weeks. The clear danger is that the spread of Omicron puts unsustainable pressure on the NHS. Across England, only 5 per cent of general NHS beds are free to cope with further Covid admissions, while median ICU occupancy is already at 90 per cent, with a quarter of NHS trusts reporting no spare ICU capacity at all. Acute NHS bed occupancy in London is already tracking above the historical average for this time of year, with the worst of Omicron still ahead of us.<sup>2</sup>

Evidence of the severity of the variant is still emerging, with existing studies pointing in different directions. Data from South Africa point to lower rates of hospitalisation than for the Delta variant, while an Imperial College London study found no evidence of reduced severity.<sup>3</sup> The World Health Organisation (WHO) also released findings suggesting that – while Omicron may evade antibodies, causing increased infections – T-cell protection, another line of the body's defence, is holding up against Omicron, potentially leading to reduced severity.<sup>4</sup> What is clear, however, is that until there is concrete and definitive data on Omicron, the UK must be prepared for all eventualities.

The measures we set out in this report aim to ensure pressure is relieved on the NHS as far as possible, while also putting in place the infrastructure the country needs to manage further waves of the virus.

Covid has changed how governments need to approach global health; the objective cannot be simply to get on top of one variant, or to tackle another wave and then wind down infrastructure. For the foreseeable future, countries will need to have in place the right systems to be able to respond urgently to new variants of Covid and to future pandemics.

To get back ahead of the curve, a set of urgent steps is required of the government.

- **Infrastructure:** Now the infrastructure is being ramped up to deliver an accelerated booster campaign, the capability must be kept in place to reinstate it at short notice. In light of data showing how soon the efficacy of two vaccine doses wanes, and the ever-present danger of new variants emerging, we must retain the capability to deliver mass-population vaccination at great speed. A fourth dose of the vaccine may soon be needed. One aspect of the infrastructure necessary to

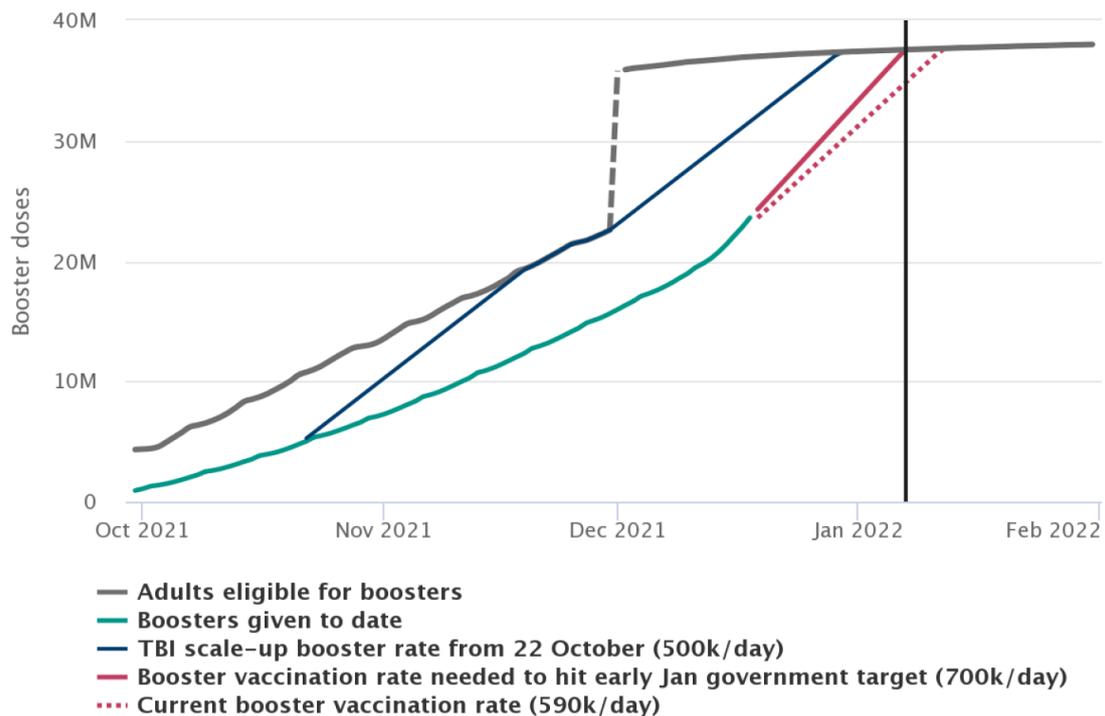
respond to future variant outbreaks is a better approach to “command and control” through a strong and coherent public-health emergency operations centre, and another is a well-established system of Covid passes. The government should publish the evidence base and detailed implementation guidance to support the NHS app’s COVID Pass. This would mean it could be quickly and easily expanded as necessary, for instance to all hospitality venues, or to share test results as well as vaccination status.

- **Antivirals:** The government must go further and faster in approving antivirals, ensuring those at risk with Covid have access to them and that the country has an adequate supply in the event of future waves of the virus. This will mean building up a comprehensive stock and linking antivirals with wider systems like Test and Trace. Enrolling in trials or receiving approved antivirals should be a button click away, following a positive test for the over-50s.
- **Vaccinating children:** Several countries, including the US, Denmark and Israel, have authorised and begun vaccinating children aged between 5 and 11, with no health issues reported. The Joint Committee on Vaccination and Immunisation (JCVI), which is still evaluating the data, should rapidly authorise the vaccination of 5- to 11-year-olds in a bid to reduce transmission and ensure schools are not disrupted at the start of 2022.
- **Testing:** The UK has put in place a world-leading testing capability. To maintain that, we need to ensure we have the best-in-class tests that technology can offer, that we streamline the end-to-end testing process, and harness new technology as it emerges. PCR testing, for instance, no longer needs to rely solely on nasopharyngeal testing but can now include reliable and highly accurate saliva testing and other emerging testing technologies to complement existing testing capacity, rapidly reduce turnaround times, and ensure ubiquitous testing across the UK. Lateral-flow tests must also be widely available and used effectively, focusing on identifying those who are infectious and thereby preventing transmission. Isolation rules must also be addressed urgently. NHS workers who come into contact with a positive Covid case should either move to daily lateral-flow testing or have access to expedited PCR capability. Wider rules for those who test positive should also be investigated, with the option of introducing daily lateral-flow tests and releasing people from isolation after two negative tests.
- **Campaigns to target the unvaccinated:** 6.2 million people in the UK remain completely unvaccinated. The next phase of our response to the virus must include not only delivering boosters, but also increasing overall uptake of the vaccine. This will require careful identification of those unwilling to be vaccinated and bespoke plans to persuade them to get the jab. In particular, this campaign should focus on the over-50s who are yet to be vaccinated. Over-50s who are unvaccinated currently comprise around 20 per cent of all Covid hospital admissions, with the unvaccinated overall making up 43 per cent. This requires bringing rapid anthropological research and behavioural science to the fore, helping us better understand the barriers people encounter in engaging with public-health guidance, and helping us to carefully respond to community concerns.
- **Vaccinating the world:** As Delta proved and Omicron has reinforced, no single area of the world is safe unless the whole world is safe. Of course, the UK must ensure the country has the maximum possible protection from the virus through vaccination, but this should coincide with urgent global

action. This action should be coordinated through an emergency meeting of the G7 and G20 to create a specific taskforce to help countries that lack the capacity to deliver an effective vaccine programme.

On 21 October we released our [Boosting the UK's Covid Measures](#) paper, calling for 500,000 boosters to be administered a day. If this had been done, 26 million people would have received their booster between 22 October and 12 December, when Boris Johnson announced that everyone would be offered a booster by the end of the year. In England, 15 million people received a booster in that period, meaning that had the government followed our recommendation, over 11 million more doses would have been administered. Working from the date of our report, our rollout recommendation would have allowed every eligible adult in England to have been vaccinated by the end of the year. As it stands, the target of even offering every eligible adult a booster by the end of the year is in question.

**Figure 1 – Impact of accelerating the booster rollout in England to 500,000 per day in October**



Highcharts.com

Source: TBI calculations using UK Coronavirus Dashboard data. Note: Figure 1 compares the total adult population eligible for boosters to the number of adults vaccinated under various scenarios. The dotted line indicates the change in government policy in late November to bring forward the booster-eligibility threshold from six months after the second dose to three months. As the chart shows, a vaccination rate of 500,000 per day would have been fast enough to reach the 6-month eligibility cap by late November. The vertical, black line indicates the government's target to offer every eligible adult a booster by the end of the year, which would mean the rollout actually completes in early January. The current booster vaccination rate is calculated as the average of the last week (11 to 18 December).

The latest estimates from the UK Health Security Agency show that a booster dose improves protection against symptomatic Omicron to above 70 per cent.<sup>5</sup> A recent paper from Imperial College London also calculates that prior Covid infection may provide around 19 per cent protection against Omicron.<sup>6</sup> Using these numbers, our modelling suggests that increasing the booster rollout in October could have provided an extra 4 to 5 million people in England with Covid immunity by today, potentially averting tens of thousands of the hospitalisations we may see over the coming months.

To get back ahead of the curve on Covid and be better prepared for future waves, we believe the government should take the action set out in the following sections.

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## How We Get Ahead of the Curve

The government must act on the following areas of policy to ensure that we bear down on the Omicron variant and have in place the capability needed to deal with future variants.

### Putting the Right Infrastructure in Place

#### Vaccines

The announcement to offer every adult a booster vaccine by the end of December, despite being the right decision following the rapid increase in Omicron infections, caught health services off guard. The infrastructure that led to the world-class rollout that took place at the start of the year had not been maintained, so that many were unable to receive their boosters despite being eligible, in part because an issue between private contractors and the government arose over the decision to reduce the time between doses. This mistake must not be repeated, and the vaccination mechanism put in place in the past few weeks should be retained and expanded to ensure that future campaigns can happen at short notice.

These issues have highlighted the need to have “vaccine infrastructure” in place should a fourth dose be needed. This vaccine infrastructure, which should be able to be implemented within 48 hours, should involve the following: an adequate vaccine supply, venues in which to administer doses placed on standby, sufficient staff to ensure a rapid rollout and a quick-and-easy appointment system.

Having a large supply of vaccines should not be a problem. The government recently purchased 114 million doses, which will be used in any future vaccination campaign. The key issue regarding vaccine supply, which we previously mentioned in our Outpacing Omicron paper, is ensuring that any future rollout does not infringe on the UK’s COVAX commitments. For all the boosters administered in the UK, the end of the pandemic will occur only when vaccines are available, absorbed and administered globally.

As well as having enough doses, we need to ensure that we have the locations and the staff available to administer doses at short notice. The vital element is that these express, short-term rollouts should not impact on NHS capacity, so that non-Covid services can continue. This means that there must be a clear strategy for where people can go to receive their boosters at short notice: sports stadiums, concert halls and pharmacies could be turned into vaccination centres with little notice. These venues would also require a workforce that can be quickly mobilised and that would not reduce NHS capacity during any

rollout. This workforce could include retirees with both medical and non-medical backgrounds, medical students and volunteers.

The final phase in the creation of an effective vaccine infrastructure is an efficient booking system. The NHS website crashed several times following the announcement of the booster rollout, as people rushed to book their jabs. An updated website with the capacity to handle a vast amount of people without crashing would help to reduce confusion. People should then be able to book appointments based on prioritising people based on their age and medical condition.

### **Recommendation**

- Ensure that a vaccine infrastructure that can be mobilised within 48 hours is kept in reserve.

### **Command, Control, Coordination and Collaboration**

The UK response has been plagued by over-complex coordination mechanisms since day one, with confusing messaging to the public and a slowness to adapt to changing circumstances. Omicron has shown us it is imperative to address this gap for future variants and future incidents: a single national centre for command, control, coordination and collaboration is long overdue. The National Covid Response Centre was set up last year between Public Health England and NHS Test and Trace to help address this (with other organisations also invited to participate) and, while it brought coherence to the common situational-awareness picture, it was not empowered to go further and coordinate national-response operations or clarify strategy and plans.

The response is so wide-ranging that it inevitably demands attention from a vast array of people from vastly different organisational cultures with a diverse range of skills and expertise. Rather than marry the very best expertise to the most appropriate roles, there has been duplication of effort and competition, resulting in an inefficient application of resources. A single point of contact for leadership and coordination is a tried-and-tested route to mitigate such effects.

Several national agencies and taskforces have been established, and this has been counter-productive, because the levers for change that each organisation reaches for are inevitably the same overstretched regional and local ones needed by others, resulting in confusion and inertia. A better approach would be to centralise the national functions of “strategy and planning”, “data and analytics”, and “operations and logistics” to support regional and local response mechanisms. There is already an existing structure for this: a “Public Health Emergency Operations Centre.”<sup>7</sup> There are existing agreements for a National Flood Response Centre, so why not the same for infectious disease outbreaks?

### **Recommendation**

- Put the response on an unambiguous “command and control” footing, with a coherent national

Public Health Emergency Operations Centre that follows best practice and endures for future crises.

## **Covid Passes**

We first called on the UK government to embrace Covid passes as a public-health intervention last February. As we have argued, Covid passes should be a core tool for reducing transmission in the event of a variant of concern. They have been implemented in several countries around the world, including France, Italy, Denmark and Israel. There is evidence to show that they can reduce transmission, and public support for them has remained constant throughout the pandemic with 64 per cent of people supporting them for large events.

NHSX has developed digital Covid passes available via the NHS app; they are secure, free and simple to obtain and use. A verifier app is also available to help venues check customers' Covid passes.

At present, Covid passes are in use for large events throughout the UK (specific rules differ slightly between England, Wales, Scotland and Northern Ireland). However, they could play a much greater role in managing Covid. The government's mixed messages and refusal to engage with the political debate around Covid passes has generated immense confusion and allowed misperceptions to proliferate. The government should now ignore the vocal minority who view Covid passes as a form of excessive state coercion and instead accept the practical reality: a global pandemic requires unconventional but practical tools to help retain a semblance of normality. It now needs to match the technical solution provided by NHSX with political and regulatory support to enable it to deliver its full benefits.

As part of the infrastructure necessary to manage further Covid variant outbreaks, the government should develop and publish the evidence base on the impacts of Covid passes, communicate its policy approach clearly to businesses and the public, and work with businesses to develop detailed guidance as to how to implement them across a wide range of settings. This would put the UK in a position to expand their use, for instance in all hospitality settings, or by including a requirement to show a negative test result as well as vaccination status for some high-risk settings. Once businesses and the public are clear on the rationale for implementation, they can be easily scaled up and down as necessary to respond to levels of concern.

## **Recommendations**

- Put in place the necessary political and regulatory measures to support wider use of the NHS app's COVID Pass by expanding and publishing the evidence base, clearly setting out the policy principles underpinning the use of Covid passes.
- Developing and publishing detailed implementation guidance to allow a wider range of settings to adopt Covid passes rapidly as and when it becomes necessary.

## Antivirals

Antivirals are not a silver bullet but they should become a key tenet of the UK's pandemic response: in particular, directly acting antivirals (DAAs) that selectively target key stages of the viral life-cycle to suppress viral replication, reducing the likelihood of severe disease, hospitalisation and death. These will play a key role for those in at-risk groups in the early stages of infection and should be deployed immediately following a positive PCR test, prescribed by test-and-trace and embedded within the NHS contact-tracing app.

In the UK, one antiviral (remdesivir) is licensed, one antiviral from Merck (molnupiravir) has a conditional approval from MHRA, and one from Pfizer (Paxlovid) is being reviewed but has been approved by other regulators, including the European Medicines Agency. The latter should be rapidly reviewed and approved by the MHRA as, like Merck's antiviral, it is administered in pill form rather than an intravenous drip. Other approved interventional treatments tend to be monoclonal antibodies, such as those from GSK and AstraZeneca. These are administered by transfusion and will likely be given in clinics or to outpatients in hospital. They are especially important for immunosuppressed patients who test positive, but for the wider population pills will be key.

Data show the Pfizer pill – specifically designed to target Covid-19 – is around 90 per cent effective at preventing hospitalisation <sup>8</sup> and, in a study, 28 days after it was administered, no deaths were reported in patients who received it compared with ten deaths in patients who received a placebo. The Merck pill has fared less well, with one trial showing 50 per cent efficacy and another totally ineffective, netting out at 30 per cent. A UK-wide trial is ongoing but it's important to remember that even a 30 per cent reduction in hospitalisations, at a time when the NHS is under severe strain, will save lives and preserve vital hospital capacity.

The UK has ordered 250,000 courses of the new Pfizer pill and approximately 500,000 of the Merck pill. <sup>9</sup> These orders should be ramped up into the millions, especially for the Pfizer pill where a full course – costing around £400 – represents a significant cost-saving and a potentially life-saving intervention on an otherwise hospitalised Covid-positive person over 50.

Antivirals must be incorporated into the test and trace system. If a person over 50 tests positive, they should be automatically invited to enrol into a live trial of the Pfizer antiviral and this should be a button-click away. The precedent for these opt-in trials exists and is happening with the Merck drug through the PANORAMIC trial (sign up is [here](#)) but, save for a few mentions on news websites, it is under-publicised. At the time of writing, the trial had signed up only 451 participants. <sup>10</sup> Moving forward, the option to sign up after a positive test should be a priority for those at risk.

At present, our modelling suggests that between 2 to 3 million over-70s and 5 to 6 million people aged between 50 and 70 lack immunity protection from Omicron either through vaccination or past infection. Given that we have around 750,000 of the Merck and Pfizer antivirals, it should be possible for many positive cases in this age group to receive a round of antivirals immediately following a positive PCR test, preventing thousands of hospitalisations.

### **Recommendations**

- Expedite the approval and rollout of Paxlovid – the Pfizer antiviral – following EMA emergency approval.
- Ensure that anyone over 50 who tests positive for Covid-19 is immediately given the option of enrolling in a live trial or receiving approved, pill-based antivirals from Pfizer, Merck or other antivirals under review, reducing the likelihood of them being hospitalised.
- Invest in more antivirals to build a stock of millions, with the administering of antivirals embedded into test and trace.
- Monitor those receiving antivirals to mitigate against an antiviral-resistant variant developing, with a specific focus on the immunocompromised.

### **Issue in Focus: Preventing an Antiviral-Resistant Variant**

*Inadvertently creating the fertile ground for a variant that is resistant to antibodies is a significant problem, but very little evidence has been published on the potential to develop resistance to antivirals. We should treat them with caution but not hesitate to deploy them as the NHS faces significant pressure. Instead, extensive remote monitoring should take place when individuals, particularly immunocompromised patients, are given them. This includes ongoing PCR tests to ensure viral load is decreasing. Trials that combine different drugs should also be set up, as theory suggests this is an effective way to reduce the risk of resistance and, possibly, to improve clinical efficacy.*

### **Vaccinating Children**

Omicron has severely impacted children, with the Department for Education estimating that almost 236,000 children, roughly 2.9 per cent of all pupils, were not in school for coronavirus-related reasons on 9 December. According to the ONS, an estimated 5.6 per cent of primary school children tested positive for Covid during the week ending 11 December. In comparison, the percentage of children in years seven to 11 testing positive decreased, following the decision to reintroduce face masks for secondary school children. The ONS also reported that people working in education were among those most likely to be infected by Covid. Despite this, schools have mostly remained open. Pupils at certain schools have been sent home following suspected cases of Omicron, with classes moved online for the last week of term.

Schools are also unable to make concrete plans for January 2022, after health secretary Sajid Javid refused to rule out the possibility that schools would have to close in January. Should this occur, it will ensure that a whole generation of children have their education significantly disrupted for the third consecutive year.

As well as not being made to wear masks, most primary school children are unvaccinated. As Omicron continues to spread, it is likely to disproportionately affect children under 11, who are still not eligible to receive a vaccine. The JCVI is currently reviewing data on vaccines for 5 to 11-year-olds “as matter of urgency”, but no decision has been made on whether they will be offered a vaccine. Originally, the JCVI demanded caution over calls to vaccinate children, stating that the benefits did not significantly outweigh the potential risks associated with vaccinating young children, notably the possibility of heart inflammation, a rare side effect of the Pfizer and Moderna vaccines.

However, since then, the US Food and Drug Administration has given the green light for 5- to 11-year-olds to be vaccinated, and children have been able to be vaccinated since the end of October. Children received two vaccines, each containing one third of the dose used for those aged 12 and above, administered three weeks apart. The European Medical Agency authorised the same vaccine at the end of November and, following this, several European countries (including Denmark, Spain and Greece) have given their own approval. There have been no reports of any health risks posed by the vaccine.

There is little doubt that the JCVI will make the decision to vaccinate children, so there is no reason why this decision should be delayed. A rapid decision, followed by a concerted effort over the rest of the Christmas break, would enable a substantial number of children to receive a first dose, providing some protection and limiting the impact on schools in the new year.

### **Recommendations**

- Authorise the vaccination of children aged 5 to 11 as soon as possible to minimise the impact of Omicron on schools in 2022.
- Consider encouraging the use of masks in school for children aged 10 and 11 until 60 per cent of children aged 5 to 11 are fully vaccinated.

### **Upgrading Testing**

Over the past year the UK has put in place a world-leading testing infrastructure, with the capability to conduct a significant number of PCR and lateral-flow tests per day.

To maintain this position the government must ensure we have best-in-class PCR testing ubiquitously available and that the testing capability we have is being used effectively. Ultimately, a successful testing strategy is a diversified one. Reliance on one form of testing is not sufficient to meet demand when the

virus surges and different types of testing such as nasal swabs, saliva, breath testing, and lateral-flow tests can complement each other to fulfil this demand.

The existing nasal PCR testing capacity can be added to with new and innovative testing methods such as saliva and breath testing. These can be expanded into the community at scale for decentralised collection and instant logging of results in end-to-end data systems. Such an approach would enable more granular public-health monitoring and responses, streamlined workflows and protocols to rapidly increase testing throughput and reduce turnaround times to under 24 hours. During lulls in the spread of Covid, this system should operate at a background level but be able to rapidly scale up capacity in the event of future surges to cover the increased demand.

While not yet available with current technology, the government should set a goal of ubiquitously available reporting and recording of PCR test results at the point of care (i.e., at a testing centre, doctor's clinic) within 60 minutes by quickly adopting new technologies and providing the public-health framework and infrastructure for private companies to do the same.

### **Adopting Saliva PCR Testing**

While nasopharyngeal is often regarded as the “gold standard” test, it has its own limitations. The nasopharyngeal site can be difficult to reach, impacting on specimen collection and quality, which can in turn account for significant differences in sensitivity and increases the risk of false negatives. In addition, the invasive nature of nasopharyngeal testing can often cause discomfort and is unsuitable for those requiring frequent testing, for example, health-care workforce, students, border staff and other essential workers.

There are several advantages to saliva testing:

- It bypasses the need for invasive sample collection so is an attractive option for frequent testing.
- Self-sample collection reduces the need for health-care professionals to be involved in the process, enabling maximum utilisation of the health-care workforce during the pandemic.
- Some saliva tests, such as that developed by the University of Illinois Urbana-Champaign (UIUC) or Yale omit the common RNA-extraction step and utilise a modified method to avoid reagent competition and supply-chain issues for consumables such as plastics and swabs.
- Evidence indicates that it may be able to detect Covid earlier in the infection cycle than the nasopharyngeal method.

The use of saliva testing as a method to detect SARS-CoV-2 is rapidly increasing around the world. Countries such as New Zealand are looking to broaden their Covid testing strategies and boost their testing throughput by including saliva testing as a complement to nasopharyngeal testing.<sup>11</sup> A prime

example of this in New Zealand is the diagnostically validated covidSHIELD PCR saliva test used by Rako Science. This test has been demonstrated to be 99.1 per cent accurate at detecting Covid in saliva and is highly sensitive, indicating that it can detect lower levels of the virus in a sample, compared with a nasal swab.<sup>12</sup> This enables earlier detection of positive asymptomatic and symptomatic cases and strengthens capability to detect infection at an earlier stage, thereby drastically reducing the timescale during which infected persons can unknowingly spread the virus.

Widespread use of saliva testing could be used to keep universities and schools open. A real-world example of this is the University of Illinois Urbana-Champaign (UIUC) who used the covidSHIELD saliva test to test students two or three times a week. By January 2021, UIUC were performing one out of every 50 Covid tests performed in the US. They attribute their low Covid positivity rates, in part, to this protocol.

### **Innovative Technologies to Test for Covid**

Recent studies have shown that SARS-CoV-2 can be readily detected in the breath. This has driven the development of breathalysers that rely on viral RNA detection to diagnose SARS-CoV-2. Virus detection by such technologies is similar to a nasopharyngeal PCR test, however it may be a more accurate measurement of risk of infection as it detects airborne viral particles rather than fragments of SARS-CoV-2 RNA that persist in previously infected cells.

Samples from breathalysed Covid tests can be PCR tested and genome sequenced, enabling measurement of viral load and identification of the strain identity. Such a test could be adapted for environmental sampling in hospitals, transportation hubs and schools. Consideration, uptake and implementation of emerging technologies will be necessary to maintain the world-class testing capability of the UK as the virus evolves.

### **Thinking Laterally on LFTs**

The recent surge in demand for lateral-flow tests has shown how vital they are to the UK's defence against Covid. To maintain this role, they must be used correctly, linking to an effective Covid pass.

Critically, the government must set out and share simple-to-understand guidance on lateral-flow testing making clear:

- They identify infectious cases of Covid, not all cases of Covid.
- They should be used before meeting other people on the day of that meeting.
- They should be used every three days as part of regular surveillance testing.

They should be used every day by close contacts of known positive individuals, where those close contacts are not self-isolating. Action should also be taken by government to ensure stock and delivery capability is in place to meet surge demand, both in the ongoing struggle against Omicron but also so that large-scale testing can be quickly turned back on in the case of further waves or variants of concern of the virus.

## **NHS Staff**

The rapid spread of Omicron risks putting incredible pressure on the NHS. The BMA estimates that 50,000 NHS staff could be off sick by Christmas Day, not including those being required to isolate through household contacts.<sup>13</sup> While the isolation rules for fully vaccinated adults have been dropped, with fully vaccinated close contacts now required to take daily lateral-flow tests for seven days rather than isolate, different rules apply to NHS staff. NHS staff that are “contacts of someone confirmed Covid-19 positive” must take a PCR test and can only return to work if it is negative.

These rules must be addressed and changed urgently. We suggest two potential options:

1. Lateral-flow tests are effective at picking up infectious cases of Covid and we believe NHS guidelines could be brought in line with those for the rest of the adult population.
2. Rapid turnaround PCR testing should be made available for NHS staff so they can do a PCR test and receive a result within an hour rather than days.

Whatever option is adopted should be harmonised across NHS Trusts.

## **Isolation Rules**

The isolation rules for those testing positive should also be looked at carefully. With the high number of cases expected in the coming weeks, it is vital only those infectious with the virus are at home. We suggest careful investigation is undertaken on whether those positive with Covid could take daily lateral-flow tests during their ten-day isolation period and leave isolation when they have had two negative tests. This could allow staff to be back at work safely as soon as possible.

## **Recommendations**

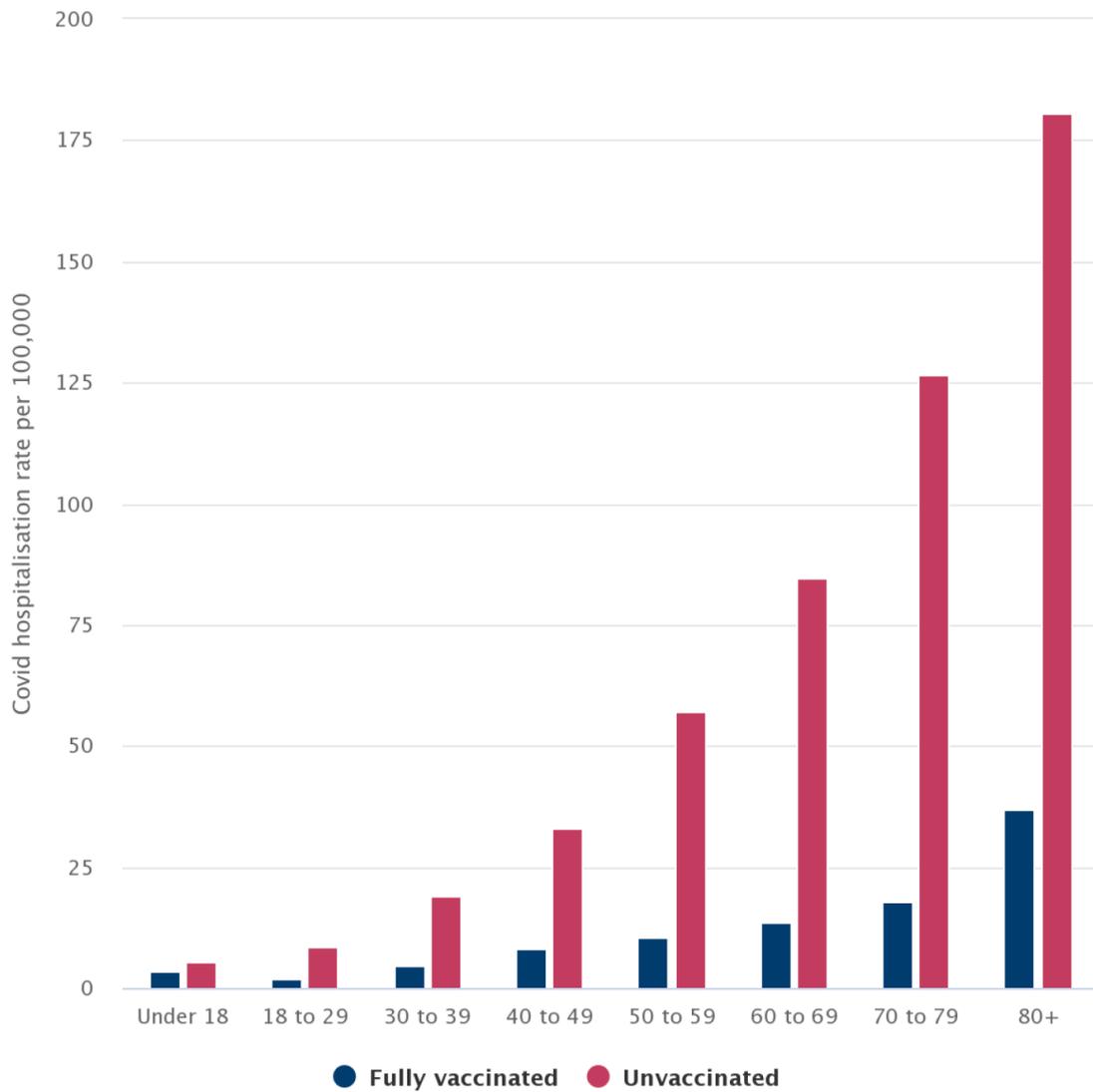
- Lateral-flow tests should be used on the day of meeting others.
- They should also be taken every three days as part of regular surveillance.
- Isolation requirements for NHS staff should be addressed urgently with the rules either brought in line with those for the rest of the population – daily lateral-flow tests – or provision made for rapid turnaround PCR testing.

- Conduct urgent investigation into isolation rules for positive Covid cases, for instance whether daily lateral-flow tests could be used and a person released after two negative results.
- Adopt existing testing technologies, such as saliva- and breath-testing, in tandem with nasal-testing to scale PCR testing into the community.
- Invest in end-to-end data systems to enable instantaneous access to test results to immediately inform public-health response, and ensure this infrastructure is kept warm to be able to respond to surges when they occur.
- The government should set an ambitious goal to reduce PCR test turnaround times at point-of-care to less than 60 minutes and make this universally available across the UK.

### **Vaccinating the Unvaccinated**

As of 7 December, there are over 6 million totally unvaccinated people in the UK, including at least 645,000 who are over the age of 50 and therefore at higher risk from Covid. These are individuals who have not received even a single dose of the Covid vaccine. Although a small group, the unvaccinated over-50s currently account for 20 per cent of all hospital admissions in England.<sup>14</sup> Irrespective of their age, unvaccinated people are also more likely to infect others if infected themselves, are four to five times more likely to end up in hospital, and are at much higher risk of death from Covid. To save lives, limit community spread and protect the NHS, government must redouble its efforts to vaccinate the unvaccinated.

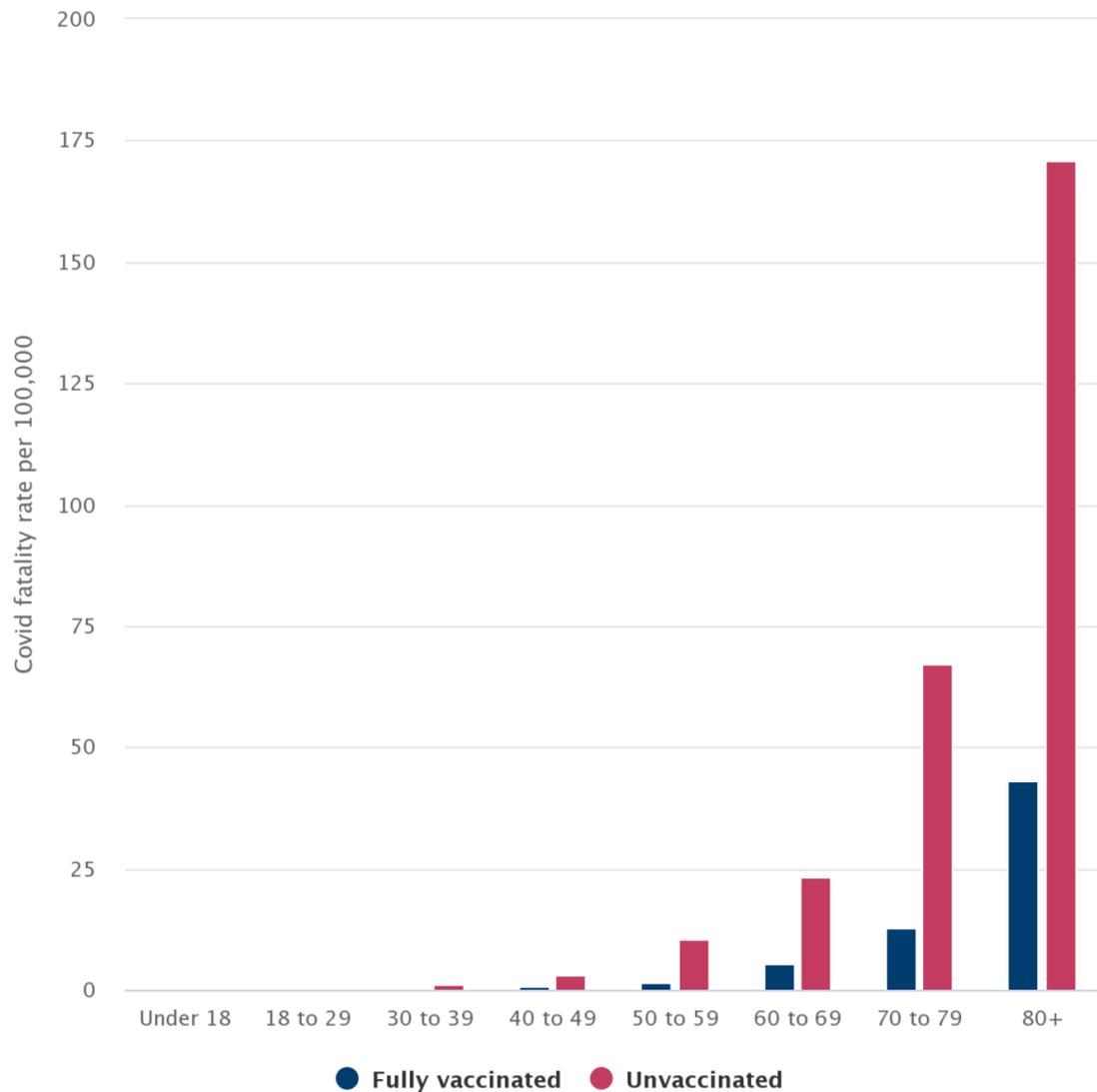
**Figure 2 – Covid hospital admission rates in England, by age and vaccination status**



Highcharts.com

Source: UK Health Security Agency Covid-19 vaccine surveillance report, Week 50. Note: This chart shows the unadjusted incidence of Covid-related hospitalisation in England between 15 November and 12 December 2021, broken down by age group and vaccination status.

**Figure 3 – Covid fatality rates in England, by age and vaccination status**

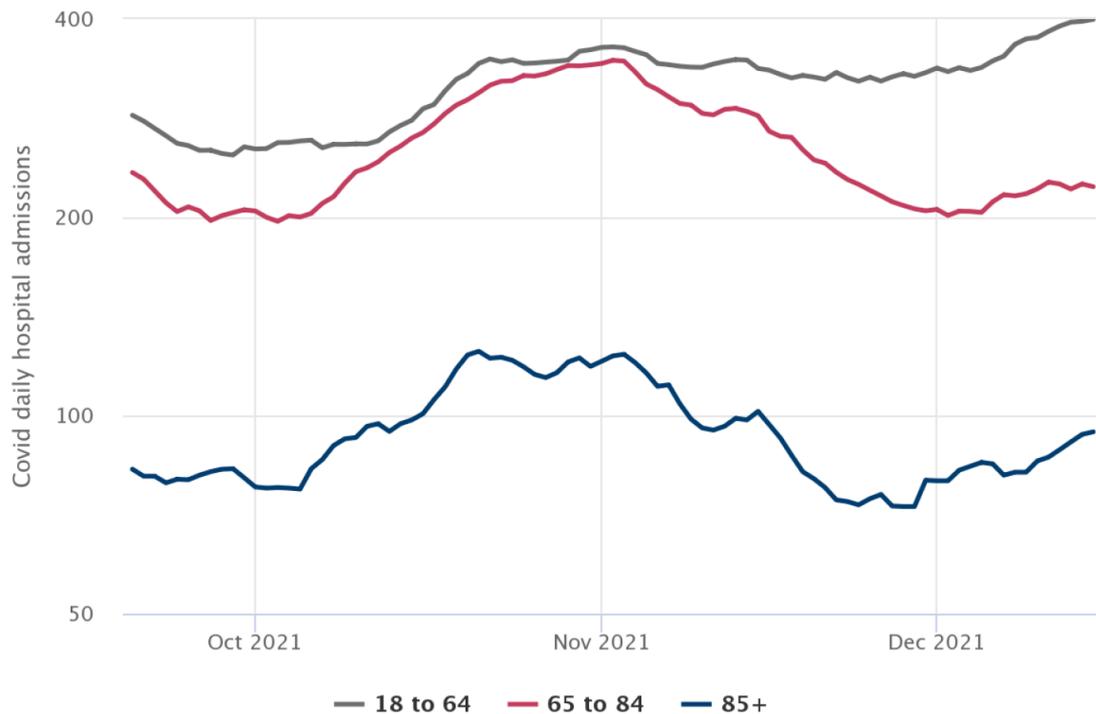


Highcharts.com

Source: [UK Health Security Agency Covid-19 vaccine surveillance report, Week 50](#). Note: This chart shows the unadjusted incidence of Covid-related mortality in England between 15 November and 12 December 2021, broken down by age group and vaccination status. Deaths are recorded based on whether a person died within 28 days of a positive Covid test result or had Covid reported on their death certificate.

While real-world data on the effectiveness of boosters at preventing hospitalisation is not yet available, we can roughly estimate this by looking at the relative incidence of hospitalisation during November among the people aged over 65 – who were 70 per cent triple-vaccinated by the middle of the month – compared to adults aged under 65, who were only 11 per cent covered at that time. As the chart below shows, the hospitalisation rates among older demographics fell relative to younger groups, likely indicating a substantial protective benefit from a booster vaccination.

**Figure 4 – Hospitalisations during November across high and low booster coverage age groups**



Highcharts.com

Source: TBI calculations using UK Coronavirus Dashboard data, method from James Ward (@JamesWard73). Note: The chart above uses a logarithmic scale to better visualise changes in hospital admissions over time. November was chosen to reflect a recent period where some age groups had high booster coverage but others did not, in order to clearly illustrate difference-in-difference effects.

Persuading the unvaccinated to take up the vaccine continues to be a major challenge and requires a better understanding of who exactly these individuals are. Across all age groups, the two key factors associated with Covid vaccine hesitancy are deprivation and ethnicity. Almost 60 per cent of the unvaccinated are in the bottom 40 per cent by deprivation, and the white British population from disadvantaged backgrounds is the single largest group (numbering at least 2 million aged 18 or older) among the unvaccinated. However, for some ethnic backgrounds such as black Caribbean, the rates of hesitancy are higher than deprivation alone would predict, with as many as 40 per cent unvaccinated.

The immediate priority must be to reach the groups at highest risk. A Cabinet Office taskforce on the unvaccinated should be set up and ensure that every unvaccinated person over the age of 50 receives direct communication from the NHS and an in-person visit. It is also worth placing a heavy focus on working with venues frequented by priority groups to ensure that elderly and disabled unvaccinated people continue to be informed of Covid-19 risks and vaccine safety, potentially setting up pop-up clinics so they can receive the vaccine there and then.

The taskforce should take a data-driven approach to identifying “hotspots”, areas with higher proportions of unvaccinated people than elsewhere in the country, and partner with the local communities and their leaders to deliver effective messages, assemble mass local vaccination campaigns with community

volunteers knocking on doors and targeted mobile vaccination services. Such social mobilisation has been a key part of the response to previous disease outbreaks elsewhere, such as Ebola, and requires rapid anthropological research to be built into the taskforce so that community fears, concerns and barriers can be properly understood then met with appropriate “risk communication” campaigns. Examples of such hotspots include the Newtown ward of central Birmingham, where half of over-16s have not received a single dose, Nottingham, where a quarter of the population remains unvaccinated, and in areas of London such as Westminster and Camden, where 30 per cent of over-12s have also yet to receive a single dose.

Alongside this effort, the taskforce should focus on developing and executing a plan to reach and persuade the large number of younger unvaccinated people who, while at lower risk of death, risk overwhelming the NHS and allowing community spread. Given the impact of deprivation on the uptake of vaccines, this activity should closely coordinate activities with the Department for Levelling Up, Housing and Communities and adopt a differentiated approach that recognises the different issues around lack of access and lack of trust among unvaccinated populations.

### **Recommendations**

- Urgently establish a Cabinet Office taskforce that focuses on the unvaccinated population, particularly the over-50s, and includes anthropological researchers.
- In the immediate term, organise a nationwide drive to reach the 650,000 unvaccinated people at highest risk from Covid (aged 50+) with individual communication, in-person visits and mobile vaccination clinics.
- In the medium term, coordinate with the Department for Levelling Up, Housing and Communities to develop a place-based, differentiated approach to reaching the several million unvaccinated Britons under the age of 50.

### **Vaccinating the World**

A smart response to Omicron will also need to extend beyond the UK’s borders. The spread of Omicron is the starkest reminder yet that, as long as some places remain unvaccinated, we all remain at risk. Developing a clear and credible plan to help vaccinate the world isn’t just a moral imperative, it’s the key to putting an end to lockdowns once and for all.

While UK adults receive their boosters and third doses, billions worldwide are yet to receive a single jab. Just 7 per cent of Africans are fully vaccinated, including just one in four healthcare workers. In the Democratic Republic of Congo – a country of nearly 90 million – only 0.1 per cent are fully vaccinated. Without proper protection, new variants – perhaps even more serious than Omicron – are inevitable.

But this isn't just a question of more vaccines. As global production ramps up, countries are increasingly facing problems of demand and absorption rather than supply. Earlier this year South Africa, where Omicron was first detected, had to turn down 191,000 doses of AstraZeneca, while the DRC returned 1.3 million COVAX doses. As we set out in an [earlier paper](#), new strategies are needed to develop infrastructure capable of delivering vaccines at scale, as well as to tackle hesitancy and counter disinformation.

The UK has a key role to play in this. Vaccinating the world doesn't mean giving up the doses we've secured for potential future booster campaigns; it means becoming smarter about how we help lower income countries. Sharing our world-leading expertise in genomic sequencing and ensuring funding goes to building health-care capacity for Covid-19 and beyond will be the fastest way out of our current crisis.

Beyond the UK, however, global action is required. We believe the G7 and G20 should convene an emergency meeting to discuss vaccinating the world. The focus of this meeting should be agreeing the creation of a dedicated taskforce to help countries lacking capacity to deliver an effective vaccine programme. As we've set out above, it is increasingly clear that supply is no longer the main issue. Without urgent action on vaccine absorption, we will not be able to vaccinate the world.

### **Recommendations**

- Ensure aid and expertise is directed to helping lower-income countries develop effective infrastructure and public-messaging campaigns for their vaccine rollouts.
- The G7 and G20 should convene an emergency meeting to create a specific taskforce to help countries lacking capacity to deliver an effective vaccine programme.

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## Conclusion

Omicron has posed a severe challenge to the UK's Covid defence. The speed with which the new variant has spread has highlighted both the urgency with which the government must maintain its efforts to tackle the virus, for instance through the booster programme, but also that it must put in place the right ongoing infrastructure capability to ensure we can respond urgently, at speed, to future waves of the virus.

In our [21 October report](#), we called for 500,000 boosters to be conducted per day. Had our recommendation been followed, the country would have vaccinated the eligible adult population by the end of the year. As it is, that target is in considerable doubt and instead will most likely be reached in mid-January.

To get back ahead of the curve on Covid, both in terms of responding to Omicron and ensuring the UK is as prepared as possible for future variants, we call on the government to take the following action.

### Recommendations

#### Infrastructure

#### Vaccines

- Ensure that a vaccine infrastructure that can be mobilised within 48 hours is put in place.

#### Command and Control

- Put the response on an unambiguous “command and control” footing, with a coherent national public-health emergency operations centre that follows best practice and endures for future crises.

#### Covid Pass

- Put in place the necessary political and regulatory measures to support wider use of the NHS app's COVID Pass, by (1) expanding and publishing the evidence base; (2) clearly setting out the policy principles underpinning the use of Covid passes; and (3) developing and publishing detailed implementation guidance to allow a wider range of settings to adopt Covid Passes rapidly as and when it becomes necessary.

## **Antivirals**

- Expedite the approval and rollout of Paxlovid – the Pfizer antiviral – following EMA emergency approval.
- Ensure that anyone over 50 who tests positive for Covid-19 is immediately given the option of enrolling in a live trial or receiving approved, pill-based antivirals from Pfizer, Merck or other antivirals under review, reducing the likelihood of them being hospitalised.
- Invest in more antivirals to build a stock of millions moving forward, with the administering of antivirals embedded into test and trace.
- Monitor those receiving antivirals to mitigate against an antiviral-resistant variant developing, with a specific focus on the immunocompromised.

## **Vaccinating Children**

- Authorise the vaccination of children aged 5 to 11 as soon as possible to minimise the impact of Omicron on schools in 2022.
- Encourage mask wearing for children in primary schools until 60 per cent of children aged 5 to 11 are fully vaccinated.

## **Testing**

- Take immediate steps to scale PCR saliva testing across the UK as a complement to the existing testing capacity.
- Explore the use of diagnostically validated and highly accurate PCR saliva tests overseas.
- Lateral-flow tests should be taken on the day of meeting others.
- They should also be taken every three days as part of regular surveillance.
- Isolation requirements for NHS staff should be addressed urgently with the rules either brought in line with those for the rest of the population – daily lateral-flow tests – or provision made for rapid turnaround PCR testing.
- Conduct urgent investigation into isolation rules for positive Covid cases, for instance whether daily lateral-flow tests could be used and a person released after two negative results.
- Infrastructure should be put in place and kept in place to cope with surge demand on testing in future, since it will remain a vital part of our response to Covid.

## **Vaccinating the Unvaccinated**

- Urgently establish a Cabinet Office taskforce that focuses on the unvaccinated population, particularly the over-50s.
- In the immediate term, organise a nationwide drive to reach the 650,000 unvaccinated at highest risk from Covid (aged 50+) with individual communication, in-person visits and mobile vaccination clinics.
- In the medium term, coordinate with the Department for Levelling Up, Housing and Communities to develop a place-based, differentiated approach to reaching the several million unvaccinated Britons under the age of 50.

## **Vaccinating the World**

- Ensure aid and expertise is directed to helping lower-income countries develop effective infrastructure and public-messaging campaigns for their vaccine rollouts.
- The G7 and G20 should convene an emergency meeting to create a specific taskforce to help countries lacking capacity to deliver an effective vaccine programme.

*Charts created with [Highcharts](#) unless otherwise credited.*

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## Footnotes

1. ^ <https://www.gov.uk/government/publications/sage-99-minutes-coronavirus-covid-19-response-16-december-2021/sage-99-minutes-coronavirus-covid-19-response-16-december-2021>
  2. ^ <https://www.ft.com/content/d69a0a68-d5ac-4ac3-98ac-1bbceec513b6>
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  5. ^ [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1040076/Technical\\_Briefing\\_31.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1040076/Technical_Briefing_31.pdf)
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  7. ^ <https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre>
  8. ^ Pfizer's Novel COVID-19 Oral Antiviral Treatment Candidate Reduced Risk of Hospitalization or Death by 89% in Interim Analysis of Phase 2/3 EPIC-HR Study | Pfizer
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  10. ^ <https://www.panoramictrial.org/> (19 December)
  11. ^ [https://covid19.govt.nz/assets/Review-of-Surveillance-Plan-and-Testing-Strategy/Final\\_Report-of-Advisory-Committee-to-Oversee-the-Implementation-of-the-....pdf](https://covid19.govt.nz/assets/Review-of-Surveillance-Plan-and-Testing-Strategy/Final_Report-of-Advisory-Committee-to-Oversee-the-Implementation-of-the-....pdf)
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  13. ^ <https://www.bma.org.uk/bma-media-centre/bma-warns-that-without-further-measures-nhs-could-face-almost-50-000-staff-off-sick-with-covid-19-by-christmas-day>
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