HOUSE OF COMMONS

Health and Social Care Committee

Oral evidence: Management of the Coronavirus Outbreak, HC 36

Tuesday 21 July 2020

Ordered by the House of Commons to be published on 21 July 2020.

Watch the meeting

Members present: Jeremy Hunt (Chair); Paul Bristow; Rosie Cooper; Dr James Davies; Dr Luke Evans; Neale Hanvey; Barbara Keeley; Taiwo Owatemi; Sarah Owen; Dean Russell; Laura Trott.

Greg Clark attended the Committee.

Questions 563 - 658

Witnesses

I: Professor Sir John Bell, Regius Chair of Medicine, Oxford University; Professor Sir Paul Nurse, Chief Executive and Director, Francis Crick Institute; Professor Devi Sridhar, Chair of Global Public Health, Edinburgh University; and Professor Sir Jeremy Farrar, Director, Wellcome Trust.

II: Dr Jenny Harries, Deputy Chief Medical Officer for England, Department of Health and Social Care; Professor Chris Whitty, Chief Medical Officer for England, and Chief Medical Adviser and Chief Scientific Adviser, Department of Health and Social Care for England; and Professor Jonathan Van-Tam, Deputy Chief Medical Officer for England.

Examination of witnesses

Witnesses: Professor Sir John Bell, Professor Sir Paul Nurse, Professor Sridhar and Professor Sir Jeremy Farrar.

Q563 **Chair:** Welcome to the House of Commons Health and Social Care Select Committee. Today we are focusing on the next steps in managing the coronavirus outbreak. I am delighted that we have Professor Chris Whitty, the chief medical officer, and his deputies Dr Jenny Harries and Professor Jonathan Van-Tam.

Before we hear from them, we are going to hear from some other important scientific voices. We give a particular welcome to our first panel. Professor Sir Jeremy Farrar is director of the Wellcome Trust and listed as an adviser on the Government's Scientific Advisory Committee, SAGE. Professor Sir Paul Nurse is a Nobel Prize winner and chief executive of the Francis Crick Institute. Professor Devi Sridhar is from Edinburgh University, where she is professor of global public health. She is an adviser to the Scottish Government. Professor Sir John Bell is regius professor of medicine at Oxford University.

Would everyone participating in the session put themselves on mute if they are not speaking? That is so that we do not get noises off and disturbances.

Sir Jeremy Farrar, you have been very honest about what you think has gone right and gone wrong. Let me quote one of your comments: "If I pointed at one difference, let's say, between Korea, Germany and the UK, it would be that those critical five or six weeks"—at the start of the pandemic—"are when Germany reacted more boldly and more courageously, and Britain was slow." Could you tell us what those other countries did in that five to six weeks that we did not do?

Professor Sir Jeremy Farrar: I would rather we broke it down. I think there are two critical periods. I will concentrate on the second one, but I do not want to leave the first one out.

You cannot just turn public health and the response to it on and off. You invest in it over many years. Often you do not see obvious benefits; it is not like clinical medicine, where there is an immediate response to what a nurse or a doctor does. You invest in it over the long term.

Frankly, since SARS 1, public health around the world, including in the UK, has been neglected. We have underestimated the warning calls from SARS 1, through Ebola, Zika and the pandemic of 2009. Maybe the world became a little bit cynical and thought that emerging infections were not going to cause the devastation that some people had said they would. We let down our guard and did not realise the power of infectious diseases. Critically, we need to look at the period prior to December 2019.

Coming into January and February, which I regard as the absolutely critical two months, it was very clear from the middle of January,

certainly around 20 January, that this infection was not like SARS 1. By that, I mean that it was transmitting between people who were asymptomatic or with very mild symptoms. That is not like SARS 1. It caused a clinical syndrome that went from very mild or asymptomatic all the way through, tragically, to very severe and death. That range of illness is unusual.

It was an animal infection that humans have no immunity to, and we had no diagnostics, no treatments and no vaccines. It was spreading between people; healthcare workers were getting sick and family members were getting sick. There was clearly a very high infection rate.

The lessons that Korea, Singapore and Vietnam had learned from previous epidemics were well implemented, and they acted quicker. The UK was slow to put in place testing and extra clinical capacity and slow to make sure that healthcare workers were protected with PPE. As a result, subsequent events led to the epidemic taking off in a way in the UK that was not the same as in Korea, Germany, Singapore or Vietnam.

Q564 **Chair:** One of the reasons it appears that we did not act so quickly was that SAGE's modellers did not actually model test and trace, as a fully-fledged option to be considered, until April, which was three months after we had our first case in the UK. Why was it that we did not model the test, trace and isolate method of approaching the pandemic?

Professor Sir Jeremy Farrar: Through January and February, the test and isolate structures in the UK were in place. The challenge was ramping them up to the level that was going to be needed. In the SAGE minutes of the middle of March, there was no surge capacity in the system, certainly in Public Health England. I go back to my earlier comments about investments in public health. Testing capacity for going up to potentially 1,000 a week at some point was nowhere near enough to cope with the growing epidemic that, by the middle or towards the end of March, was doubling every two to three days.

At that stage, the CMO faced a choice; either he continued testing in the community, which was the optimal choice, or he focused the testing capacity on patients and healthcare workers in hospital. Inevitably, the choice was made to test patients in hospital with the limited capacity that was available.

Remember that at that time there was a global shortage of the reagents for doing RT-PCR, the diagnostic test. Serological tests had not yet been developed robustly enough. I do not believe it was a scientific choice to stop community testing; it was a pragmatic one. If there is only limited capacity, where do we apply that capacity best? Inevitably, patients in hospital took priority.

Q565 **Chair:** On 18 February, the SAGE minutes said: "When there is sustained transmission in the UK, contact tracing will no longer be useful." It does not seem that it was entirely about capacity. There seemed to be a view

in SAGE that there came a point after which it was not worth doing contact tracing and isolation. Do you accept that it was not just about capacity, and there was also a strategic view that there came a point when testing and tracing was not useful?

Professor Sir Jeremy Farrar: I would have to ask you to check. I am not excusing myself, but I do not think I was at that SAGE meeting. Yes, I think there was a sense that there has to come a point when transmission is going on so much in the community that you do not have the ability to keep up with it; and that was a view shared in the Netherlands at that time. You are right, and I accept that it was a combination of having a limited number of tests and where they would best be deployed. The second question is, will there be so much transmission going on?

In retrospect, I think that was a mistake. If it was possible to ramp up testing and to have testing in place throughout January and February, as was the advice of WHO at that time, and was what Germany, Korea, Singapore and Vietnam were able to do, it would have been a better option to ramp up the testing in February.

It goes back to my comment about the eight weeks in January and February when I think there was not enough urgency. If I look back on my time on the SAGE committee, I regret that SAGE was not blunter in its advice and was not more robust, but it did not have the job of holding people to account, unfortunately, for the delivery of interventions that were made.

Q566 **Chair:** Thank you. Sir Paul Nurse, you have said frequently that you have governance concerns on that very issue—the way scientific advice is given to Ministers, exactly what Sir Jeremy Farrar was just talking about. Could you elaborate what those concerns are?

Professor Sir Paul Nurse: Thank you for the invitation to speak, Chair. First of all, it needs to be said that politicians and their advisers have been dealing with a very difficult situation in this pandemic. I had concerns about governance combined with the high-quality communication of decisions. Both of those are absolutely important.

The issue I have is that it has not always been clear, at least to me and my colleagues, who exactly is in charge and who has been making decisions. We constantly hear politicians say that they are following the science. Of course, that is good but have they fully communicated that, in a pandemic situation, especially at the beginning, science is tentative? It changes and it is evolving fast. It is uncertain. You cannot just have a single top-line phrase: "We are following the science." It has to be more nuanced. It has to deal with what we know about the science and what we do not.

My experience, in talking to advisers and politicians, is that I have never found it too easy to find out who is actually responsible for the different

parts of the strategy and, for that matter, the tactics that are being put in place. I have a sense that there has been too much pass the parcel. You talk to somebody and they say, "Well, we are only responsible for part of the system; we are not responsible for the other part of the system." Talking to the NHS, public health and other bodies, as well as politicians, I feel that we have not had a good governance system in place.

One example, which Jeremy just referred to, is the need to ramp up testing. The decision to invest in large lighthouse laboratories, which is not completely wrong, and the idea that that could be delivered in time to help with the pandemic, was clearly a big mistake. I have no idea who made that decision. SAGE was recommending that we needed testing, but who made the decision that we should rely only on big, centralised labs and not consider any other options?

In reality, what happened was that at the peak of infection, occurring in April and early May, the big laboratories were not properly in place to help. There were other options that would have been available and that would have allowed that to take place.

Perhaps we need to think about whether we have clear governance in place. Do we have it both at the executive level and at the political level? Unless we get that straight, we may run the risk of sleepwalking into, frankly, a winter of discontent, if we have an issue with second peaks and so on. We have to have greater clarity, in my opinion, about the governance and who is in charge.

Q567 **Chair:** When you say that we are following the science, is there a risk that we are putting too much weight on the shoulders of scientists? They like a high degree of certainty before they give advice, but in a pandemic you sometimes do not have that high degree of certainty and you have to decide things quickly. Is what you are saying that the governance risk is that decisions take too long if you do it that way?

Professor Sir Paul Nurse: I am saying that we all have a responsibility: the scientists, the advisers and the politicians. I am not blaming the politicians and I am not blaming the advisers. What I am saying is that, when you have a pandemic, knowledge is uncertain, and we cannot always rely on clinical trials to come to decisions. That is uncomfortable for scientists because they are giving advice in an uncertain situation. How do you deal with that? You have to deal with it honestly, to be quite honest.

If we did not have the capacity to test, it would have been best to admit that we did not have the testing capacity and that we were making do, but what we were hearing from different bodies was that there was sufficient testing to protect the NHS when there wasn't. The combination of perhaps trying to put a good face on it rather than facing the problem properly damaged the way we responded.

Q568 **Chair:** Let's go into that for a moment. One of the things you have been

very critical about is the failure to test more hospital staff, which you said is "making hospitals potentially unsafe places to be." Can you explain what you meant by that?

Professor Sir Paul Nurse: Yes, I can. We recognised that fairly early in the Crick. We are a research institution, so we are not in the same position as those who are normally involved. My colleagues at the Crick contacted Downing Street in March and wrote to Minister Hancock in April, emphasising two main things. The first was the importance of regular, systematic testing of all healthcare workers, including not only frontline doctors and nurses but support staff, ambulance drivers, and other healthcare providers such as care homes, GP surgeries, community nurses and the like. They all needed to be tested. At the height of the pandemic, our own research, which only backs up what has been done elsewhere, is that up to 45% of healthcare workers were infected. They were infecting their colleagues and patients, yet they were not being tested systematically.

The second point is the one that Jeremy made. It was quite clear that those without symptoms were likely to be transmitting the disease. Again, our own research has shown that nearly 40% of healthcare workers at that time were infected but had no symptoms. That was a major failure. In the healthcare environment, we were not providing proper protection.

That is important because it protects the most vulnerable in our society—the sick and infirm in hospital. It is important because it protects our healthcare workers. They deserve to work in a safe environment. Some of them are dying because of what they do. Frankly, they deserve better. They need to be protected and we need testing.

A third point is that, unless healthcare environments are seen as safe by the public, they will not go there for treatment for other diseases like cancer and so on. We have seen a real drop-off and difficulty in delivering healthcare.

A fourth reason is a simple one. Hospitals and healthcare environments are good indicators of infections breaking out. They are the canaries in the mine, if you like, because you find out what is going on in the local community. That meant we needed systematic testing, but we did not have systematic testing.

Q569 **Chair:** Could you possibly write to the Committee and share your evidence with us? It is very striking. You think that up to 45% of healthcare workers in some hospitals were infected at the height of the pandemic. It would be very helpful for us, in making our recommendations, to understand that a little better, if that was possible.

Professor Sir Paul Nurse: Yes; it would be possible.

Q570 **Chair:** We will ask Professor Whitty about this a bit later. One of the reasons that he is reputed to be hesitating and nervous about systematic

testing—we understand that he supports targeted testing where you know there is an outbreak, but not systematic regular testing of everyone—is the issue of false positives. Do you have any evidence on false positives?

Professor Sir Paul Nurse: Yes, we do. The Crick has been involved in testing for the last three months at a small level, but one that has given us quite a lot of experience. If the testing is done in an appropriate way, our level of false positives is down at one in 5,000, in actual fact. You have to have certain ways of doing it, and I do not know whether that has been put in place in the testing facilities that have been made more available, but one in 5,000 is clearly not a problem.

Others have said that it may be too expensive and that you can pool samples, which reduces cost. We have produced new assays that reduce the reagent cost. We make more of the reagents ourselves, so we can reduce the cost tenfold in the way we do some of the tests. The false positives issue could be solved if we had the will to solve it.

What I do not know is whether the way the big testing capacity has been put in place in the lighthouse laboratories is sufficiently flexible to allow changes in practice that allow you to deal with those sorts of issues. I do not know enough about them. They may be working efficiently, but we are getting very little information back, to be honest, on the turnaround times, the work flow and things of that sort, to be completely clear how well they are working.

Q571 **Chair:** Thank you. Sir John Bell, you said that saturation testing in hospitals should have happened from the get-go and is an absolute requirement—not antibody but PCR testing. You also used the word "pandemonium" to describe what could happen in winter if we do not ramp up testing. Could you explain what you meant by that?

Professor Sir John Bell: I agree with many of the things that Paul has said. The failure to aggressively approach healthcare testing with PCR was a major oversight, and one where I am not entirely sure what the motives were. I will come back to that in a minute.

What I know is that, as the numbers of cases rose in late March and April, it became very clear that the NHS lab capacity to deal with PCR had been completely overwhelmed. Jeremy has given you some of the numbers. PHE was completely out of its depth. It was not able at all to keep up with the numbers. By then, we already had the experience of Italy, where the conflagration of disease largely came from the failure to manage the disease properly in hospital; to know who had it and who did not have it. As a result, everybody in the hospital gets infected. They all go out into the community, and it was well documented that the problem in Italy was hospital testing that led to the great troubles they had in Lombardy and elsewhere. It was not a novelty to think, "Oh gosh, we should test healthcare workers." It was in fact something that we knew about from other places.

We also knew that the lab testing capacity in the NHS—to be clear, it is a long-standing issue—was very small. It is a cottage industry. They make up their own reagents. They do very small numbers of tests. It was not at all surprising that they got overwhelmed very early. We were at risk of not having any testing. That was the reason why there was a move to try to create centralised facilities.

As time went on, there still was not a real push to do healthcare workers and, indeed, all patients in hospital. It went on and on, and there was a suspicion, which I think is probably correct, that NHS institutions and the NHS were avoiding testing their hospital workers because they were afraid they would find the kinds of levels that Paul described and they would have to send everyone home and, as a result, not have a workforce.

In my view, that is not an ethical approach to the problem. You cannot not test people because you are worried about a human resources issue. I think that was a pretty central issue in the failure to test hospitals.

Q572 **Chair:** We will ask Professor Whitty about the saturation testing of healthcare workers. Looking forward, are you satisfied that we are ramping up flu vaccine implementation as much as we need, thinking about a second wave and so on?

Professor Sir John Bell: The nightmare scenario is that we get any sort of flu epidemic this winter, or even the usual levels of influenza, which usually starts to pack out A&E departments with people with respiratory problems and pneumonia. The elderly are particularly affected because their T-cells do not work very well in that disease.

Distinguishing clinically between severe flu and Covid-19 will be difficult. Obviously, testing will enable that, but there will be a big problem in sorting out the two populations. They will also put enormous pressure on our healthcare services. They will definitely fill intensive care units pretty quickly. That has been my concern, and the concern of others, for a while.

The solution, of course, is to try to get flu vaccine much more widely distributed, even more than it would normally be. As you know, there are specific groups that get it. There is intensive effort to vaccinate the elderly and people with underlying conditions. I would have thought that this is a year to try to get all the kids vaccinated and all people in middle age. It should be a year where we try to vaccinate everybody. Why would we not? Vaccines are cheap and they are pretty effective. That should definitely be on the radar.

Q573 **Chair:** Finally, I have a couple of questions to Professor Sridhar. You said that the decision in early March to shift from containing to mitigating the virus was disastrous. What did you mean by that?

Professor Sridhar: I have been following the outbreak since early January. We have learned things that have emerged. We learned in

January about the clinical profile of those who are hospitalised. By February, we learned the percentage and that it would be at population scale; 80% with mild symptoms and 20% requiring some kind of medical support, and an estimated fatality rate between 1% and 2%, but that has been revised downwards. We knew about the issue of asymptomatic infections from the *New England Journal* in February.

We could see it progressing, and we could see it playing out in east Asia. I think that was one of the benefits that European, North American countries and the whole world had. We saw what had happened in China, South Korea, Taiwan and Hong Kong and could start to figure it out. There was a playbook for how you could control the virus, and it was not uncontrollable. It was not like flu. There were measures that you could put in place.

For example, you could already see by February that South Korea was keeping a hold on it through mass testing and tracing and isolation of carriers, and they were trying to keep their economy going through that process. It seemed to be relatively successful. South Korea had travel restrictions and was watching for imported cases in early January. Most parts of the world had put them in by February and early March.

Next, we learned about face coverings and distancing between individuals, and clear communication and local dashboards of data. Having seen that there is a way through this crisis, it is not hopeless. You can find a way to suppress it. It is too dangerous a virus to let go. We still do not know about immunity or long-term health issues for those who recover; 98% or 99% of people might be fine, but what does it mean within that for those who might have long-term morbidity? It seemed like quite a dangerous decision to abandon containment when we had learned so much in January and February about how you could successfully contain the virus. There was a playbook and advice to follow on how to do that from other parts of the world.

Q574 **Chair:** Are you saying that we did not follow that playbook here?

Professor Sridhar: If you look at the SAGE minutes, which I have read carefully, from January to March, and you look at the policy decisions made, it seemed clear that it was seen as unstoppable and that you could not contain it, that it would be flu-like and it would probably not be as bad as we thought it was, and that perhaps we could even treat our way through it, if NHS capacity was built. That led to a strategy of building hospitals and increasing healthcare capacity, but not to putting the same effort into building up testing and tracing, which would have kept the pressure off the health services.

The countries that knew they could not treat their way through it—Greece, Senegal, Rwanda, Taiwan and Vietnam—because they did not have the healthcare facilities, the oxygen or the beds, knew that they had to keep pressure off the healthcare services through public health measures and containment. They did much better, whereas in the UK,

the US and several other countries, there was the feeling that as long as you could treat your way through it you could find a way forward, mitigating the worst.

Q575 **Chair:** One other thing. You said yesterday about the Prime Minister that you feared he was "painting himself into a corner" by promising there would not be a second lockdown. What did you mean by that?

Professor Devi Sridhar: If we look across the world, we do not have RCTs for a lot of policy interventions, but we have observational studies, which mean that you can look at other countries and learn in real time what is working and what is not. That is what our team has been doing.

One of the things we have seen is that this is an incredibly transmissible and infectious virus when it tips into community transmission. If you can keep it in clusters, such as in a church setting or in a hospital setting, and you can make sure that it does not spill over, by making sure that you have aggressive surveillance of those sites, you can find a way through.

If you have existing community transmission, which is where England is now, you are going to see spikes. It is inevitable, as we have seen in Australia with Melbourne. At a certain point, you are going to have to tip into a local lockdown. If the local lockdowns get too stretched and you have too many occurring, you get into a national lockdown. That is what has happened in other places. To say, "Oh, we're never going to have another lockdown," is not helpful. The only place on the planet you can say that is New Zealand because they are out in the Pacific, they are an island and they are checking everyone off flights. Everyone else always has the risk of tipping into transmission.

That is one of the things we have been trying to emphasise heavily in Scotland. If we can suppress the virus to zero, to as low as possible, and then catch it when we see cases in clusters where it tips into community transmission, we can get our economy and society going, get kids full time into school, get people out into restaurants and hospitality and all the things that the economy needs to get going, without the risk of a second lockdown.

Lockdowns are very blunt. I agree with the Prime Minister that they are like the last resort. Look at Leicester. I do not think the people there are happy to go into lockdown. If it is released, can you imagine it in a few weeks if they have to go into a lockdown in September? What we have seen in Serbia is that at a certain point people say, "No, we don't want a lockdown," and you have mass riots on the streets because people refuse, especially younger people who do not feel that they are affected.

I am just hinting that we should use the eight weeks of summer, when we can get people outside, to drive infections low and protect the low incidence areas. That is the best way to go into winter and try to avoid a second lockdown. That should be at the top of our minds. We need to avoid any of the mistakes we have made. We have had four months of

lockdown. It was way too long, and there probably was a better way through those months.

Chair: Thank you. Lots of my colleagues want to come in with questions. Would you direct your questions to whichever panellist you would like to answer first? We start with some questions about SAGE and how it works.

Q576 **Taiwo Owatemi:** Professor Sir John Bell, you spoke earlier about how we need to avoid a second outbreak. What do you think are the key failures and successes of the UK's response to the pandemic so far?

Professor Sir John Bell: The failures are the ones that Jeremy laid out at the beginning. We started too slowly. To add a comment to his, the fact that we were asleep to the concept that we were going to have a pandemic is shame on us. Since the year 2000, we have had eight close calls of emerging infectious diseases, any one of which could have swept the globe as a pandemic. Some of them carried very much higher mortality than this one. There have been three serious flu epidemics. Two of them failed to ignite, but one of them became global. We have had Zika. We have had Ebola. We have had two little outbreaks of SARS in Asia. We have had MERS. This is not new. We should not be proud of the fact that we ended up with a system that had no resilience to pandemics.

The biggest single failure was not being on the front foot. To be clear, Singapore started, as Devi described, preparing for trouble in the first week of January, whereas it took us very much to the end of February or beginning of March to get going. That is the single biggest failure, and a lot of things fall out from that.

At the other end of things, we have done really well in evaluating new therapies. The RECOVERY trial has been fantastically good. The discovery of dexamethasone cuts about 35% of mortality. We had some news yesterday that inhaled interferon might end up being a useful therapy. We eliminated the idea that chloroquine or ritonavir might be useful. We have done very well on that.

You know the news about vaccines. I do not want to overhype the news about vaccines, but we are in the hunt for a vaccine, as much as anybody else is, which is a pretty good result. Although it is true that the transition from a pretty chaotic testing environment in February to one where we have large-scale testing available has been a journey, today 94% of the tests done at the lighthouse labs get back to people within 24 hours, and to the health system. Given the fact that that is from the time you type in a request on your computer to the time it comes back, and not just from the time they take the swab, 94% is pretty impressive. They are doing something in the order of 100,000 tests a day, and will scale that to 200,000 tests.

We started late so, guess what, our responses are late, but I do not think the responses are bad. Some of this stuff is very impressive indeed.

Q577 **Taiwo Owatemi:** Professor Sir Jeremy Farrar, what do you think we

could have done better?

Professor Sir Jeremy Farrar: The critical phase that did not receive sufficient attention was during January and February. I have been involved in many of the epidemics that John just mentioned. I lived through SARS in Vietnam, where I lived for 18 years. I was very involved in Ebola and others. If your response is slower than the pace of the epidemic itself, you get behind the curve and you cannot catch up. Once the doubling time of the epidemic is two to three days, which is what it was in the middle of March, your response has to be faster than the pace of the epidemic. It cannot just be faster than usual. You cannot pat yourself on the back and say, "We are doing this quicker than we normally do it," because that is not good enough.

The only way you can do that is to have systems in place before you need them. That is why public health is so critical. The RECOVERY trial is a good example. The RECOVERY trial was successful because the people involved in it have been running epidemic clinical trials for 10 years. I pay tribute to Professor Peter Horby; he knows what to do, and he had an established system through ISARIC to get it going, and RECOVERY built from that.

If you try to establish structures in the middle of an epidemic, when it is chaotic and frightening and the science is uncertain, as Paul rightly said, you will always be behind the curve. That is what happened in January and February in a way that was different from countries that have experienced recent epidemics, like Vietnam, Singapore, Korea and Germany. They were faster off the blocks and they were therefore able to get ahead of the epidemic curve.

Q578 **Taiwo Owatemi:** What do you think we could do differently, if there was a second wave?

Professor Sir Jeremy Farrar: Devi had it right. The third phase of my crucial phases is June, July and August in the UK. If we do not use these three months wisely, if we do not assume there is a second wave coming and if we get complacent because people say, "It's not quite as bad as people thought it was," or, "There's a lot of mild disease out there," or, "Young people do not suffer," and if we have any sense of complacency that it is behind us, we will undoubtedly have a second wave, and we could easily be in the same situation again.

The lockdowns have made an enormous difference to community transition. They have done nothing to change the fundamentals of the virus. It remains as infectious as it was at the end of December. It has the same clinical syndrome. It kills the same number of people. As soon as the lockdowns ease, if we do not have mechanisms to change the fundamentals—the diagnostics, testing, treatment and vaccines—it will come back, and it will come back in winter with all the other respiratory things.

June, July and August are absolutely critical. If we do not have things in place by the beginning of September when schools restart, we will face a very difficult winter.

Q579 **Sarah Owen:** My first question is to Professor Sir Jeremy Bell, and then I have another couple of questions for the other panel members.

You have already touched on the decision to stop testing and tracing. On 12 March, at the press conference, Boris Johnson said that, according to scientific advice, banning major public events would have very little effect on the spread of the disease. Sir Patrick Vallance talked about needing immunity to protect ourselves from it in the future. Do you think that on 12 March the Government had decided to go through a strategy that included herd immunity?

Professor Sir Jeremy Farrar: Was that for me? I think you said Jeremy Bowen but he's a news reporter.

Q580 **Sarah Owen:** I'm sorry. I meant John Bell. I mixed you up.

Professor Sir John Bell: You can have it, Jeremy.

Professor Sir Jeremy Farrar: I will take it as a compliment. I am a public health physician and a clinical medic, as are many on your panel. None of us could argue for herd immunity. I do not believe that could ever be a public health approach to dealing with a pandemic that we know was already killing a lot of people in China. It was transmitting asymptomatically between people and had led to draconian interventions in much of Asia before it arrived in the UK. Allowing an infection like that, which we have no knowledge of, no human immunity to, and no treatment and no vaccine for, to spread through a community and sacrificing tens of thousands, if not hundreds of thousands, of people in some sort of idea that we would generate herd immunity is not something that any public health individual or clinician could argue for.

I do not believe that Patrick Vallance was arguing for that. I think what he was saying was that ultimately this can only be controlled when there is herd immunity, and that will have to come through a vaccine. That is as I understood it.

Q581 **Sarah Owen:** His full quote was: "It's not possible to stop everybody getting it and it's also actually not desirable because you want some immunity in the population. We need immunity to protect ourselves from this in the future." Even if the scientists did not want to pursue herd immunity, the Government appear to have done so by stopping the testing and tracing and allowing major public events such as Cheltenham and Atletico Madrid and Liverpool. Do you agree that at that stage the decision to stop test and trace, not to have a lockdown and to allow mass public gatherings to continue was effectively allowing herd immunity?

Professor Sir Jeremy Farrar: I do not accept the way you have characterised it, in the sense that I do not believe anybody could argue,

from a scientific and public health perspective, for an infection like this to generate herd immunity. I do not think anybody could make that argument when we knew so little about it but we could see awful things happening in hospitals in China and indeed, by the middle of March, in Italy. No; I could not characterise it like that and I do not believe SAGE ever advised that.

Q582 **Sarah Owen:** Professor Sir John Bell, could you come in on that as well, please?

Professor Sir John Bell: I agree with Jeremy. No one is used to making decisions around pandemics, particularly with a virus that no one has ever seen before. There are lots and lots of uncertainties. As a result, don't be surprised if the noise in the system is greater than you might expect. The truth is that we are learning things about the virus even today that we had no idea about in February and March. It is a brand new pathogen. We knew what it did in China. What we did not know about were any of the aspects of immunity, what the types of immunity were or what kind of durability that immunity had. All of those things we did not know anything about in February.

I have to say that I did not interpret Patrick's views as encouraging the development of herd immunity by allowing the disease to run rife in the population.

Q583 **Sarah Owen:** We did not know that in February, but we knew it in March when we saw what was happening in other countries. Other countries were effectively having lockdowns and were able to stop the transmission rates from increasing in the way that they were here. On 12 and 13 March, it had increased four times in the UK. Do you think that lockdown was too slow, in your opinion?

Professor Sir John Bell: Everybody would agree that had we locked down earlier we would have had a better effect from the lockdown. There is no doubt about that.

Q584 **Sarah Owen:** My other question is to Professor Devi Sridhar. Do you think that communication from the Government throughout the pandemic has been clear enough and consistent enough, not just for the general public but for healthcare professionals and businesses as well?

Professor Sridhar: Is it okay if I also answer the previous question? To go back to the point about herd immunity, the way I understand it is that there are two paths you can take with the virus: eradication, in which you get rid of every case on the planet, and it was clear that that was not going to be possible in March; and immunity, either vaccine induced or natural, where you hope that there are fewer susceptible people and at some point it stops transmitting because you have reached that.

Reading the 13 March SAGE minutes, they noted that full suppression of the virus was not advisable because it could result in a second peak. That was a unanimous decision taken at that meeting. That meant that at a

certain point you would want some of it to filter through. You would not want full suppression, and then, in the winter, you lift it, there is an explosion and healthcare collapses. That is the way I understood that at the time.

What that decision missed was the value of time and that science would deliver solutions. If we have a vaccine this fall, or even this winter, the countries that kept away their deaths and protected their populations will look smart. In the populations that frontloaded their deaths to try to get through, it will be, "Why didn't they take time?" It is the same with dexamethasone and the whole RECOVERY trial. There is so much that science is delivering that will protect lives that every day you can buy by keeping people unaffected by the virus is important.

Secondly, there is a way through with national elimination and border control, which is what more and more countries are going for. You use your borders, which is the best part of your system in a pandemic, to keep the virus outside, especially as it takes off.

Coming to your second question, yes, I think messaging is absolutely essential. Again, we saw that from east Asia. You have to take the public with you. The public will comply, not because they are forced to, or because there is military on the streets, but because they want to. People generally want to follow the rules if they understand them.

One point where you can see that England and Scotland diverged was when England changed in May to: "Stay alert." Many people did not fully understand what that meant. In Scotland, the message was very clear: "Stay at home." When we started to see divergence in infection rates and death rates, it was around that time. England, in a sense, started getting back to normal, whereas in Scotland we still could not travel more than five miles from home until later because it was very much, "We're still in a pandemic. Follow the rules, It's in our collective interest."

The message when face coverings were brought in was clearly communicated, with the First Minister wearing a mask and going around and showing people, so you got compliance jumping to between 90% and 95% when it was made mandatory. People understood it. If the messaging is mixed, there is a lot of confusion: "Should we wear a mask? Does it really matter? Is there scientific evidence?" It becomes a free for all, which is what you do not want in a pandemic.

Q585 **Neale Hanvey:** My question is initially for Sir Jeremy Farrar. You described the timing of events in March as a national catastrophe and alluded to the fact that the pandemic could have been avoided to some extent. That has also been commented on by other respected scientists.

Do you think that there could have been significant avoidance? We have heard lots of examples of how the mortality could have been avoided. Reflecting on that, looking towards the future, and focusing on messaging, which has just been picked up, I get the sense that the

message is that everything is fine. What targeted investments and resourcing are critical to get the timing right, and to get the messaging right as we move through the summer months?

Professor Sir Jeremy Farrar: First, the infectiousness of the virus is very different from SARS and flu. It is in every country now. I do not think that any country can escape having some impact from the infection. It is a question of the level of that impact. I believe that the decisions in January and February not to ramp up testing faster and not to make sure there was enough PPE for healthcare workers to protect the most vulnerable senior people and people with other disabilities—increasingly known by the middle to the end of February—were critical. Later, the vulnerability of people from BAME communities became obvious, but the elderly and the more vulnerable were known in February. The January and February period was critical to that.

Yes, I believe lockdown was too late. It should have come in earlier; indeed, in the weekend following the SAGE meeting there was pressure and urgency to lock down immediately, within the next 24 hours of that weekend and the coming week. That delay led to the epidemic expanding faster than if the lockdown had been imposed earlier. That week was a critical week for subsequent events in the epidemic.

Messaging is absolutely crucial. Devi said it earlier; consistent messaging and trust in that messaging is absolutely vital. If you are asking anybody—the community or the public—to do things that they would not normally do, they have to trust the message and the messenger, and that has to be consistent over time. That has been shown in every epidemic that we have faced, from Ebola through SARS through Singapore to Taiwan, wherever you name it. Consistency of messaging and trust in the message and the messenger are absolutely critical.

I pay tribute to Scotland because I think, on the whole, the messaging there has been better. That is not a political point, but I think you have been more consistent.

Q586 **Neale Hanvey:** I could go a bit further and reflect on the lessons that we know we have learned from other countries, particularly around tracking, tracing and, most importantly, isolating asymptomatic and symptomatic carriers. Is there work that we need to do on focused resourcing between now and the winter to learn those lessons and implement strategy in that manner?

Professor Sir Jeremy Farrar: Yes, there is. That is why these three months—June, July and August—are absolutely critical to what we will face over the next 12 months. We need protection of healthcare workers and testing in all hospital and clinical settings. It has to be blanket testing. We know that a significant number of people are asymptomatic. Therefore, just testing those who are symptomatic will leave a whole pile of transmission going on that we will not get on top of. It needs to be random and frequent.

Paul Nurse mentioned the Crick study. That showed that in healthcare workers you need to be testing in a mandatory way twice a week in order to pick up a sufficient number of asymptomatic cases. You need to protect care homes and vulnerable populations. Critically, in a very diverse country, we need to make sure that information is not just available in English but that it is available in a way that is accessible to every community in the country. We need to learn lessons about how we communicate not just with native English speakers but with people whose native language is not English. We must reach out to those communities, because we have seen in various places that that is difficult.

There are other communities we need to be careful of: vulnerable communities, the homeless, people in care homes and prisons, and people in micro-populations such as meat-packing factories and others. This is where there have often been epidemics across Europe.

Q587 **Neale Hanvey:** Do you feel that the Government's messaging is clear now? Do you feel that it needs to be refined? Is the message at the moment that everything is fine and we will be done by Christmas helpful or unhelpful?

Professor Sir Jeremy Farrar: Things will not be done by Christmas. The infection is not going away. It is now a human endemic infection. Even if we have a vaccine or very good treatments, humanity will still be living with this virus for very many years to come. We need to transition from the sense of crisis and urgency. We need to keep the urgency in place in June, July and August, but we need to move to a consistent long-term approach because humanity will be living with this infection for decades to come.

Q588 **Rosie Cooper:** We have talked quite a lot this morning about confused messaging. The information about shielding has been quite difficult. How confident are you, Sir Jeremy, that pausing shielding is safe, given the presence of the virus and where we are currently?

Professor Sir Jeremy Farrar: These are all difficult questions, but this is a particularly difficult one because there is no such thing as zero risk. We should not underestimate the negative consequences of people being isolated. The elderly being isolated from their loved ones and young people being isolated from their friends and schools is causing enormous mental health harm and other clinical conditions as well. We should not underestimate that. The consequences of the epidemic go far beyond the virus itself.

Shielding has protected a very large number of people. On the whole, it has been enormously well respected by people. I think that there are ways, with handwashing and, critically, wearing masks, and keeping a safe distance—either 1 metre-plus in England or still 2 metres in Scotland—whereby you can meet people safely now, as long as you do not go out when you have symptoms, you wear a mask, you handwash

regularly, you keep a reasonable distance of 1 or 2 metres and you respect that the virus will continue to circulate.

We have to lift some of the shielding because otherwise vulnerable people will not see their loved ones, and it may be their last chance to see them. That would be devastating.

Q589 **Chair:** We have to move on. We have lots more questions to get through. Sir Paul Nurse has to leave very soon. Before you go, Sir Paul, I have one final question. If you were to sum up the two or three things that must happen in the next couple of months—the summer months—that you do not think are happening as far or as fast as they should be, what would they be?

Professor Sir Paul Nurse: I have a couple of general things and a specific one. The general things I have mentioned already. We need clear leadership in place: people who take responsibility for the decisions, who are clear about the decisions being made, and who are not passing the buck from one to another.

The second thing, related to that, which has already been mentioned, is communication, messaging and keeping trust. We need trust in the system. Suggesting, for example, that 40,000 tests in the post are adequate to getting up to a target of 100,000 destroys trust. We need honesty, and transparency with that. Simply inventing things for one-liners is no way to deal with it. Those are the general points.

The specific point is that testing is critical. We have seen that, without testing properly in place, things did very badly in the pandemic. Unfortunately, the big lighthouse labs did not assist at that time. They may assist in the future, as John has argued, but we have to make sure that there is capacity, rapid turnaround, accuracy and flexibility.

At the height of the pandemic, the big lighthouse labs were getting less than 8% returned within 24 hours. What do we do about that? We argued very early on, in March it has to be said, that we should mobilise much more locally. We turned the Crick into a testing facility. We used that terrible metaphor of Dunkirk and little ships, and so on, but we produced a testing facility locally within two weeks that was doing 2,000 tests a day. That was about 20% of total facility.

Why on earth was that not rolled out across the country? All the labs in medical schools and universities were empty. All the people were at home. Everything was there to get it working. Everything done locally is so much easier than doing it in distant ways. They will work eventually, but are they working well enough now?

We should seriously think about complementing the big laboratories with a network of local support, pulling in those who might be being sent home because people cannot go to work. We can provide a better, locally connected support system, particularly in hospitals and healthcare. Many

things go wrong with the work flow. If you are in contact locally, you pick up a telephone, you know the people and you solve it. You put a sticking plaster over the problem. That needs to be thought about to see whether it is needed to complement what we have in place. As Jeremy has emphasised, we have a couple of months to plan that, if we are going to do it.

Chair: Barbara Keeley has a question for you on the SAGE membership, Sir Paul, just before you go.

Q590 **Barbara Keeley:** The Government website says that SAGE membership depends on the nature of the emergency, including experts from within Government and leading specialists from academia and industry. If you look through the list of SAGE members, it does not include anyone from social care. There has been a lot of comment about that. I think, Sir Paul, that you have raised the point that you think SAGE membership should be larger and more diverse. Could you comment on that? The exclusion of experts from the care sector seems to be an enormous yawning gap.

Professor Sir Paul Nurse: I have not had anything to do with SAGE, so I cannot comment very much on it. It seems to me that there are probably too many members who are half in government as advisers of different sorts. There is definitely a lack of diversity.

I am told that it is quite a good discussion place. Others like Jeremy can comment more on that. I do not think it is a good decision place. I was talking about governance, and I think we need to be clearer about how SAGE discussions lead to decision making.

The point you are making is one that I have emphasised: in dealing with crises of this sort we need a multidisciplinary approach. We need to deal with a range of individuals with expertise across the board. If I may say something about that, those individuals are often not used to working together because they come from different places in the sector. We need to be practised at doing that. We need good chairmanship, so that people who bring, for example, expertise from the social sciences, healthcare or science can work better together. I think we probably do not have that in place. It was a rather conventional set-up of people, but it was not wide and diverse enough, as you say.

Chair: Sir Paul, thank you very much indeed. We are going to extend the first half of the session for another 25 minutes because we have lots more very important questions.

We are going to move on to the question of mortality rates in the UK compared with other countries.

Q591 **Paul Bristow:** Professor Sir Jeremy Farrar, you said that at the start of the epidemic we were likely to be the worst affected in Europe. Given the recent questions on Public Health England's methodology for recording mortality rates, do you consider them to be accurate?

Professor Sir Jeremy Farrar: I am not an expert on mortality rates. I have read the same reports as you have and—

Q592 **Paul Bristow:** I am just interested in your opinion.

Professor Sir Jeremy Farrar: I personally think that the most important mortality statistic that needs to be looked at is overall excess mortality. It is the direct effects of Covid and it is the secondary consequences with other people tragically dying as well. Mortality rates are crucial, but I prefer the statistic for looking at that to be overall mortality compared with previous years at this time. If you look at that, the UK has certainly been one of the worst off, if not the worst off, country in Europe, as we suggested many months ago.

Q593 **Paul Bristow:** What are your thoughts on the statistics that Public Health England have been using? If we are using those statistics as a guide to make decisions, are you worried about that?

Professor Sir Jeremy Farrar: My understanding is that Public Health England uses it if someone has had a positive test and dies within 28 days. Like many mortality statistics, that is ultimately flawed, because some people may live longer than 28 days and subsequently die of their Covid if they are in intensive care. Some people will recover and, as has been euphemistically said, die of something else but still be Covid counted. It is not a perfect statistic at all.

Q594 **Paul Bristow:** It is my understanding that that is not the methodology used. If you have Covid or are recorded as having Covid and then die at any point in the future, that is being used as a Covid death, or have I got that wrong?

Professor Sir Jeremy Farrar: My understanding is that it is a Covid diagnostic test and a death within 28 days.

Q595 **Paul Bristow:** That is not my understanding. I think some of the reports that have come out have called these highly exaggerated. Professor Devi, do you have any thoughts on that as well? I want to know your view and whether you consider them reliable.

Professor Sridhar: I agree completely with Jeremy that excess death is the best way to compare across countries. It is very hard to compare across countries for a number of statistics, even on testing and the number of cases. It is correct that the more you test, the more cases you find. Therefore you need to find comparable statistics. If one is testing positivity, that is a great way to compare across countries. Unfortunately, I have not seen from Public Health England the number of people tested each day, which would allow us to calculate that across time.

On deaths, everyone counts in a different way. My sense, looking across Germany and the UK of why we have potentially suffered more, is that, first, people stayed away from the NHS when they were having minor to moderate symptoms instead of coming in immediately. Some of the

places that kept their mortality quite low, like South Korea and Germany, immediately triaged at a very early stage. Both of those have said that the reason they kept their mortality low was that people came to the health services. They did not see them as being closed. Perhaps the messaging around protecting the NHS, and the fear that Paul referred to, meant that people stayed away from the NHS, even when they did not need to.

That is now something we see playing out in Mexico. About half the people who come into hospital there die, and doctors say that is because people come in in such a bad state. They are terrified of coming into hospital, and, when they come, they are in such a state. It is multi-organ at that point, so doctors cannot do much.

Q596 **Paul Bristow:** I appreciate that may be what is happening in Mexico, but if Ministers are making decisions on figures that have been called wildly exaggerated by some experts and could be revealed as misleading, do you not think that is a problem?

Professor Sridhar: I do not think that the ONS figures, or the FT or others who have been tracking that, affect their estimates at all, because they have been looking at—

Q597 **Paul Bristow:** But Ministers have been announcing every day Public Health England figures. We have to go with those as the basis on which decisions have been made and how the public have been reassured. You said earlier on, which I thought was an excellent point, that we need to get out during the summer. We need to make sure that people are out there for a number of different reasons, but certainly for the reasons you have said. If we have scared the public to death by using inflated Public Health England figures, that is a cause for concern, isn't it?

Professor Sridhar: Yes, I agree with that, but I think the decision to stop publishing death data at all is also very confusing for the public. It makes people think that perhaps data is not being given to them. Right now, the biggest problem for the economy is that people are scared and their behaviour has changed. Are they going to return to workplaces? Are they going to return to restaurants? If you want to reassure people, you have to provide them with accurate data.

I agree completely that there are problems with the data, but it does not mean we stop publishing death data at all. We need to provide the data and explain it so that people can follow along. As we see with getting schools back and the teaching unions, what will make people feel safe is not telling them, "You will be safe"; it is showing them the data and saying, "This is why you will be safe. This is the data." It is trusting that and then trusting the decision.

Q598 **Paul Bristow:** But it is important to use accurate data. There is no point publishing data that has proved to be inaccurate, because that could have the opposite effect from what you are saying. You are saying we should

publish data, but it has to be accurate, otherwise it could have the converse effect.

Professor Sridhar: Exactly; it has to be accurate. I think not publishing data at all, and not sharing it with the public, is a big problem. You need to reflect on what mistakes there might have been in the past or how it has been accounted for, but not having any data is also a problem because then people will just wonder what is happening today. It is not necessarily trust right now; it is just because of counting issues. It might be that issue.

Q599 **Dr Davies:** This is a question for Professor Sir Jeremy Farrar regarding obesity levels in the UK. Obesity has been implicated in high levels of mortality in this country. Do you have any message for the Prime Minister, who is expected to make an announcement on obesity and policy, perhaps as soon as next week?

Professor Sir Jeremy Farrar: Yes, there is so much wider comment. You are absolutely right that, of the other conditions that have been associated with more severe outcomes, there is no doubt that obesity fits that. For all other conditions, whether heart disease, cancer or of course diabetes and susceptibility to other infections, being overweight is a significant risk factor. Anything the country can do, including policy interventions, that encourages, facilitates and helps people provide healthier lifestyles is to be encouraged. I certainly hope that we see that in any Government announcements that may be coming out soon.

Chair: Barbara Keely has some questions on the social care sector.

Q600 **Barbara Keeley:** Professor Sridhar, you have written about some of your issues with the Government's approach to the pandemic. Do you have any specific concerns about how the care system has been treated, and how that could have been done better?

Professor Sridhar: Universally, it is acknowledged. It is not just in the UK. It is also true in Sweden, the Netherlands and other places that care homes have borne the brunt of the crisis. The issue of asymptomatics was flagged early on in the scientific literature. The *New England Journal* had an article on 19 February talking about the issue, based on passengers evacuated from Hubei Province. Looking at east Asia, and following it from that time, they never had those issues. I think it is because they never had sustained community transmission. It is the same with the paediatric syndrome in children. They did not see that either.

One big lesson is about how much you can shield or cocoon the vulnerable. It is extremely difficult if you have community transmission. The second thing is that, when the modelling was done on the care home sector, I do not think there was an understanding of how people who work in care homes operate and that they might actually be working in different care homes. With the discharging of patients back to care

homes without being tested, it became like a fire once you were in a care home; when one person had it, it spread.

The lessons going forward are that, first, we have to keep community transmission low, otherwise it will be very difficult. You cannot just cut off certain parts. It is the same for those who are shielding. The second is that rigorous testing and screening in vulnerable populations must be done, as well as making sure that appropriate PPE is in place. PPE was a big problem as well at the start.

Coming back to Paul's point on responsibility, I was talking to a GP about that in detail. She said that it was not clear who was responsible. Was it the person who owned the care home? Was it the NHS? Was there a policy directive on acquiring proper PPE and requiring testing? We need clear decision making on structures and policies around care homes. What has happened in care homes is truly a tragedy. Hopefully, that will never happen again if we take the right policy steps now.

Q601 **Barbara Keeley:** You have criticised the Government policy of shielding, particularly people who need care in the community or in care or nursing homes. What do you think we should do now in terms of a second wave? Although some of what you have just talked about might have improved in relation to PPE and testing, the policies are the same as they were. What we are saying in this Committee today suggests that there should be much better representation in the decision making of people who understand how the care sector works. What would you do to improve things and to avoid a second wave?

Professor Sridhar: There is a similar goal. If you want to have the care sector and those who are shielding protected, if you want schools to return full time and if you want the economy to fully recover and you want London full again with people, the way to do that is to fully suppress the virus and get to a zero Covid reading from community transmission, and you would just have imported cases coming in.

To get there, you would need to use the next eight to 12 weeks, with clear leadership, as Paul was saying, and a game plan. You have to carry people with you with the messaging, saying, "Look, we're going to have a push in the next eight weeks to really knock this down." All the issues are connected. Those in care homes, those who are shielding in multi-generational families, and teachers going into schools—now that we see kids transmit similarly to adults—as well as the economy, are all tied together.

The way to drive the infection low is by protecting low-incidence areas. The south-west of England is pretty much clear. There are parts of the country that are very clear. Protect those, maintain them and get them back to normal. Then aggressively go after those that are higher incidence, but not through a lockdown. Lockdowns are just seen as blunt instruments. Do it through aggressive testing and tracing at a local level,

going door to door and figuring out who has the infection. Get them into quarantine and drive it low.

The cost of that strategy is your borders and free, easy international movement of people. That is the difficult public choice that has to be made about what you want to have. In a pandemic, you cannot have it all. Sweden put a lot of money into protecting its care homes and focused a lot on vulnerable populations, and it has not escaped the brunt of it. If you want to protect the vulnerable, you need to protect your entire society, so that your numbers are low and your prevalence is low. Personally, having studied this across the world, I think that is the optimal situation and the fastest way through until, hopefully, we get a vaccine. Then we can slowly start having more movement and more international engagement.

Chair: Dean has some questions on vaccines.

Q602 **Dean Russell:** First, I have a question for Professor Sir John Bell. This might be a lack of understanding from my perspective, but I have read recently that people who perhaps had SARS during a previous epidemic have potential immunity to coronavirus. There were some sort of findings around that. I saw a few articles in *Nature*. I am interested in your view, from an immunity perspective, on things that might affect immunity for the population more widely.

Professor Sir John Bell: There are three aspects to the immune response. One is the class called antibody-based immunity. We know about that because there has been a big flurry about trying to get tests to measure antibody immunity. Not everyone who has had the virus gets an antibody response, so that is quite an interesting observation. The majority of people do, but not everybody does. It is not clear how durable those antibody responses actually are.

There is a cellular response, which is due to T-cells. For other SARS viruses, that is much longer lived. In fact, they can last out to the 20 years since the SARS epidemic, so they are a long-lived form of immunity. Then there is a bit in the immune system called innate immunity, which are cells that live in the mucosal surface and actually attack the virus.

At the moment, in our understanding, it looks like many people have existing T-cell immunity to peptides—short proteins—that are expressed in a wide range of coronaviruses, including SARS, and that cross-react. Very often when you get a head cold, it is actually a coronavirus. There may also have been other SARS-type viruses circulating that we do not know about because of the asymptomatic frequency. Those generate a T-cell response that you keep for a very long time. That provides you potentially with some form of cross-immunity to Covid. We do not know that for sure, but that is what it looks like at the moment.

Q603 **Dean Russell:** With that in mind, could it potentially be a reason why

places like Singapore, Taiwan, Japan and China have perhaps not been quite as affected in the population, if that turns out to be the case? If they were affected very heavily by SARS previously, perhaps there was a greater immunity in their population.

Professor Sir John Bell: The answer formally is that that is a possible explanation as to why there is quite wide variation in individual bits of the world as to how badly you are hit with the virus. It is whether it is what you have actually done—how tight the lockdown has been and how good your test and trace is—as opposed to how much existing immunity your population might have had to start with.

Jeremy would be quite good on this because he spent many years in Vietnam. Vietnam is very odd. They did lockdowns, but they did not do a national lockdown. They did regional lockdowns, and they have had only 300 cases and no deaths in a country of 100 million people. Work that one out. I don't get it at all.

Q604 **Dean Russell:** Professor Jeremy, would you give your thoughts on that?

Professor Sir Jeremy Farrar: There may be some pre-existing immunity. The data from Singapore that you refer to and that you have read suggests that people who had SARS 17 years ago may have had some protection.

SARS was never a widespread community infection. It never reached that level. The background levels of SARS immunity in populations in Singapore and Vietnam, in Hong Kong and in China never reached levels that would protect a population from SARS 2. Other coronaviruses might, and that may explain some of the difference.

I think the remarkable success of Vietnam actually has more to do with an incredibly strong public health system. They have been deeply scarred by SARS. A very good friend of mine, Carlo Urbani, died of SARS in 2004 and the whole system was remodelled after that to give a very strong public health system. Although John says that they did not lock down nationally, they introduced some pretty draconian measures—much more draconian than were implemented in the UK. People were put in quarantine. I think there are still 10,000 or 11,000 people in quarantine in hotels or other establishments in Vietnam today. It was much more draconian than has been implemented anywhere in Europe.

Q605 **Dean Russell:** My key question is about the vaccine. There was the announcement yesterday and there have been several announcements over several weeks. I am interested in your take on two points around the vaccine.

First of all, I know that there is a big anti-vaxxer movement, which is incredibly dangerous, and is potentially putting people off taking the vaccine. If the vaccine appeared tomorrow and it is all fine, what percentage of the population would need to take it to ensure that the whole population is safe? Secondly, people are just coming into the

period when they might be taking their flu jab. Has there been any research into the two working together? What potential risks or benefits are there? Could people have a flu jab and a vaccine together?

Professor Sir John Bell: They are both good questions. Let me start with the latter one first. There has not been any work to date because we are only getting to the point where we know about the Covid vaccines and how they operate. My suspicion is that you will be able to use them both completely safely, but that will obviously need some scrutiny before we can vaccinate much more widely. It is definitely worth keeping an eye on.

With regard to what percentage of the population needs to be vaccinated, I go back to a point that I think Jeremy made. With all the discussion about the vaccine, people have thought, "Oh good, the vaccine is going to come; it's all going to be fine; we'll all get vaccinated and that will be the end of that." The reality is that this pathogen is here forever. It isn't going anywhere. There is so much disease out there. Even if it completely sterilises populations, it is very unlikely that we will eliminate the disease. Look at how much trouble they have had in eliminating, for example, polio. That eradication programme has been going on for 50 years and they are still not there.

It is going to come and go. We are going to get winters when we get a lot of the virus back in action. The vaccine is unlikely to have a durable effect that will last for a very long time, so we are going to have a continual cycle of vaccinations, more disease, more vaccinations and more disease. The idea that we are going to eliminate it across the population is not realistic. This is it. It is like the first time we had a big flu epidemic, which was a very long time ago. This is, essentially, the central example of that, and it will be with the human race for a very long time.

Q606 **Neale Hanvey:** Professor Sridhar, from your vantage point in Scotland, what changes would you recommend on messaging, strategy and resourcing? You mentioned previously the use of dashboards. What metrics are vital for such a dashboard to be useful. Finally, for everyone, are we ready for winter?

Professor Sridhar: Moving forward, it is about getting the test/trace/isolate system as effective as possible. The faster you can get test results back to people, the better. In most NHS labs, we have that within 24 hours. If we can push it to within five or six hours, it will make a huge difference. The next thing is compliance in tracing. If we can get some kind of app to support the people who are tracing, especially with more and more things resuming, that will help them to do their job.

A third thing is isolation facilities. A big difference in east Asia is that people were offered the choice to leave their home and isolate in other facilities, whether hotels or other facilities. The reason is that household transmission is extremely high. Some people might test positive and not

want to go home and expose others in their family who have tested negative. If you offer those kinds of facilities to people, not forcibly making them go but offering the choice, you might get a good take-up when people do not want to expose those they live with, or their flatmates or anyone else.

The list of symptoms is currently three. The WHO list is over 60. This is a very puzzling virus as it presents itself. There are some questions over whether we want to enlarge the list of symptoms to be able to catch more cases; and how do you manage testing capacity when flu hits and you are going to have people presenting with both?

Preparing for winter is really tricky. If you get out of community transmission into imported cases, you can have a lot of normality come back. You can have schools return. You can have people not needing face masks. You can have a lot of the things that we had before, which is where countries that have done that have resumed and gone on, even to the point of having large football matches with spectators.

If we do not have that, and there is a certain level of virus circulating, we are going to have to keep in place things like face coverings inside, distancing and asking people to work from home. If we can maintain the current levels of infection through winter and we do not see spikes, I would see that as a pretty good situation.

Q607 **Rosie Cooper:** Professor Devi and Professor Sir Jeremy, public health in this country has been hollowed out since 2012. I hear that Public Health England has the budget of a small general hospital. Even in this panel earlier today, we have heard that people think Public Health England is out of its depth.

As track and trace has been given a budget of around £10 billion, is that statement fair? Aren't PHE simply being the whipping post for poor ad hoc and unstrategic decisions? Part B of the question is, how competently do you think Public Health expertise is being utilised locally?

Professor Sridhar: What your question points to is that it is much cheaper to invest in health ahead of time and prevent a crisis than to respond to a crisis afterwards. This is something we have learned across countries and across crises. The problem with prevention is that no one wants to invest in it because if it works you never really see the gains. One of the things, looking forward, should be to invest in local public health expertise and authority, and rebuild that in the coming years.

Secondly, as an external observer, it feels to me as though there is a lot of blame-shifting right now. What we really need, instead of everyone making decisions looking backwards, is to make decisions looking forwards without worrying about how it might look and what they might have done in the past. We need to be forward-looking. Right now, looking forward, we need a strong Public Health England and a strong NHS. We

need everyone pulling together to go forward and deal with the crisis with the least loss of life and the least hit to the economy.

There are two things coming out of this. What we are going to struggle with is, first, the economy, unemployment, the recession and the long-term impacts of the lockdown and how we deal with those; and, secondly, the morbidity. Of all the people who are young, aged between 30 and 59, who have had this virus, it is estimated that 10% will have long-term health issues. How will the health services cope in the years to come? Those are two things that may have been overlooked, and going forward we need to address that. I do not know if it directly answers your question, but we need all hands on deck moving forward on that. We need a strong Public Health England as well.

Professor Sir Jeremy Farrar: I re-endorse what I said earlier. You invest in public health for years, and if you do not it will not be there when you need it. The fragmentation across government has been a challenge. Having separate agencies—Public Health England, the NHS, the Department of Health and Social Care and other elements—means that it has been difficult to cobble together a coalition that can work together when they have been used to working somewhat separately, including the care sector.

Public health thrives critically on two things, in my view. One is trust and the second is local ownership. Although I would defend centralised lab testing because I think it was the only option at the time, the data has to flow back for local decision making to be in place. Test, trace and isolate is necessary, but it is only part of the issue. When you have so much asymptomatic transmission, you need a more blanket approach to testing. It is not just testing people who come forward with symptoms, but all their contacts. We need more blanket testing in the population than we currently have in place.

Chair: Thank you very much indeed. We have overrun, but that is a sign of how excellent the answers were and what an important discussion this is. A very big thank you to Sir Jeremy Farrar, Sir John Bell, Professor Devi Sridhar and Sir Paul Nurse for coming to the first panel. Thank you all very much indeed.

Examination of witnesses

Witnesses: Dr Harries, Professor Whitty and Professor Van-Tam.

Q608 **Chair:** We are looking at the next stages of managing the coronavirus pandemic. On our second panel this morning, we are delighted to have as witnesses, Professor Chris Whitty, the chief medical officer, and the deputy chief medical officers, Dr Jenny Harries and Professor Jonathan Van-Tam. Thank you very much for joining us this morning.

I will start with a few questions to Professor Whitty. Last Thursday, Sir Patrick Vallance told the Science and Technology Select Committee that

the Government introduced compulsory lockdown measures on 23 March, which was nearly a week later than SAGE advised doing so, which came either on 16 or 18 March. We all know that voluntary social distancing was introduced on 16 March, and it was made compulsory a week later on 23 March. At that time, during that week, were you content with the timetable, or did you advise Ministers that the compulsory lockdown should have happened earlier?

Professor Whitty: The first thing to say is that I do not think that is an accurate reflection, in fact, of what Sir Patrick Vallance said. I have checked it with him this morning, to make sure that I understood what I thought he said, and read his transcript. What he thought he said, what I read him to say and what he meant to say was that there was an intention on the 16th very strongly to say that more measures were needed, and that is indeed what happened. It is important to recognise that Sir Patrick was trying to do that from memory, having not expected the question. That was clear from the answer he gave.

If you look at the minutes of SAGE, it is clear that there was a package of things that were strongly recommended on the 16th, and those happened then. There was subsequently clear advice to close schools, which previously had not been advised. That happed subsequently. As it was clear, after that, that there was further acceleration, or at least less clarity that we were going to be confident at getting R below one, which was clearly the aim, there was advice to go further. It was not a one hit, nothing, and then suddenly everything should go into lockdown. To be clear, multiple steps were taken along the way. If you look at the R, and the behaviours, quite a lot of the change that led to the R going below one occurred well before, or to some extent before, the 23rd, when the full lockdown started.

Let us be clear. I am very much in favour of the fact that the lockdown happened, but some people argue that R had crossed one even before that point in time. Lots of people are going over the numbers retrospectively. It is very easy to do that retrospectively, but I wanted to clarify that that was what Patrick said, and meant.

Q609 **Chair:** In terms of the advice that you gave to Ministers, at the time you were absolutely happy that Ministers were proceeding with that full lockdown at exactly the pace that you were advising as CMO.

Professor Whitty: You know perfectly well, Chair, as a very distinguished Cabinet Minister, that it is not a matter that at 10 o'clock an adviser advises something that is extraordinarily difficult and at 10.01 a Minister immediately does something that is going to be problematic. One of the things that it is easy to paper over is that all the things we were asking people to do were incredibly socially disruptive and incredibly economically damaging from the minute you started them. There was obviously a process of discussion in government at multiple levels.

We can go through it. Many more hours have already been spent by people who were not there commenting on the exact sequence of events over a relatively short period than actually we had hours to make decisions. I would have to go through all my notes to know exactly what conversation I had when.

Chair: I understand that.

Professor Whitty: You are basically trying to get me to go back and remember, and frankly I was not expecting that question.

Q610 **Chair:** I am not, actually. What people want to know is something very simple: were Ministers actually following the precise scientific advice that you were giving them? I will give you an example. Professor Neil Ferguson said, with the benefit of hindsight, that we could have halved, or more than halved, the number of deaths if we had gone into full lockdown a week earlier.

Let me put the question to you this way, because it is a really important thing for the public to understand. Two days after that full lockdown, Sir Patrick made another comment, again to the Science and Technology Select Committee. He said: "I think the Government have listened to the advice of SAGE very carefully and followed it." When it comes to the timing of the lockdown, are you content that the Government followed your advice in terms of the staging of different elements of the lockdown?

Professor Whitty: What you are trying to do is run a very complicated period as a kind of jumped-on question about this. There isn't a straight answer to that. I am not trying to give you a yes or no answer to that, but—

Q611 **Chair:** Let me interrupt you. It is not an unreasonable question to ask. The Government constantly said that they were following the science. I am just asking you, on the crucial question of the timing of the lockdown, were they following your advice?

Professor Whitty: I am confident that Ministers at the time, who were put in an incredibly difficult position, in my view followed the advice given by SAGE, which is clearly signposted through the minutes of SAGE, with a delay that was no more than you would reasonably expect for what are very difficult things to operationalise and decide.

I would make a further comment. Obviously, to be able to do that, there was a bit of signposting that sometimes we may have to go further. Ministers were aware of that, and they said it at the time. For example, on the 16th my memory is that the Prime Minister did not announce schools closing, but I think he said at that time, "and we might need to consider schools closing."

I do not think—I am not saying it now and I am not going to say at any point, to be clear—that in my view there was huge delay between the advice that Ministers received, given the enormity of the difficulties that

we were asking of people and the practical implications of what was being done. Does that give you a clear enough answer to the question you are trying to ask me?

Chair: It does.

Professor Whitty: It is a much more complicated picture than that, but as a summary that will do.

Q612 **Chair:** It is a very clear answer. Thank you very much indeed; that is very helpful.

At the Liaison Committee on 22 May, the Prime Minister said to me: "The brutal reality…is that this country did not learn the lessons of SARS or MERS." What do you think we would have done differently if we had learned those lessons?

Professor Whitty: Several of your previous witnesses—unfortunately, I only caught the second half because I was in a Cabinet meeting—said that we underinvested in public health over a period of time. At this point in time, you would say that is definitely true. I want to be clear that I do not want to say that anyone made mistakes in that sense, but every time there is a crisis we always say that. Just after a crisis we invest, and then memories fade and people prioritise other areas and then there is another crisis. I am afraid that has happened repeatedly, so there is an investment question on the public health side.

The second set of things is that there was a serious debate among quite a lot of us, including me, about where this new infection sat on the spectrum between SARS and MERS, which were very high mortality/low incidence cases but were coronaviruses, and about which we knew a certain amount but not a huge amount—not as much as we now know about Covid-19—and the other respiratory pathogen that we know causes major pandemics, which is influenza. It clearly was none of those three. It clearly had features of all three of them.

It is legitimate to say that countries whose last serious domestic experience was with SARS and MERS, most of which were in east Asia—in fact, I was discussing it with my scientific counterparts in Japan just this morning, and have done so with colleagues in Korea, China and elsewhere over the course of this—used a pattern of response that probably was more geared around a SARS and MERS response. It was MERS in the case of South Korea because that was the experience they had, and SARS elsewhere.

Q613 **Chair:** What were the specific things that they did, though, that were different? That is what I am trying to understand.

Professor Whitty: They started off with a very different situation. When they had their initial cases, they started off with relatively smaller numbers than we did in the UK. That led to a different situation. I think they put heavier emphasis on an old-fashioned technique that, I have to

be clear, I am very much in favour of and have used previously, and that is case isolation. In fact, it was used in the last major epidemic I was involved in closely, which was the west African Ebola one. For a variety of reasons, that was possible for us to do at the very early stages because the numbers were very small, but was not possible for us to do at a later stage of the epidemic here in the UK.

Q614 **Chair:** Obviously, you do not know everything at the outset but they were putting a heavier emphasis on case isolation than we were. There were, of course, people who were saying that we should be doing that kind of thing right back in January. The World Health Organisation said on 14 January: "There are many similarities to SARS and MERS." The European Centre for Disease Control said on 28 January: "MERS guidelines should be used."

What was the reason, when you were having those debates, that we stuck more to the flu playbook than what those voices were asking us to do?

Professor Whitty: I have heard you make this point several times, Chair, and I think it is a misrepresentation.

Q615 **Chair:** It was not just me. The Prime Minister also made it.

Professor Whitty: Let me, as a technical person, give a fair answer. At the early stage of this epidemic, we thought that there was a reasonably high chance that it could turn into something like MERS or, more likely, like SARS where there were relatively small numbers of cases—low thousands—and you had a central country, which in the case of SARS was China, and in the case of MERS was Saudi Arabia, which is where it originated; there would be some spillover cases, and then in some of those countries you isolated the cases and could get on top of it that way. It was reduced in the country of origin and then, for practical purposes, went away. MERS is still endemic in Saudi Arabia, but SARS has for all practical purposes gone away.

That was originally what we were aiming for. In the stages of our plan, which were laid out very clearly, that was the contain strategy. When SARS, and subsequently MERS, occurred, there were imported cases in the UK. We found them and isolated them, and we had no further onward transmission.

In the initial phases of this epidemic, that is exactly what we were trying to do: find cases, isolate them and find their contacts. As the epidemic moved on, we got to a point, practically, where there were many more cases being transmitted internally. We had probably successfully, by a combination of skill and good luck—that will be debated for a long time—contained cases coming in from east Asia. If you look at the genotyping now, there are very, very few. We then got a wave coming in from, above all, Spain, then France, and then Italy over a very short period of time.

You have to remember that this virus has symptoms that can range from almost no symptoms or no symptoms through to a variety of things, as previous witnesses have said, and as I think is well known. At that stage, we had incredibly limited testing capacity. We were at the tail end of the winter respiratory illness system. We therefore had no capacity to find all the cases and do the kind of isolation that you would need to do.

If you think about the scale of what we have now, in terms of the test and isolate strategy, the investment in that, as a previous witness said, is an almost £10 billion envelope this year compared with what we had available, and if you compare our ability to do 300,000 or more tests a day, when early on it was in the low thousands, it was clearly at a certain point impractical for us to continue to do that as a strategy. It was going to pick up such a small proportion, and the testing we had had to be deployed to the higher risk areas of healthcare workers.

Q616 **Chair:** Can I ask you about that? We all understand the testing capacity constraints, but it was more than that. Isn't the main difference between the SARS/MERS countries and the flu countries, if I can put it that way, that in the flu countries there comes a point when testing and case isolation is no longer a sensible thing to do, whereas the SARS and MERS countries carried on testing and isolating right the way through?

The SAGE minutes on 18 February say: "When there is sustained transmission in the UK, contact tracing will no longer be useful." What I am trying to understand is that, when you gave that advice to Ministers, why hadn't we modelled what test, trace and isolate, à la South Korea, would do? The modelling on South Korean test, trace and isolate did not actually happen until April, so why were we able to give that advice to Ministers without having modelled what a test, trace and isolate strategy would do?

Professor Whitty: Let me be very clear about this. I am absolutely confident that we had no capacity to do it on the scale that would have been needed for the kind of epidemic we had. It is nothing to do with theory here. This is a—

Q617 **Chair:** But we got it up in four weeks in April. We got the test capacity up to 100,000 a day in just four weeks. If you had advised doing that in January, we could have got to that stage by the end of February.

Professor Whitty: SAGE was consistent, and I was consistent, in saying that we needed considerably more testing capacity. Many of the problems we had came from our lack of testing capacity, but testing alone is not sufficient to have a full test, contact-trace and isolate system. That requires an infrastructure we did not have, which was built up by places like Korea and—

Q618 **Chair:** But why didn't you advise that we put that infrastructure in place? I want to go back, because the SAGE minutes on 12 February, and even before then, say: "We recommend that contact tracing should be discontinued when person to person spread is epidemiologically

demonstrated to be dominated by second and subsequent generational cases, or when the number of contacts being contacted gets more than 8,000 a day."

I am trying to understand why you did not say, "We need to expand our testing and contact tracing capacity," rather than what you actually did, which was to accept the capacity as a given. We know now that we were able to expand the testing capacity and the contact-tracing capacity, so why didn't you advise that in January or February?

Professor Whitty: Sir Jeremy Farrar gave an extremely sensible answer on that. You cannot stand these things up practically. One of the ways you can really mess up—

Q619 **Chair:** But we did. We did stand them up.

Professor Whitty: I respectfully differ. You are going to say, I suspect, at some point, because people keep on saying, "Why is test, trace and isolate not brilliant now?" This is after we have had huge investment and many months of preparation. The idea that you can suddenly switch it on is, I am afraid, incorrect.

The way you run emergencies badly is to try to run them based on a theory of what you could do rather than with the tools you have at your disposal. That is the way we had to run it, and that is the way we ran it. You can criticise it, but if we had wished to build up the capacity, we could have done so in previous years, but to do it from a standing start, which is where we were, and expect that to bear the brunt, whether or not it is a good idea, is a second order question. The first order question is, "Can you do it?" If the answer is no, you do not worry about it any further and move on.

Q620 **Chair:** So you look back on the advice that you gave in January and February on testing and contact tracing, and you think that was the correct advice. I want to be absolutely clear. Given the capacity we had there, it was the correct thing to say that we stop community testing on 12 March. You stand by that advice.

Professor Whitty: Yes. The words that carry the most weight in that are "given the capacity we had." Given that capacity, it was, in my view, the correct advice. That capacity had to be used for other things. By that stage, we were already in a situation where there was a big risk that we were missing cases in hospitals, we were not able to treat people and we were leaving people in ITUs without being diagnosed and so on. There were multiple things that the capacity had to be used for.

Had we had infinite capacity and had we had test, trace and isolate, there would have been no conceptual reason for saying, "We don't want to do this." It was entirely practical.

Q621 **Chair:** I have a couple of brief questions on a different topic, which is what Sir Paul Nurse and Sir John Bell were talking about earlier. They

said that at the height of the transmission in some hospitals 45% of healthcare staff were carrying the virus. We think that up to 40% of all transmission can be from people who are asymptomatic.

Why is it that you have not recommended introducing routine, regular testing for all healthcare staff? We know that you have done it for care homes, but you have not done it for hospital staff.

Professor Whitty: Again, I am very clear on the advice I have given and I will stand by it. To go back to something Sir Paul Nurse said, I am very confident about the advice I am giving; it is the advice I believe to be right.

You have to think about testing as concentric circles from the absolutely most essential through to what you do as you get more and more capacity. With infinite capacity, the number of things you can do obviously increases. The first question is a capacity one. Initially, we did not have the capacity. Even now, we would be at the margins of capacity were we to do routine testing for all healthcare staff on a more than very occasional basis, but it is improving. The capacity constraints are being eased.

Within that, patient testing was obviously the most important. Outside that, symptomatic testing of healthcare workers was absolutely essential; outside that, test and trace, which we currently have; and then social care, routine testing of asymptomatic people. You are absolutely right. I am not against routine testing of healthcare workers, but there are three things that are variables. We do not yet know the correct rate for doing it; we do not know when to do it at different epidemiological levels and what kinds of incidence we need to worry about; and we do not know the effect, for example, on the incidence of seropositivity.

What I have recommended is that we do it in people who are in outbreak situations in healthcare settings, where we have the capacity to do that. We do it in higher incidence areas routinely now, even before we know what the optimal rate is. In Leicester, for example, my advice is to do it routinely once a week. It's a finger in the air; once a week may be far too high or it may be too low. We need to test that.

What I want is to use this period of relative quiescence of the infection to get the data properly. We have, for example, the SIREN study, where people are being regularly tested—asymptomatic and healthcare staff—and also regularly tested in serology. At the end of that, we will have a much better idea about the right way to do it. This is a huge logistical, operational and indeed economic thing to do, and we should get it right when we do it.

When there is a surge, if there is a surge in winter, which is a really serious concern looking forward—where I spend most of my thinking time—and is what I am really worried about, we certainly will need asymptomatic testing among healthcare staff. The question is: who, what

is the frequency and under what circumstances? We should be basing that on data.

I came under a lot of pressure early on for not saying, "Why don't we put everyone on all the drugs that are available rather than insisting that wherever possible people go into trials?" We are reaping the benefits of the kinds of approaches that we, as a country, have taken. I think we should be doing that systematically, based on data, for this kind of outcome, but I am not against it. I want to reassure you, Chair, because you have made a strong point about this. I do not disagree with you that asymptomatic testing is going to be needed. It is just under what circumstances and with what frequency.

Q622 **Chair:** Sir Paul Nurse believes that around 20% of the people who had coronavirus in hospitals caught it in those hospitals, which led to a number of deaths that might not have happened if we had had better infection control inside those hospitals. We obviously agree on the importance of asymptomatic testing, but the question is why we are taking so long to get on with it. What you are proposing is, essentially, targeted testing based on where we think there are outbreaks, but if you had regular mass testing throughout the whole system, you would obviously pick up asymptomatic carriers earlier.

When it comes to the winter, Sir Simon Stevens told this Committee very clearly that he will not introduce regular mass testing of all NHS frontline staff until you make it your advice that he should do so. Everyone is waiting. You have done it for care homes. People are worried that it is another of the decisions where we are taking too long to make up our mind. We are looking very carefully for the evidence, but at the same time we are ignoring the fact that you cannot always wait for all the evidence to be there when there is a pandemic happening. Is there not a risk that we are taking too long on this critically important decision?

Professor Whitty: All of these things are professional judgments. I am going to give you what my judgment is. You can say that you know technically better than that. Fine.

My view is that we need to know more about how frequently to do it. We are not alone in this debate. It is one of the questions I was debating with my colleagues in Japan, who are also not doing routine testing, and their testing capacity is significantly lower than ours.

To reassure you, Chair, if there was a big surge I would be absolutely in favour of going for regular testing, even in advance of knowing the optimal frequency; we can try to model it out as best we can. It is clear that it is part of the mix. That is why we are doing it with social care. At this point in time, given where we are in terms of capacity and our knowledge, it seems to me much more sensible to do surveillance everywhere, doing the studies that help us tell what the frequencies should be, understanding what seropositivity means, if anything, for this—it may mean absolutely nothing; and doing it in a systematic way,

so that when we face another peak or surge, if we do, we are in a much better position to do it, rather than just guessing. Guessing is not the best way to get the optimal outcomes, even in emergencies.

Q623 **Chair:** To be clear, I am not just expressing my own view. I am expressing the view that Sir Paul Nurse, Sir John Bell and many others have expressed, even in the last couple of hours. Would you write to the Committee and explain why it is that you disagree with their view of the need for saturation testing of NHS staff, and outlining the approach you are taking? It would be very helpful for us to understand on paper why it is that you are not advising doing what they clearly think matters. Would that be possible?

Professor Whitty: It would, but my point is not that I am against it. My point is about—

Q624 **Chair:** No, but it is just to explain why you are not advising what they are recommending.

Professor Whitty: I am very happy to write that extremely clearly. In fact, I have had the privilege of discussing it with Sir Paul and various other people as well. It is not in a vacuum.

Chair: Excellent. Thank you very much indeed. We are now going to move on to questions from other members of the Committee.

Q625 **Dr Evans:** My questions are to Dr Harries on the public health side. I am particularly intrigued about how we put together guidance. Could you talk me through the stages to get the guidance that goes up on the gov.uk website, please?

Dr Harries: On any particular topic, or just generally?

Q626 **Dr Evans:** That is part of the question. Is PPE in clinical, different, say, from whether you can go to gyms? A lot of the concern that I have from constituents, and indeed clinicians, is about how we get to the guidance that we give.

Dr Harries: It will depend on what the topic is. I am sure that your constituents and we would expect people with the expert knowledge to contribute to constructing the guidance.

Normally, Public Health England oversees most of the specialist guidance, as you would expect for public health. For something like PPE, it will come through Public Health England. However, sitting beneath that will have been a very detailed review of the evidence to start with, and then almost certainly consultation. It will depend on which group it is. For example, if it was for hospital-based PPE, it will be with clinicians from the hospitals and infection control teams there. If it is for the social care sector, there will be discussions working with, for example, the Department of Health adult social care team, and with providers' representatives as well.

There is quite a lot of background work before you get to something that appears as a neat three or four sides on the website. Sitting above that is a triple-lock mechanism for agreement across Government, Public Health England and the CMO's office.

Q627 **Dr Evans:** That is helpful. In my clinical role, some of the guidance I use is NICE CKS guidance. Whenever they put their guidance out, just as you do on the website, it is very clear, but at every point they have a chance to look at the background information for the evidence to support why you should follow the guidance. That is very difficult to find on, for example, PPE. Why is that?

Dr Harries: This particular epidemic, as we have heard from previous comments and in the earlier session, has moved very quickly, but, most importantly, the evidence continues to accrue. We must never forget that. We would expect the guidance to change. That is good practice. It means that evidence is changing as well.

To go back to your point, in fact you could probably look through and see that much of the evidence that is discussed, for example, will start with a NERVTAG clinical discussion on different evidence that has arisen. There will be a report to SAGE. The SAGE advice will probably be taken into what it means practically by colleagues in Public Health England. It will come through that system.

NICE has a structure that is very solid, but also very prolonged. We do not have the luxury of that timeframe, so the fact that you perhaps cannot immediately see where it comes from is not surprising. There will be a chain of evidence. It will start with, for example, a change in clinical understanding of the condition and what that means in terms of advice that should be given.

Q628 **Dr Evans:** That is really helpful. If I could stay on PPE for a second before I move on to the wider guidance, on 18 April Professor Neil Mortensen, the president elect of the Royal College of Surgeons, said: "We are deeply disturbed by this latest change to PPE guidance, which was issued without consulting expert medical bodies. After weeks of working with PHE and our sister medical royal colleges to get PPE guidance right, this risks confusion and variation in practices across the country."

Why do you think there was that confusion, or perceived confusion? It seems to be something that has come along with the change in guidance and how it happens. Do you have a thought on that?

Dr Harries: A general comment about ourselves and our clinical colleagues is that there are huge numbers of different tribes of clinical colleagues, as I am sure you and I both recognise. Satisfying every single individual and representative at one time is extremely challenging.

I would have to check my own records to be clear, but I think that April was probably the height of the period when very large numbers of

different specialists had different views about PPE. Extensive discussion went on about that. Again, it was not just doctors. It is very much about all clinical staff and all allied health professionals working in clinical and care settings.

I have not seen that particular individual one, but I know that considerable care was taken by PHE. There are also routine discussions with the Academy of Royal Medical Colleges and with other representatives.

Q629 **Dr Evans:** If I can move to the public-facing side, a big thing that got a lot of press was the fact that we were able to open pubs, yet people said that you cannot open gyms. I can theorise as a clinician as to why that would be, with the effort and the aerosol-generating procedures in a gym, but the public seem to have that disconnect. Wherever you look, you cannot find good answers to why that might be, or at least the explanation.

Could you explain what mechanism there is to inform the public of the decisions? They understand what the guidance means, but often they say, "Why is it there?" That is the key part of informing people and bringing them with you. Could you comment on that for me?

Dr Harries: It is a really good point. One of the discussions we have had recently is to see if there is a way to translate the public health principles in general, if you like, going forward. It is the reason for a number of other conversations I have been in with clinically vulnerable groups, for example. As we go forward over the winter, both for our clinical colleagues and particularly for the public, it behoves us all to manage our lives and our actions in a way that is going to help us individually and as a society. It is impossible to have guidance that will dictate every single move you make through the day, or that you plan out.

Having those principles is a good idea. I know personally, if I am involved with drafting something, that in communications we try to highlight the principles behind the decision, so that people hold on to those and take them forward in what they are doing. If you are looking at something very specific like pubs in comparison to gyms, it gets into difficulty because you are starting to talk about all sorts of things like air flow and increased respiratory effort if you are doing gym or physical exercise. You will notice that there is a different issue in pubs. If you are outside, it is fine, but if you are inside, you have to be seated. Part of that is about ensuring that the risk of transmission is reduced, even though you are in an internal environment.

There are a number of different controls. It becomes very difficult because probably the guidance that you are referring to in relation to pubs is business guidance, which is quite right: how does a business safely run its practice? Then there is the message to the public about what they can use. There may be an opportunity to try to clarify that, but

I certainly think the principles would be the way to go forward for the public.

Q630 **Dr Evans:** I think principles would be really good. I would highly recommend taking that away. The final question is a big, overarching question and I would like your thoughts. On your website, about Public Health England, it says: "We provide Government, local government, the NHS, Parliament, industry and public with evidence-based professional, scientific and delivery expertise and support." Overall, how do you think Public Health England has performed, given that remit?

Dr Harries: I am not Public Health England, to be absolutely clear; I am the Department of Health.

Q631 **Dr Evans:** But your background is very much public health.

Dr Harries: I listened to a number of the comments in the earlier session this morning. I think it is extremely difficult in the current pandemic. A number of different facts are floating around. I draw attention to the discussion about the recording of deaths. You can have a death from Covid; you can have a death with Covid. We do not know how long the impact of Covid lasts, so there is whether it is 28 days. Do we know whether somebody has recovered and it is relevant? Whichever way you describe something can be very challenging in a fast-moving situation, and often information is taken by others and translated differently.

If we take that example, the media often say, "Covid deaths," and I think the implication for the public is that they are deaths from Covid. Actually, they are deaths recorded in very precise ways. Public Health England is very good at being very precise, but sometimes the translation is not so good.

Picking up what the CMO has said, as well as other individuals, for all the reasons that other people have mentioned, public health has not had significant investment, in the sense that it is one of the easy things to remove because if it is working well you do not see the problems. It is only when you get a real, big challenge like this that you see them.

On the really positive side, the system we have is quite unique in the world. For example, you can go straight from the Secretary of State, the Department of Health, through Public Health England and out to local authority directors of public health, right through to the local community. If you compare that with somewhere like the US, where you have CDC Atlanta, there is absolutely brilliant scientific control over not just the health protection element but also the wider health improvement issues. On the last bit about translation through to the public and linkage across the NHS, clearly there are imperfections, but it is nevertheless quite a unique system, and we should always remember that.

Dr Evans: Thank you very much.

Q632 **Sarah Owen:** This is a very quick question to Professor Chris Whitty.

Your colleague Sir Patrick Vallance told the Committee that SAGE always gives a range of options to Government Ministers to take a decision. Could you quickly confirm that, please, and then I will move on to my next question?

Professor Whitty: It entirely depends on what the question is. Sometimes the view will be that there is just one thing that makes sense, but there may often be other options available. Very often, it is much more to do with how you operationalise it. The central principle may come from SAGE: "This is the clear advice scientifically, broadly." Then policy officials may say, "Within that, here are three or four different ways in which you, Ministers, could choose to use this advice." A much more common situation is that Ministers are given policy advice with options, based on a broad set of scientific principles and guidelines.

Q633 **Sarah Owen:** To take one specific example, the Prime Minister took the decision to allow mass gatherings to go ahead, such as Cheltenham and football matches. Was SAGE unanimous on guidance around mass gatherings? Were the predicted mortality rates, without lockdown and without systematic testing, provided to the Government advisers?

Professor Whitty: The decision as to whether to cancel mass gatherings is finally a decision for Ministers. You can read the SAGE advice in the minutes. It is very clear. It is not that they were advising that those should be kept open, but neither was there clear advice that the first thing you must do was close them down.

There was quite a complicated debate around that. If you suddenly close things and people are kicking around, instead of going to a stadium where they are all outdoors are they going to be in pubs and so on? I am just giving that as an example of something where the science and the debate behind it is rather more nuanced than the headline figure might be. That is an example of one of many of those kinds of choices.

Q634 **Sarah Owen:** I have two more questions. The area where you gave very clear advice was on 11 May when you advised people to wear masks where it is not possible to social distance indoors. You said there could be benefits, particularly on public transport and in shops.

Two months later, we had confusing messages from Ministers before a decision was made. We heard earlier from the panel how important clear and consistent communication is during this pandemic. Do you think that the Government could have been clearer and quicker about the benefits of using masks in confined spaces?

Professor Whitty: Masks are probably the clearest example of something where the scientific advice, in terms of the consensus view, shifted during the period of the epidemic, not just in the UK, but in the WHO and many other countries as well.

The first point is that there are many areas where the scientific advice was absolutely consistent all the way through the epidemic. This is an

area where the scientific advice shifted from a more cautious to a more positive stance. That is the first general point.

The second point is that the question is not around giving advice about where and whether masks should be used, where I think our advice is reasonably clear. It goes back to your previous point. The question is, in which environments is it going to be mandatory—which is an issue of the state—and in which environments is it going to be advisory? That is where Ministers have to make policy choices.

Our advice on where you should use them is absolutely clear and consistent, and in my view can be understood by everybody. In any situation indoors where you are not going to be able to maintain social distancing, wearing masks, with our current advice, reduces the probability that if you have asymptomatic Covid-19 you will pass it on. Therefore, it is a good thing to do in those environments; we are not advising it outdoors, but in indoor environments where you cannot maintain social distancing that is currently our advice.

Q635 **Sarah Owen:** Thank you. I can understand the shift in scientific advice, but that does not explain the delay of two months between the scientific advice and the Government's actions. I do not expect you to be held accountable for that.

The UK has recorded more Covid-19 deaths among healthcare workers than any country in the world except for Russia, with over 500 deaths. Guidance from the Government on PPE was downgraded on 13 March. Was that on guidance from SAGE, and was everybody in agreement?

Professor Whitty: It should be clear that that is actually conflating two slightly different questions. There is a question around the categorisation of the virus and around PPE. Then there is a question around healthcare workers. I will start off with the healthcare workers because that is by far the most important part.

As a healthcare worker myself, I absolutely bitterly regret every single death of any healthcare worker from whatever cause. If you look at the statistics—this is where the technical side comes in—as to how we can protect people from mortality and the long-term effects of Covid, which some people sadly have even when they fortunately recover in terms of not dying, the critical thing, and the thing that would reduce cases in healthcare workers and everybody else, is to keep the rates of the virus down. Quite a high proportion of healthcare workers will have got their virus in the community, and that is from the high community transmission that the UK suffered.

Within hospital settings, in settings where PPE was routinely used, the rates were often much lower than in ancillary and other areas where that was not the case. PPE clearly has a very major role. The actual grading of the PPE is probably much less important than whether people used it at

all and were using the techniques that we are now currently using to reduce infection rates.

To be clear, healthcare workers have always taken risks, and in this epidemic will continue to take risks, when they are caring for people with highly infectious diseases with a significant mortality rate.

Q636 **Sarah Owen:** That does not explain precisely why we have seen such high levels and numbers of healthcare worker deaths in comparison with other countries. What was the guidance from SAGE on downgrading PPE on 13 March?

Professor Whitty: Mistakenly, I was preparing for a forward-looking Committee rather than a backward-looking one. I do not have all these kinds of—

Q637 **Sarah Owen:** The reason why this is crucial is that if we are to live with Covid-19 for a long time—we have heard from other panel experts about the need to be able to start services again in the NHS to clear the backlog and to make sure we do not have problems with hidden cancers in the future, for example—the issue of PPE and making sure that we get it right is important for the future as well. It is about whether we will see any changes in guidance on PPE and therefore making sure we have the correct supplies.

Professor Whitty: On the forward-looking and on now, I can answer that. Remembering exactly which committee said what, and when, is something I have not prepared for, and therefore I do not have it in front of me.

In terms of PPE now, we are confident that the PPE advice that currently exists seems effective. It is in line with other countries and WHO norms. The data actually shows that, in those bits of hospitals where PPE is widely used, there is no clear evidence of any increased rate over background rate in the general community.

The big risk to healthcare workers is in the fact that there is background rate in the community, both directly and with indirect effects through hospitals. Within hospitals there is reasonable evidence, not great evidence, from genotyping that a lot of the transmission in hospitals was from care staff and health staff to one another, and equally from patients to one another but less between patients and healthcare staff. There is just as much risk from people being in their break room as there is on the wards in those kinds of situations.

It is pretty clear that we had very considerable problems with the supply of PPE through a large period of the early part of the epidemic. We are going to continue to have challenges on that, but far fewer than we had. The problem fundamentally is that every country in the world wanted it, and the supply was highly constrained. Supply is absolutely not my area of speciality so I am only quoting the views of others. At this point in time, their view is that our supply lines on PPE are much more secure

than they were a couple of months ago. But if we have a major surge in the winter that is simultaneous with a major surge in the winter in many other countries, it would be foolish to say that the risk has gone away completely.

I am reasonably confident that the advice currently is good advice if properly followed. The practicalities of it are obviously something that we need to keep on top of all the way through, particularly in what could be a very difficult winter period.

Chair: My colleague from the Science and Technology Select Committee, Greg Clark, has some questions.

Q638 **Greg Clark:** Thank you, Chair, for letting me join the session. May I say, Professor Whitty and Dr Harries, how grateful we are for your very hard work over a sustained period of time?

To pick up a question from the Chair about the evidence that Sir Patrick Vallance gave my Committee last week, Sir Patrick said that the SAGE advice on 16 or 18 March was that the remainder of the lockdown measures should be introduced as soon as possible. Is that right? Is it your recollection that it was all the remaining measures?

Professor Whitty: As I said, I have heavily prepped for a forward-looking what is the state of things, and we are now going over my memory of stuff that I was not fully prepped for. With that caveat, what I think Sir Patrick was saying was that the quite significant package of things that were recommended on the 16th should be done as soon as possible, and they were.

The package of things that came out on the 16th was very sweeping in its scope. People misremember that everything started on the 23rd. There had been previous things about self-isolation and all those things, but the biggest package in terms of having an impact on people's day-to-day lives irrespective of their symptoms was on 16 March.

As I understood it, that is what he was saying. I do not think he used the word "lockdown" in what he said. If he did, I am wrong, but I do not think he did. I think what he said was misreported. But he was clear that, by the time we got to the 16th—and prior to the 16th—and that continued for the rest of the following week, individual scientists on SAGE, and SAGE as a whole, were getting increasingly concerned that the speed of it was faster than had previously been understood, and we really needed to move fast at that point in time. That is clear from the minutes. I consider that the minutes are an accurate record.

Q639 **Greg Clark:** The minutes refer to additional measures, but Sir Patrick referred to the remainder of the measures. You can see that there is a difference between those—whether all of the other things should be introduced, or some more of the other things.

Professor Whitty: This is trying to do exegesis on Sir Patrick's words and at the same time remember exactly something that I was not properly prepped for, because, as I say, I had understood this to be about the very serious challenges that this country faces over the next few years rather than endlessly cycling back over previous periods. I am happy to go where the Committee wishes to go, but my memory would be that what we were recommending on 16 March was a very extensive package of measures, but not all the measures that finally ended up in what was called, in general terms, lockdown. Specifically, advice on schools, from my memory, was given at the next SAGE and the next iteration.

Q640 **Greg Clark:** Indeed. Looking forward, there is a relevant question that came up in the previous panel as to who is responsible for decisions and strategy. As I understand it, it is very clear that SAGE exists to provide co-ordinated, timely advice to Cobra. That is the constitution of SAGE, is it not?

Professor Whitty: I have been involved in almost every SAGE since it first existed. What it does, and what it is claiming to do, has shifted over time. Its latest iteration before this crisis was that SAGE is stood up by the Cabinet Office or the Government chief scientific adviser or a few other people, including me, but it is primarily to advise Cobr in emergencies. If we, the science groups, think that we should be doing something in advance of that, we stand up something called a pre-SAGE, precautionary SAGE, which can happen even before that has been activated.

The reality over this epidemic is that initially SAGE was advising Ministers through the Cobra mechanism. Increasingly, it has ended up as the final common pathway for major bits of scientific advice across Government that are not necessarily through to Ministers in Cobr. It has ended up having a much wider role in this epidemic than it has in some previous emergencies.

As it happens, I actually chaired the last but one, which was around the Salisbury poisonings. In that situation, we were giving advice very firmly to Cobr.

Q641 **Greg Clark:** SAGE can only be activated by Cobra. That is its constitution.

Professor Whitty: That is its latest constitution. In its very first constitution, it could only be done in a domestic emergency, and then we expanded it to international. Then we went into pre-SAGEs. It is a slightly moving target. The reality is that its central role is to provide co-ordinated advice to Ministers through Cobr.

Q642 **Greg Clark:** Exactly; Ministers through Cobra. In terms of the clarity of decision making, who takes decisions? These things are important going forwards. When did Cobra last meet with you advising it?

Professor Whitty: I cannot recall, but not very recently. Ministers of course have met individually, in groups and sub-committees and so on, and have been advised; but Cobr as a specific mechanism I cannot recall. It is certainly not in the last two or three weeks.

Q643 **Greg Clark:** But it is a mechanism designed to bring together decision making in emergencies, is it not? Do you have any idea why it has not met recently?

Professor Whitty: I am very happy to take questions on the advice we give and on SAGE. I am absolutely not the right person to advise on the mechanisms of Cobr. I attend it where that is the appropriate—

Q644 **Greg Clark:** When it meets, yes.

Professor Whitty: When it is a health emergency, but I do not call it.

Q645 **Greg Clark:** If you are not docking into Cobra, as it were, what body is your advice going into? Is it to individual Ministers, or does it go into a formal decision-making body?

Professor Whitty: Different forms of advice go to different areas. You know this, Mr Clark, but other people do not, so shall I lay it out? As you are asking quite detailed questions, it needs the framework for people to understand them. Science advice goes into Government via multiple routes. It obviously includes the chief scientific advisers in individual Departments.

Many individual Departments have very large numbers of scientists working in them who provide advice. There are independent scientific advisory groups, one of which is very important in this case. It is NERVTAG, which is the novel and emerging respiratory infections group. They have been incredibly active and I pay huge tribute to their work, but there have been several others. Then there are lots of sub-groups that are Government sub-groups and committees of scientists, some of whom come from Government and some of whom are independent and feed into SAGE.

There is quite a complicated architecture giving advice to different bits of Government. SAGE officially was giving advice to Cobr through the GCSA—Government chief scientific adviser, Sir Patrick—or in his absence me. That is the constitutional role, to give it a rather pompous term. That is its very formal role. In reality, it gives major bits of advice, particularly of a high level or high impact sort to make sure that there is co-ordinated advice across Government, particularly to Cabinet Office. Cabinet Office obviously represents other areas.

If something was just a bit of health advice on an important topic to the Department of Health, to Public Health England or NHS England, I would expect that not to go via SAGE except under exceptional circumstances. It will usually go from a specialist committee directly, or possibly via me, as chief scientific adviser as well as chief medical officer, to those

departments. SAGE is a co-ordination mechanism in its current incarnation as well as a formal route for advice into Cobr.

Q646 **Greg Clark:** Sir Paul Nurse was reflecting that there seems to be some opacity about decision-making structures. It seems surprising, when you have a piece of apparatus that is designed, in anticipation of emergencies, to be able to make decisions and draw different advice together, that it has either been stood down or not made use of recently.

Professor Whitty: I go back to my point. That is a question about how Ministers co-ordinate their decision making. Although I am very happy to take responsibility for advice given, the old saw of advisers advise and Ministers decide remains. Cobr is a vehicle of Ministers, not a vehicle of SAGE; we are servants of Cobr, not its overlords.

Greg Clark: You have many responsibilities, and I am not laying on your shoulders the responsibility for convening Cobra. Thank you very much indeed, Professor Whitty.

Chair: Barbara Keeley has questions on the social care side of things.

Q647 **Barbara Keeley:** There have been criticisms that the membership of SAGE, which we have just been discussing, is not large or diverse enough. In this pandemic, did anyone on SAGE have expertise on social care, how our care sector is structured and issues that were going to arise in the pandemic? Looking forward, how is that being addressed?

Professor Whitty: If Dr Harries is still with us, I will turn to her in a second, but my short version is that SAGE is specifically for science. That is all it is for. Many other groups and individuals give advice in other areas.

There were certainly people on SAGE who had an understanding of the social care sector, and there were people who had interests in different elements of social care. There are other routes by which advice from people in social care, including social workers and others, give advice. For example, I chair something called the senior clinicians group, and that has on it the chief social worker, so there are other routes by which that happens.

The criticism of SAGE is, if anything, that it is possibly too big and therefore unable to convene absolutely everybody in its current incarnation, rather than that it is too small. Lots of different groups have said, "Why don't you have a representative of this or that on it?" At a certain point, it becomes quite difficult.

If there is a question around social care, it absolutely should be answered by people who have expertise in that area. There is a group that has looked particularly at care homes and social care more widely, and it was chaired until recently by one of our colleagues who is a chief scientific adviser and is now chaired, as from now, by Dr Jenny Harries. Jenny might wish to say how that works. That then feeds into SAGE.

Dr Harries: I am very happy to help on that. It is a really interesting question. As speakers noted in the earlier session, the issue of care homes and social care has become increasingly more prominent as we learn more and more about the disease. There is now an adult social care policy team in the Department of Health, which is part of the linkage with the sector, and that has routine links for discussion and negotiation.

On the science side, there was an initial working group when it was very clear that there needed to be some very detailed and specific analysis of the impact of infection control for care workers, particularly in care homes that have the highly vulnerable, mostly the elderly and particularly those with dementia. That specialist group was initially looking at the data that was available and how the data could be improved.

One of the challenges with social care is that it is a very disparate grouping, going right from an individual unpaid carer in somebody's home to something that we perhaps recognise as an organisation in its own right—a care home—and sometimes part of a large chain. It is a difficult context in which to gain good information and to ensure that everybody who needs to be spoken with and talked to, not least the residents, is included in the discussion.

From that initial analytical group, as Professor Whitty said, there is now a social care working group that feeds directly into SAGE. I think a couple of papers are available to the public on the website, and there is a huge amount of detailed work going on behind that which involves not only representatives but academics who are specifically researching, for example, frailty and trying to take that in the context of things like the very specific workforce issues that are prominent in social care. Both the scientific analysis and the contextual elements are important in making recommendations, particularly for the protection of vulnerable adults.

I might add, in terms of how that translates through—*[Inaudible]*

Chair: I think we have lost Dr Harries. Barbara, do you want to carry on?

Q648 **Barbara Keeley:** Comments by the Prime Minister have sought to blame care home deaths on procedure not being followed. Later, he said it was related to the fact that we did not know about asymptomatic transmission at early stages of the pandemic. Could you give me your view as to whether care home deaths were caused by them not following procedure? There has been a lot of outrage and sensitivity about those comments, and I think we need to have a view on that.

Professor Whitty: First of all, my enthusiasm for blaming people for anything is zero. That is absolutely not the way you deal with any kind of situation in healthcare or social care. That is across the board, and that would be my starting point.

It is clear that every country that has a care sector has not handled this well. The UK is one country that has not handled it well in terms of issues in social care, but the same is true—as previous speakers have said—and

the numbers are very similar or even higher in terms of proportions of deaths, in almost every country where you look at it. Across the board, it has been a major problem.

Some of it comes from the fact that we had not recognised what are, in retrospect, obvious points but were not obvious early on—for example, the fact that people were working in multiple homes and people were not paid sick leave[1]. That is a clear risk. Those were major risks in health and social care settings.

Comment [WC]: For clarity: we were aware this was happening, but did not have data that this was a major risk factor for COVID

There are a lot of things that we have learned and that we can now do a lot better in social care. I do not think any of us would look back on what has happened in social care and say that the ideal advice was given, or that it is the fault of anyone. I personally would shy away from that across a whole range of different areas. Jenny might want to add to that.

Dr Harries: Can you hear me now?

Barbara Keeley: It is coming and going, but yes.

Dr Harries: My understanding, not to go back on the detail, is that the change in our knowledge of what we could apply, and our planning and what we are doing now to protect residents in care homes, is important. Some of that knowledge was missing, I think, when we first started.

One of the most notable things is the presentation of elderly people, particularly not just asymptomatic but with very non-specific illness. We now have very good testing programmes in place that we can implement for asymptomatic individuals. We have very proactive management of any indication of an outbreak. A single case will alert health protection teams locally to advise specifically on management.

A whole infection control programme, which was funded to about £600 million, picks up all the points Chris mentioned about supporting the workforce and ensuring wherever possible that they are not mixing between, and sequentially going around, different homes or settings. Importantly, it provides support to care homes, which are very differing organisations, around good infection prevention and control mechanisms. It is also works with the NHS, with lead CCD clinicians, to ensure that there is direct clinical input and named advice to each care home.

The deaths have come right down. The knowledge is very good. There is a new system, Capacity Tracker, in the care home system that means that there is almost realtime knowledge of what is happening. That can be triangulated with testing data.

Q649 **Barbara Keeley:** Sadly, the tragic thing is that we have had tens of thousands of deaths in care homes to get to that position. There have to be some lessons learned. In relation to the things you have just pointed

[1] Note from witness: we were aware this was happening, but did not have data that this was a major risk factor for COVID.

out—particularly the points raised by Professor Chris Whitty—if there had been representation from the care sector at an early stage, those things would have been known. The things you have referred to, such as agency staff moving between care homes, are well known. There has to be some learning from that. With the benefit of hindsight, are there elements of the approach to social care that you think could have been handled better? How will they be handled better going forward?

Dr Harries: Picking up your point, the adult social care team in the Department of Health routinely engages with providers. There is always room for improvement. Hearing the voice from the ground is really important—

Q650 **Barbara Keeley:** Could I just stop you there, Dr Harries? I was in contact with all the national care provider organisations in the first month or so. They routinely told me that they were completely excluded; they felt left out and that no one was talking to them. I am not making a point of wanting to go over which day this was said or that was said because I think we need to look forward, but it is the case that they were ignored. They have said they felt like an afterthought. That is the thing we should take from what their experience was.

Dr Harries: It is really important that there are good engagement processes. It is probably not my personal area of responsibility, but I know that colleagues in the Department of Health are working on that. I have personally contributed to some stakeholder discussions.

One of the key things, as you highlighted, is that there are multiple different provider representatives. It goes right through from the manager of a very small private residential unit, perhaps for learning disabled for example, to large chains of providers across the country. Having an understanding of that has come very considerably through the new data systems that have been put in place, as well as the conversations.

That is important because it highlights differences. Most importantly, there has been very specific research, which is ongoing, into care homes and care home staff. There are huge amounts of support going forward in recognition of the hard work that carers have provided, and of some of the uncertainty in the care sector in terms of its importance and its viability.

Q651 **Neale Hanvey:** Professor Whitty, I accept that it is important to look forward, but we also need to look back. There have been many critical voices around the timing of lockdown. There were certainly, with the benefit of hindsight, lessons available from Korea, Italy and Spain. Viral suppression was clearly a key target.

Bearing that in mind, and given the comments you made earlier today around the expansion of capacity of testing, who did you consult in terms of pathology, IT support and HR on that expansion, and what assessment was made before the advice was given? Reflecting on our ability to build

Nightingale hospitals, there was definitely the will and ability to expand things quickly.

Finally, looking forward, I want to ask about your comment on waiting for a surge before we start more saturated testing. Is that not a bit like waiting for lockdown until we have a surge in March? Are we not repeating the same mistakes?

Professor Whitty: That is a series of quite different questions, so tell me at the end if you think I have missed any of them.

On the question of my consulting HR people before trying to work out whether we did not have the capacity to do testing and tracing, there was no need to, because it was so clear that we were so far away from what we would have needed to do it at scale. I reiterate the point I made previously; we made it very clear that substantially more testing was a priority but was very difficult to do. Remember that it was a disease for which there was no diagnostic at all, so Public Health England did a remarkable job, in their first iteration, of going straight from the genetic code that was generously put out by Chinese scientists to a test very quickly. It was the ramping up of the testing that took longer, and testing was not the only thing we were missing.

It has taken us a long time in all four nations to get to the point where we can do anything on the scale we currently want, and there were several things we did not know about the virus in the early stages, including, for example, the role of pre-symptomatic and possibly asymptomatic transmission, which we know now. You are absolutely right that, were we to run things again, there are many things we would do differently, but it was a practical question and it was very clear that we would not, in the time, be able to do something that was even material and, therefore, the question, in a sense did not arise.

Q652 **Neale Hanvey:** I am trying to make a direct contrast, though, with the situation in March when an assessment was made about whether or not there was sufficient capacity. As the Chair has pointed out, we have now built that capacity. What assessment was made of the capacity in path labs, the ability to expand IT infrastructure and training sufficient numbers of people to participate in the programme? Was there an assessment of that before the judgment was given?

Professor Whitty: There is a danger that I end up repeating myself. We were so far away from where we needed to be, across multiple different areas. The biggest limiting step was on testing. Without testing, there is no system, and our ability to ramp up testing was very significantly strained.

Testing capacity is not an area I am an expert in, so again I am giving other people's views. I think we were lulled into a false sense of security by the fact that we were so fast off the mark in developing a test, with Public Health England doing that. It was not the problem of developing the test; the problem was around the scale-up. Germany in particular

was clearly ahead of us, but most other countries have had significant constraints on testing all the way through. In a sense, we were in the pack in our ability to speed up testing; we were not a real laggard. I want to be clear about that. To go back to the point I was making about Japan now, Japan has done excellent work; their testing capacity is now significantly less than the UK's but they are still managing a good response.

The question, in a sense, did not arise. I can only say in lots of different ways that, fundamentally, there was no possibility of achieving it. I can say that—

Q653 **Neale Hanvey:** Is the future plan of waiting until there is a surge before we start saturate-testing based on the same view—that we won't have the capacity to do it anyway?

Professor Whitty: No. There is still a remaining capacity constraint, but that is not the primary reason. There are choices to be made about how we do it. It is based on the fact that where we see outbreaks or a surge, or at least a relatively high transmission rate, as in Leicester, we absolutely should do it, even in advance of knowing the right frequency. At this point in time, my judgment is that we do not know the right frequency; this is a really major operational and practical thing to launch, so we should take the time, while we have low rates of transmission, to work it out systematically, based on data. Then we will be in a very strong position to advise on when is the right point to do it and, more important, on the right frequency to do it. You can make a different technical judgment, but it is not that we should not do it; it is to do with when we have the right knowledge to do it with some confidence that we have the right frequency.

Q654 **Paul Bristow:** I have a similar question to the one I asked Sir Jeremy Farrar. Dr Harries touched on it earlier.

Public Health England may have been precise in the way it recorded data, but not, I believe, in the way it has reported data. We can now see that, if someone has tested positive for Covid, any death subsequently is counted as a Covid death, even if they died of nothing related to Covid. We already know that the mere possibility of Covid, with no test, was enough for it to be put on the death certificate. With all that in mind, Professor Whitty, do you regard Public Health England's figures as reliable as a way of informing people about deaths related to Covid?

Professor Whitty: I heard Sir Jeremy's answer, with which I completely agree. It is consistent with what I have said consistently through this entire epidemic. The hardest metric, the one that really matters, is all-cause mortality above baseline—excess mortality. That is because it captures Covid deaths directly but also, very importantly, people who die indirectly, because health services are not working properly or because of some of the impacts on people's health-seeking behaviour or, in the long-

run, because of the economic effects of the lockdown. That is the most important thing.

There are lots of different ways you can measure whether someone died of Covid specifically. We started off with one mechanism, which was in-hospital deaths with proven cases, and extended that subsequently to care homes. There is a technical debate about the number of days after the initial point when you put a cut-off. Scotland does one thing. England has done a slightly different thing. The debate was about the length of time.

Sir Jeremy was not exactly correct on that narrow point. The whole point, which has had a lot of traction in the media, is that Public Health England was not putting a timeline on it. It was not putting a censoring case. We know that some people die after 28 days, so they chose to include people who died later than that. Some other countries, including Scotland, put in a 28-day censoring. Finally, ONS does it by what is put on death certificates, based on a clinician's judgment as to what someone died of.

Those give different answers, but what I think, and what the national statistician and Sir Jeremy think, is that the most important metric is excess mortality. At the moment, in England and Wales, it is currently running negative; in the last week reported, there were 560 fewer deaths than there would normally be at this time of year, and this is a low period. Overall, the most important metric is excess mortality.

Q655 **Paul Bristow:** I don't disagree with that, but do you think the over-reliance on the Public Health England Covid deaths made your job more difficult because it is not an accurate picture?

Professor Whitty: No, I don't. The whole point is that all the ways you can do it are flawed. The key thing is to do it well and in a systematic way—the same way the whole time—so that you can follow trend lines over time. Every death is a tragedy, but trying to work out what to do in an epidemic is to do with which direction things are going. Are they getting worse or are they getting better? Public Health England has chosen one particular model; others have chosen a slightly different one. Every country in Europe has chosen a slightly different model, which is one of the reasons why international comparisons are so difficult, and rather over-egged sometimes.

The key thing is all-cause mortality. What you care about is whether your relative or your friend has died; the exact mechanism is not the point.

Paul Bristow: I understand that, but—

Chair: Paul, I'm so sorry. We have to finish at 12.30 and there are some other contributions. I apologise.

Q656 **Dean Russell:** May I express my thanks to you, Professor Whitty, and the team, for everything you have been doing and your momentous efforts over the past few months?

My questions relate to the vaccine. There has been some great news this weekend and over the past few weeks about the success in trials. I have a few questions about the practicalities of that moving forward. Do you have a sense of what percentage of the population would need to have the vaccine for it to be truly effective across the country?

Professor Whitty: I hope that Professor Van-Tam is on the line. If he is not, I'll answer.

Dean Russell: I believe he is. I can see him.

Professor Van-Tam: Good afternoon. You asked how much of the population we would need to vaccinate to have a good effect. I can chop that several different ways, all of which are valid and important.

We may end up, in the first instance, with a vaccine that is most appropriately targeted, and with a label that restricts its use, to a certain population; purely for argument's sake, shall we say those aged over 50? A regulatory body may take that view, and it would always take a view based on risk/benefit. As we know, in this disease the likelihood of death changes very markedly with age, so the risk/benefit for a vaccine is likely to be very different by age. There may be some other considerations—for example, data that show that a particular vaccine does not work in the very elderly or that it has some other limitation. That may constrain who we can give it to.

The next point is about how effective the vaccine is going to be. Vaccines range in effectiveness, from flu vaccines, between 40% and 50% in a given year, which seems low, but is a very important public health benefit, to hepatitis B vaccines, which are highly effective. From that perspective, we do not know until we get it how effective it will be.

The JCVI has done some work in the area already and, using a new algorithm, has looked at the likelihood of suffering a complicated or fatal outcome from Covid-19, and has looked at the characteristics of patients. If we could vaccinate even the top 20% in the risk scale for adults from the age of 19 to the top end of the range, we would be dealing with the age group in which almost 90% of the mortality is currently loaded. You would only take out all of that mortality if you had a vaccine that was 100% effective, but targeting a relatively small proportion of the very highest risk will deal with a very large number of the population who have the mortality loaded against them at the moment.

Q657 **Dean Russell:** Thank you for that excellent answer. I have a few brief points that I'll wrap into one question. They are some of the comments that have come into my inbox. First, Professor Whitty or Professor Van-Tam, do you see a point when it will be a legal requirement to have the vaccine? Secondly, do you see it being free or will a prescription be required? Thirdly, I have heard a lot about the flu jab and that it will shortly be needed for the winter. Do you see an opportunity to combine flu jabs with the vaccine trials?

Chair: We only have time for Professor Whitty, with great apologies to Professor Van-Tam, because we are coming up against the clock.

Professor Whitty: I very much doubt that there would be a legal requirement. Finally, it is a decision for Ministers, but forcing people to have vaccines does not strike me as a good answer under any circumstance. To go back to a previous point that Professor Van-Tam made, we may, in any case, have a vaccine that simply protects the individual but has no benefit to society. In that case, it is entirely a matter of choice as to whether someone wishes to be protected against this substantially significant disease. Whether it is free is a policy decision, but I would expect it to be.

If you want more details on combining it with flu, Professor Van-Tam is the expert. If we were lucky enough to get a vaccine in time for the winter flu season, we would of course want to try to do both, but we are some way from that. I want to be very clear. We are incredibly excited by and proud of what the UK has done in leading the way on vaccine science here and on funding vaccines elsewhere. There has been excellent work by many people on securing potential vaccines, but no one should be under any illusions: the chances of us getting a highly effective vaccine before Christmas are, in my view, very low. Professor Van-Tam would probably be a little more optimistic than me, but both of us would say that it was a low probability for this winter flu season.

Professor Van-Tam: I am cautiously optimistic that we will have some vaccine this side of Christmas. If we do, we will not have data on whether it can be given at the same time as flu vaccine, and it is likely that we will have to delay or separate the two vaccines and stage the way we give them to the relevant patients.

It is a utopian dream and would be wonderful if one day we could have a combined Covid-19 and flu vaccine in one syringe, because it is the same target group, but that kind of vaccine development will take many years into the future to achieve.

Chair: Professor Van-Tam, would you kindly write to us, as it is such an important area, to help us understand the difference between utopia and reality? An awful lot hinges on that. I am sorry to cut you off. We now have the final question. It has been a very long session and we are very grateful to you for hanging on.

Q658 **Taiwo Owatemi:** Professor Whitty, earlier in the session, we learned from Professor Devi Sridhar that what would make members of the public feel safe is showing them the data. Is there any intention to increase the local availability of data, and, if so, when will it be delivered?

Professor Whitty: There are two levels to that. In a sense, this is mechanistic, but we should have done it before; we now share a lot more data with local authorities and local directors of public health, so that they can direct local responses better. We should be doing that right

down to postcode level to help them in their work. We are very fortunate to have outstanding directors of public health across the country.

On the question about how detailed data should be, in terms of going down to household level and being in the public domain, although I am very strongly in favour of data being available as widely as possible, we need to be a little bit careful. Advice from my local authority and public health colleagues in the community is that going down to individual streets has some advantages, but could lead to stigmatisation, victimisation or other problems—not in most places, but it could occur. We need to be careful about going beyond a certain level of granularity, so that we do not give rise to a situation where people are blamed for disease, which would be absolutely unfair. That is the one caveat, but, in general, my principle would always be to share data. I am absolutely in favour of it, and we should have done more of it earlier on.

Chair: Thank you very much indeed. It has been a fascinating and very long session, and I conclude it by thanking our witnesses for their stamina this morning. We know how busy you are and this has been a very long session. Thank you for sitting through it and for the excellent answers you have given, and the fantastic work that you, Professor Whitty, Professor Van-Tam and Dr Harries, are doing with your teams under extraordinary pressure. We are incredibly grateful for that. Thank you particularly for this morning and all the preparation time that you had to put into the answers you gave. We wish you every success in the months going forward.

I thank the House of Commons technical team, and, as today is the last hearing of Parliament's summer term, I particularly thank Huw Yardley, the Clerk of the Committee, who is moving on from the Committee to other parliamentary responsibilities, and Dr Charlie Bell, who is moving on from being our clinical adviser. Both have done a fantastic job, Huw Yardley for the last five years as Clerk to the Committee. We are really going to miss you. Thank you very much for all you have done.