

Science and Technology Committee

Oral evidence: UK science, research and technology capability and influence in global disease outbreaks, HC 136

Thursday 17 September 2020

Ordered by the House of Commons to be published on 17 September 2020.

Watch the meeting

Members present: Greg Clark (Chair); Aaron Bell; Dawn Butler; Katherine Fletcher; Mark Logan; Carol Monaghan; Graham Stringer.

Questions 1259 - 1432

Witnesses

[I](#): Professor Carl Heneghan, Professor of Evidence-Based Medicine and Director, Centre for Evidence-Based Medicine, University of Oxford; Professor Sylvia Richardson CBE, Director, MRC Biostatistics Unit, Cambridge Institute of Public Health, University of Cambridge; and Dr Thomas Waite, Director of Health Protection, Joint Biosecurity Centre.

[II](#): Baroness Harding of Winscombe, Interim Executive Chair, National Institute for Health Protection; Simon Thompson, Managing Director of the NHS Covid-19 App, NHS Test and Trace; Dr Susan Hopkins, Chief Medical Adviser, NHS Test and Trace; and Lord Bethell of Romford, Parliamentary Under-Secretary of State, Department of Health and Social Care.

Written evidence from witnesses:

– [Add names of witnesses and hyperlink to submissions]



Examination of Witnesses

Witnesses: Professor Carl Heneghan, Professor Sylvia Richardson and Dr Thomas Waite.

Q1259 **Chair:** The Science and Technology Committee has been taking evidence throughout the pandemic, looking at the UK response to Covid-19. We have focused particularly on the need for testing. With that in mind, this afternoon's session is about precisely that.

We are starting with three experts to understand where we are on Covid-19 from the statistics that have become available recently. We will then turn to Baroness Harding and her colleagues from NHS Test and Trace, and finally, the Minister responsible for test and trace, Lord Bethell.

I am very pleased to welcome our first panel of witnesses. Professor Sylvia Richardson is director of the Medical Research Council biostatistics unit at the Institute of Public Health at the University of Cambridge. She is the president-elect of the Royal Statistical Society. Professor Carl Heneghan is professor of evidence-based medicine at the University of Oxford, and Dr Thomas Waite is director of health protection at the new Joint Biosecurity Centre. Welcome to all. We have a lot of ground to cover, and I would be very grateful if witnesses could keep their answers short so that we can do that.

Coming out of the summer and looking back at the statistics that have become available in the last few weeks and months, can you give the Committee a short précis of where we are on the incidence of Covid in the UK? What do we know is happening to the infection rate? What do we know about the proportion who get it and do not have symptoms? What do we know about the severity of those symptoms? What do we know about the fatality? Professor Richardson, would you give us an update of where we are?

Professor Richardson: At the moment, looking at the numbers that have come out, we have two types of data to get a picture of the situation. We have the data from the testing system, which is a reactive system whereby people have to join the system, so there are definitely issues about interpreting that data. There are issues about how people are selected to do the test, what symptoms they are based on, and the availability of the systems. We see a definite increase in the cases being reported through that system, but that increase has to be interpreted with a certain amount of caution, because it is influenced by the selection of the population coming in.

We also have evidence from designed studies, surveys based on randomised sampling of the population run by the ONS and the big REACT study by Imperial. Because those studies are based on designed samples, they give a very good picture of the underlying true prevalence and are much less subjectivised. Of course, they have smaller numbers.



Q1260 **Chair:** How would you characterise that from the data available?

Professor Richardson: For example, the evidence from the latest REACT study, which has four rounds and is comparing rounds three and four—the most recent one involving about 150,000 people—is that there is a definite increase in incidence. They saw that quite early between rounds three and four, before it was picked up by the test and trace system.

Q1261 **Chair:** Dr Waite, from your vantage point at the Joint Biosecurity Centre, what are the headline descriptions of where we are with the virus?

Dr Waite: I recognise the description by Professor Richardson. There were about 3,400 new infections confirmed in England yesterday, and almost 4,000 in the UK. In terms of what that means for trends, I am sure all members of the Committee are aware that the number of new cases has been rising in recent weeks, particularly in the last fortnight.

Test positivity from the test and trace system is up. That is the proportion of people who have a positive test. In terms of rates, it equates to about 33 people per 100,000 testing positive per week, up from a low of six to seven in July. It is not a universal picture across the country; there are hotspots. Disease rates are climbing particularly in places like Bolton, but they are rising everywhere, with the highest rates of the disease in 20 to 29-year-olds. That mirrors the findings of the REACT study Professor Richardson was describing.

Q1262 **Chair:** What do we know about the incidence of symptoms? Are more people asymptomatic than before? Has it stabilised at a level that is now predictable?

Dr Waite: It is quite variable around the country. Test and trace data is operational testing; it is deliberately focused on people who need a test, require a test or are directed to have a test for a number of different reasons, so it will vary around the country and in a given week, depending on the people being directed to test. The important thing linked to that is that younger people very often have less severe symptoms but are also less likely to need to seek healthcare or to go to hospital. That is really important because ensuring that it does not spread to people who are more vulnerable is a key part of the strategy.

Q1263 **Chair:** What do you make of the recent trends in fatality from Covid? We know that the number of deaths has, thankfully, dropped to a low level. Are we to infer anything from that compared with how things were before?

Dr Waite: The most severe outcomes of hospitalisation, admission to ICU and mortality are at the severe end of things and we are all seeking to try to avoid them. They are also what we call lagged indicators or lagged sources of data. We would not expect to see a rise in those until a few weeks after a rise in overall incidence. Looking at what we know about what happened among younger people in particular and healthy



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people at the beginning of the outbreak, we would not expect to see an uptick based on who is being infected at the moment. That is why it is important we all take whatever steps we can to avoid getting it and transmitting it to others. That is doing basic things like washing our hands, keeping our distance and so on.

Q1264 **Chair:** Professor Heneghan, can you give us your gloss on what the trends show to date?

Professor Heneghan: Let's try to keep it nice and clear. There were two distinct testing strategies going on in August. The Government one was about detected cases. They were running at about 1,000 through August. At the same time, the ONS data was suggesting that there were about four times as many people in the background. That is the random sampling.

One of the key issues is that whatever you detect is a function of who comes forward. What we saw in the detected cases on 2 September was an increase in that number. If we go back to 30 August, we had about 1,000 detected cases and that then went up to about 2,600. It is interesting to note that was right around the bank holiday, when we had Rishi's Eat Out on the Monday. That was a huge success, but it led potentially to some sense of increase. It is not just that; it is the delay over the bank holiday. We saw about 3,500 cases over that two-week period; it is about 3,500 to 4,000. It is early enough to start to see rises in deaths because the lag is about 14 days.

I want to explain what happens in September. We have seen from the RCGP surveillance data a 50% increase in consultations for acute respiratory infection. When people go back to school, open up businesses or come back from holiday, there is a highly predictable increase in acute respiratory pathogens. That leads to a near-threefold increase in emergency admissions of children in September alone. Therefore, it is important to say that we are acting against the backdrop of what happens in September for all acute respiratory pathogens. Of the 200,000 people who are coming forward, it looks as if about 25% of them are asymptomatic and about 150,000 have some discernible symptoms. Of those, 97% have some other acute respiratory pathogen on board, and between 3,000 and 4,000 have Covid, so we should get the context in place.

It is also important to see what has been happening in places like Oldham. For instance, over the seven weeks Oldham has been pretty stable throughout. It has moved up and down, but it has stayed in the top 10. Irrespective of what we have done, what has happened in Oldham is that cases have maintained a level of between 60 or 70 and 100 per 100,000. It is interesting that Oldham and Rochdale are in the top 10 of cases right now, but at the Pennine acute trust there are 22 Covid patients. Although we see rising cases, we are not seeing its impact in hospitals and deaths. We are seeing a slight increase, but nothing like what we saw in March and April.



Q1265 **Chair:** Do you have an explanation for that?

Professor Heneghan: There are two things. It is right to say that this is a point in time when we have to consider what is the strategy in the Government's programme. Are we accepting that the virus is endemic? Endemic viruses that are seasonal circulate weakly through summer among young people. That is exactly what we are seeing now. We also have an issue about what is called the cycle threshold in understanding the viral load people are accruing. That is an important aspect we can talk about later.

There is another aspect. When we think about seasonal pathogens, one of the things we have to be mindful of is that we do not push the disease into the winter by having delay tactics. We fare much worse in February and March. There are a number of reasons for that: circulating co-pathogens; people with immunity issues; and issues around vitamin D that we are researching. Between now and Christmas, we would see a fourfold increase in consultations in general practice in a good year. We will see an eightfold increase in an epidemic year; we will see a 50% increase in deaths between now and January. The reason I am giving this information is to provide context.

Q1266 **Chair:** We can drill down into some of the local outbreaks with my colleagues who represent some of those regions. To pick up some of the implications of what you have said, if people, especially young people and children, are going to the doctor because they have symptoms associated with September that they do not have in June, July and August, are you suggesting that some of the increased positive tests come from the fact that more people are presenting themselves with symptoms for testing than did in July and August, but they might have the same level of infectivity with regard to Covid?

Professor Heneghan: I am saying that for acute respiratory pathogens there are more people with other infections on board than Covid. One of the key things about detection is that when you see rising cases you are picking up what is in the background. That is what the ONS survey data tells us. It has told us all along that in the background it is three or four times higher than we thought we were picking up in August, and it was circulating weakly among the population.

Wherever you go in and test more, you will start to pick up what is there. That is what we have seen with the strategy. When you focus on certain areas there has been a strategy that says, "Oh, my gosh, it's going up," but actually you are picking up what is there. There has been over-interpretation, with language like "exponential rises," which is an incorrect way of looking at the disease. Most of the increase is in line with a seasonal pathogen that has a linear increase at this time of year consistent with the other pathogens out there.

Q1267 **Chair:** Do the other witnesses want to comment?



Dr Waite: As Professor Heneghan was saying, we see increases in all sorts of infections at this time of year. From the middle of August onwards, we saw quite a rise in the number of cases, first among 10 to 19-year-olds and 20 to 29-year-olds. When we drill down within that, on the weekly figures, it was particularly concentrated in older teenagers. That uptick remains concentrated in older teenagers and not among schoolchildren at the moment, which is quite important at this point in time.

Professor Richardson: I am glad Professor Heneghan stressed the useful background information that the ONS study is providing. What is now needed, and has been announced, is a massive expansion of stratified random sampling of the population, which would have good geographical coverage and target particular strata that are more vulnerable. This will give very important information in relation to the test and trace system, which, as we have seen, has all sorts of issues about the selection of the population being tested and is much more difficult to interpret. It is a combination of two types of information, obviously from Test and Trace, but we also need to roll out a large design study to capture where the prevalence is and do real-time surveillance.

Q1268 **Chair:** Dr Waite, perhaps you can clear up something. Professor Costello is reported as saying this morning that he thinks the Government have made an assessment that the true level of infection is running at about 38,000 a day. Do you recognise that in the Joint Biosecurity Centre?

Dr Waite: That is not a figure I directly recognise. I suspect it may come from a modelling study. SPI-M, which reports to SAGE, has a number of different models. There is real value in having several different models. You have different assumptions in models, and having different groups making their assumptions is important, and all of those will come with a confidence interval or credible interval around them.

Q1269 **Chair:** The implication is that it is about 10 times the current number testing positive each day. Does that seem the right ballpark to you as to the true incidence?

Dr Waite: That does not sound right to me, but it is important that the test and trace data is operational data. I also note that there was a comment about the CMO's comment in the same tweet, which I think has since been withdrawn.

Q1270 **Mark Logan:** Before I ask a question on a colleague's behalf, I have a question about statistics. I represent a Bolton constituency. In Bolton right now, we have a rate of 212 per 100,000. From what has been discussed in the last couple of minutes, do you feel that constituencies close by, or other parts of the country, probably have a very similar rate and it is just that, for whatever reason, the testing and tracing has happened in Bolton and may have been linked to a super-spreader, potentially, and vast resources have been thrown at that one particular person and their network?



Professor Richardson: By the nature of the infectious process, there is definitely evidence of spatial diffusion in the process. It is highly likely, given the location and the surroundings, that it is just by the diffusion of the population and the nature of the infectious process. There are sometimes specific high peaks in some areas that could be linked to the kind of super-spreading events that might have happened because of a particular context. It could be a work context, a care facility or whatever. There is a combination of reasons, but in general with all the analysis we have done we observe a lot of spatial structure in the incidence.

Professor Heneghan: It is important to put it in context. When we talk about infections and epidemics in terms of general practice, about 400 per 100,000 consultations constitutes an epidemic, and those are symptomatic people. That is a long-established number. When you talk about 200 or 250, you are still in the same ballpark as a seasonal pathogen. The question is how many of those 200 to 250 are symptomatic versus asymptomatic.

The other question is: what impact is it having? For instance, I looked at Bolton NHS Trust and saw that there were two patients with Covid in hospital there right now. That is where you start to provide context, as opposed to just throwing the numbers. We now need more data that allows people to put the information in context, as opposed to just seeing a number, thinking it is rising and then panicking.

Dr Waite: I want to give a little more context. You are right that the rate in Bolton at the moment from, the test and trace data, is very much higher than other places. The positivity is also very much higher. Positivity in Bolton is about 11% or 12%. That is quite striking compared with other places, including neighbouring regions, which helps give an idea of where the cases are. On top of that, the number of people coming forward for testing in Bolton is higher than in some local authorities, but it is comparable with many of the other places that have a high level of incidence at the moment, but not as high as Bolton.

Q1271 **Chair:** On the point about context, the current 3,000 cases a day nationally are shown on the same graph as the peak of about 5,000 a day during April, but the truth is that they are not directly comparable, are they? There are far more tests being taken now than there were then. Isn't it very misleading to have a graph indicating that they are going back up to April levels?

Dr Waite: It is an important graph to show the number of cases being reported per day, but you are right: context is everything. Testing has changed beyond recognition. Back in March/April there was a relatively small number of tests available compared with now. We are dealing with hundreds of thousands of people being tested a week, so it is absolutely not comparable. The age range of people being infected is not comparable, and that is reflected in the hospitalisation data we were talking about and is partly why it is so very different.



Q1272 **Chair:** That is important. Obviously, at the Joint Biosecurity Centre you are conveying information to the public. People could see the number of daily cases going up to the level they were in April, but it is strictly non-comparable. It is right that that is the number of people who tested positive that day, but there are far more tests and there is much less Covid around, one would infer, than there was in April. Is that right?

Dr Waite: Alongside that, there is other data in the public domain. That is why transparency is so important. Professor Heneghan mentioned the hospitalisation data that is updated every day. It is important to take all of that information in the round. That is one of the things we do daily across the public health system. We look at all the different sources of data, local and national, and where there may be emerging hotspots and things to be investigated, using very sensitive models to try to understand if somewhere has changed quickly. Local health protection teams and local directors of public health know an awful lot about their areas and can investigate that, and if areas need to be escalated for discussion with the CMO or the Secretary of State that can happen, but it is all part of the system.

Q1273 **Mark Logan:** Transparency, yes, but would you be concerned about transparency without context? Right now, my constituents are very anxious. The *Manchester Evening News* publishes a chart every day of Greater Manchester, and it has two red arrows going upwards for Bolton at the top of the pile. What would be your suggestions for making sure we have the right context?

Dr Waite: Having as much information available and presenting all of it together is one of the really important things. We know there are research studies, such as the REACT study and ONS, that illustrate the bigger picture in addition to incidence, positivity, the number of people going into hospital, the proportion of people who are symptomatic, the number of people who are taking up testing and whether those people are being tested through the NHS pillar one system, or whether they are symptomatic or asymptomatic people, or contacts of people being tested under pillar two. The more information that is out there the better, but it is absolutely right to make sure that we are describing it in the current context and not how things were in March or April.

Professor Heneghan: There is a fundamental shift in the debate away from protecting the NHS from the impact of the disease to cases. What we want to know, and I suspect people in Bolton want to know, is the extent to which it is impacting on the healthcare of the population.

One of the key aspects is having a clear case definition of Covid and whether it is impacting in terms of care homes and admissions. If we are going to react and have restrictive measures, we should expect to do them in terms of the impact of the disease. In March, the RCGP surveillance data was reporting about 300 to 350 symptomatic cases per 100,000 consultations across the country, so you can get a level of where we were for everything at that point.



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What is the impact in terms of disease in Bolton? If that changes and there is an impact, and healthcare is being consumed at a level where we say it is an epidemic and hospital cases are rising, you will get more trust and buy-in from the population of Bolton than if you say, "We've got cases and about 80% of them are asymptomatic, but we're not sure what's happening." If you did that—

Q1274 Mark Logan: Professor Heneghan, right now the Department of Health is saying that in France hospitalisations have tripled. If we are doing comparisons and looking at other countries, what would you say to that?

Professor Heneghan: If you look at the data in France and Spain, it is starting to flatline; it is not going up exponentially. It has gone to about 10,000 cases in France and Spain. Interestingly, in France if you want a test, you have to get a prescription. You have to come through clinical care and you can only get a test if you have a prescription.

Secondly, they have a different private incentivised system for hospitalising; there are more hospital beds. Some of that may be appropriate, particularly for the very elderly in care homes. We may want to admit more people; that is an important aspect, but it is also important to consider this as an endemic disease. If you lock down hard early, as France and Spain did, as you open up there will be areas where there is very low immunity. That could be the case in Bolton and is why we see it affecting different areas as we go through this pandemic.

Chair: Professor Heneghan, we have to move on. If we keep answers short, we will get through more.

Q1275 Mark Logan: My colleague Chris Clarkson, who represents Heywood and Middleton, has a question with specific reference to places such as Rochdale and Bolton where additional restrictions are in place to combat rising infection rates. What baseline sample is considered scientifically robust for monitoring the change in rates? With the current difficulties in providing tests, will this hamper efforts to monitor and control infections in areas with above-average levels of infection?

Dr Waite: I missed the middle of the question.

Chair: Can you tell rigorously whether the incidence in Bolton and the other areas affected is dependable enough to act in the way we are? Is it statistically robust?

Dr Waite: Absolutely. With the number of people coming forward for testing, the increasing trend in Bolton in the last couple of weeks is very different from anywhere else and is not matched by a corresponding increase in the number of tests. It is important, but it is restricted to particular age groups. Across the country, linked to Professor Heneghan's point, we need to be absolutely clear that we want to prevent it spreading to older age groups or people who are more vulnerable, and we are seeing that. In some areas, including the north-west, we are seeing



increases in hospitalisation, mercifully from a very low base, but we are seeing the beginning of that trend.

Q1276 Katherine Fletcher: I want to dive a little bit into the work of the Joint Biosecurity Centre. You are quite a new organisation. If any of our less biologically qualified constituents are listening, there are an awful lot of bits of data, names and acronyms. Could you tell us how it is set up, how you get that massive amount of data together and how, within your remit, you split analysing the data with giving advice and the responses?

Dr Waite: The JBC was set up as part of the rapid up-scaling of the response to the coronavirus pandemic, and our aim as part of NHS Test and Trace is to help to analyse that data and present it to try to identify Covid transmission chains and thus stop the spread of the virus. We have an analysis function within Test and Trace, but we are part of the Department of Health.

The idea behind JBC is to bring together experts from across Government. There are many epidemiologists, public health experts and so on in the national public health agencies of the UK, and we bring in data analysis skills, data science skills and data infrastructure skills to pull all that information together in a systematic fashion to help inform both local decision making and national decision making by the Secretary of State and so on. We do that by helping to identify outbreaks early and assessing whether there are things of concern by looking at hospitalisation data, alongside the test and trace data for example, and looking at risk factors—age, ethnicity, location and so on—by local areas or regions. There are and there will be outbreaks, and our role is to help pull all that information together.

Q1277 Katherine Fletcher: How are you pulling in all the different statistics from Test and Trace, the ONS and REACT? Are they all antigen testing results? You mentioned population and demographics. Are you doing historical antibody prevalence surveys with the ONS? Is that going in? Can you give us an idea of what is going into the pot to make future predictions?

Dr Waite: We are obviously quite new, so we are not doing the sort of research studies you mention—those are important—but we work with the teams that do. You mentioned the ONS study. There are also all the surveillance studies under pillar four of test and trace, the antibody testing and so on as part of pillar three, but we use test and trace data, public health data, supporting information about environmental risk factors, population sizes, workplaces and geography, and information that we get from, for example, the ONS, and then working—

Q1278 Katherine Fletcher: That is quite a list. Is it enough? Do you need anything else?

Dr Waite: It is important that we get many new forms of data and look at them in parallel with that data, and use our data science experts and the data analytics platform they are establishing at Test and Trace, and



see what is useful. For example, we are working with UKRI and higher education institutes to look at whether there is useful information about transport and our understanding about how people's behaviour changes around restrictions or interventions at local level. Trying to make—

Chair: We need to keep the answers short.

Q1279 **Katherine Fletcher:** I get a clear view of that. What I am interested in is how all of the different data sources coming in, including behavioural, are allowing you to make future predictions, and whether there is a gap. For example, we heard evidence previously that there were multiple seeding events when Covid-19 originally entered the UK. Are you looking back at how that happened to try to prevent it in future? What is it that gives the British people confidence that you are not just sitting in a room boiling the ocean with data and it will take you so long to come out with an answer that we will have a vaccine? That is a well-meaning question.

Dr Waite: You are absolutely right that there is evidence from COG-UK, from genomics data, about the number of seeding events back in March/April and around half-term when we saw a lot of introductions. No one wants to go back to that. That is one of the reasons that the international data that our teams looked at, and the information we can use from other countries, is so important. It is looking at estimated case rates, estimated prevalence and the number of travellers coming in, and thus trying to look at the number of imported infections.

Q1280 **Katherine Fletcher:** I am sorry to stop you, Dr Waite. That is another list of the data you are using. How are you getting from that to making the predictions? Professor Richardson wants to come in. I need to give an opportunity to someone so august, but perhaps we can thresh it down. How are you getting from that to future predictions?

Dr Waite: It is not so much about future predictions as describing what we know is going on and trying to help inform strategies that prevent what may happen in the future. We work with modelling experts, for example the SPI-M groups, who have real scientific expertise in producing those models. We will use the data and ask them questions. They have been extremely supportive whenever we have asked questions, and I suspect they will continue to be.

Professor Richardson: The statistical community has been hampered in its efforts to tackle the very pertinent question you are asking about the integration of all these data sources, with all their different biases and characteristics. Not having access and a central core where all these data can be put together has been hampering the intellectual effort of many people who really want to contribute. It is not an easy task, but it is doable if the community is engaged—for example, the Royal Statistical Society and the wider academic community.

Q1281 **Katherine Fletcher:** Are you saying that the Joint Biosecurity Centre, at the moment, is not the hub that you require?



Professor Richardson: I am saying that there wasn't a hub like that. I very much welcome the Joint Biosecurity Centre, which is creating that hub. It is an extremely positive move, because at the moment all the analysis people have been scrambling to do has been difficult because of getting access to data and having data in one place. The Joint Biosecurity Centre is a very welcome development, in particular the fact that they want to engage with the academic community and with the expertise of many brains to put this difficult problem on the table.

Chair: That is very clear and helpful.

Q1282 **Graham Stringer:** Professor Heneghan, going back to what you were saying about the steady infection rate in Oldham—I think you said it was 60 to 70—what can we infer from that steady rate? Is it that the measures that have been introduced on behaviour are having little or no effect?

Professor Heneghan: What you can conclude when you start to think about endemic environments is that you have a test and trace programme that is having an impact, but one of the key problems is that Government and policy keep intervening as soon as test and trace reports an upturn in cases. That creates a confused policy. What is the purpose of test and trace if all it leads to is lockdown measures? Somewhere, somebody is going to say, "Let's test out the test and trace programme and in doing that let's see what happens, looking at the impact of the disease in hospitals and what happens in terms of cases."

There is an important issue you should be thinking through with a test and trace programme. A proportion of people are infected but not infectious. Our work has shown that, if you start to use what is called a cycle threshold and look at the amount of virus on board for individuals, you can identify those who have a higher chance of being infectious, and those are the people you go after. At the moment, because you can shed RNA for up to three months, despite having the infection for only eight days, we are potentially following people who are red herrings. What is happening in Oldham, as we have seen, is that for about seven weeks it has just been rumbling on and, as you do that, your population is developing immunity. It will be harder in a place like Oldham because of the population and the unique issues with ethnicity and density.

Q1283 **Graham Stringer:** You have been quite critical of the tests that are based on polymerase reaction, that in effect they are giving us too many false positives. Is that a fair assessment of your criticism? What do you think the response to that should be?

Professor Heneghan: The test is a very helpful one, but if you just use it in a blanket policy without thinking through the strategy of what test you use and with what threshold, you end up with the problem of false positives. You identify too many people who could have had the infection in the past and you do not pick up the one or two people you have just described, the super-spreaders, where you need to isolate them and get



to their contacts. Once we accept that the infection is endemic, we need a process whereby we start to develop our strategy around testing. A cycle threshold above 35 generally involves people who are not infectious, yet NHS England documentation that has not been updated since January runs cycle thresholds to 45 that identify people who are not infectious.

Q1284 Graham Stringer: We are running out of time so I will try to squeeze my last two questions into one. There is a certain amount of criticism of the tests. I am told there are 200 tests available worldwide for this virus. Have we got the best tests, and is work being done to get what would be the most appropriate tests in this country in future?

The second question follows up the polymerase reaction question. There has been criticism that repeat testing gives you far too many false positives. What do you think we should do to counter that effect?

Professor Heneghan: You are right that there are over 200 tests, but we lead the way in science and the development of technology and research. The problem we have right now is that we have a more marketing than science-based approach. Statements like “moonshot” are not helping us to develop an analytical, accurate test. That is the problem.

What we have to do—I am happy to write because we are running out of time—is develop a strategy that uses a test in the most appropriate way so that we can have sustainable use of the test now and over the long term. The way it is being used now is inappropriate.

Q1285 Graham Stringer: What about repeat tests?

Professor Heneghan: Repeat tests can be very useful. If you are asymptomatic and you repeat the test within about three to five days and the cycle threshold has gone up, you are basically saying to somebody, “You are not infectious. We can rule you out and you can carry on your life.” Those tests can be much more useful. If it goes down, it means your viral load has gone up and you are the person who is infectious. There are unique ways of using the test that could be developed as a much better strategy, and then we would not have to lock down; we would be able to use a test and trace programme much more efficiently.

Q1286 Carol Monaghan: Last night, on *Channel 4 News*, Professor Alan McNally of Birmingham University was talking about a different way of testing. He spoke about the possibility of going into a school, for example, and testing at random. If the random test showed there was incidence in the school, you test everyone at that point to pinpoint infections. As we approach the winter months, do we need to look more creatively at the way we test populations?

Professor Heneghan: I would never recommend an approach like that, because you would be considering that we are going to test our way out of this pandemic. In effect, you are saying that random tests will pick up



people, potentially with dead virus. Remember, it picks up an RNA strand that is 220 nucleotides long. That degrades much slower than the actual infection when you have it on board. After eight days, we cannot isolate live virus, but for up to 90 days you can isolate the RNA fragments and pick them up when you test, so, if you randomly go into schools, you might as well shut them down right now. It is not a process that I have recognised in 20 years' experience of being a clinician, as a GP, or a process that is aligned with evidence-based medicine.

If we are to go down those routes, we have to think of the wider context of what harms they introduce, what the social consequences are and what the plan is. I can tell you what is happening right now. I have just heard today that a single student in a year 13 class had a positive test and, despite not knowing whether he had been infected or infectious, the whole year 13 was sent home. We have restrictive measures coming in now because nobody has a strategy or is thinking through how we use tests appropriately.

Professor Richardson: Pool testing could be an efficient way of dealing with well-defined groups of people. It could be an efficient way of testing because you could see whether there is a positive in the pool and then you do other testing. Professor Heneghan explained very well that the test needs to be of a better character in terms of transmission.

I would recommend that we test and trace a captive population that is totally isolated to study further transmission. What is happening among those quarantined people and their household contacts? That could be done by having add-on studies, with visits to do some testing and with questionnaires, including on the cycle and strength of the virus, and then we would understand transmission patterns much better and could take policy decisions about transgenerational contacts or whatever. Using a test and trace population with an add-on transmission study would be an important component.

Dr Waite: I agree with Professor Heneghan. I would not agree with the proposal that was mentioned. Testing does not prevent you from getting the disease. What is really important is that people who have symptoms get a test and that they also go home, self-isolate and prevent the opportunity for spreading it to others.

On the point about lab tests, some advice and guidance for labs has been published on what to do about using Ct cut-offs and so on. I know you have an expert on that appearing in a future panel, and there is a range of guidance out there on how best to use those tests.

Q1287 **Carol Monaghan:** Are we dealing with it properly in schools? Professor Heneghan talked about a whole year 13 being sent home. I know about it from personal experience. There was a positive case in my kids' school, but, although we were alerted to the positive case, kids were not sent home. Do we need clearer guidelines about what should instigate a test and the circumstances that have to be reached in order to have



quarantine or isolation in, for example, a school environment?

Dr Waite: It is a time of huge change, so I understand the concern, but there is guidance for exactly that, for the various scenarios with a case in schools and who would need to be sent home and who would not. We are only a few weeks into the term—the start of term varies in different parts of the country—and there is a lot to get used to, but we must make sure that the guidance is followed, because the education of our children is really important.

Professor Heneghan: Again, it comes down to the strategy. If you want to suppress and eliminate the virus, you test in schools; you have one case and send everybody home. If you accept that we have an endemic seasonal pathogen and we want to promote education and keep society functioning, you have to have a strategy that minimises those risks.

What is happening at the moment is that the language and the rhetoric is making people so fearful and terrorised about what is coming next that they are going beyond the guidance. There needs to be a dialling back of the rhetoric and a thoughtful discussion now about what exactly the Government's strategy is. I do not understand it right now. If you clear that up, everything can flow from that. The maximisation of education across universities and schools is imperative. Keeping our children in school is important, but at the moment it is utter chaos because of the 50% increase in other respiratory pathogens that mimic Covid in children.

Q1288 **Katherine Fletcher:** Thank you, Professors and Dr Waite. You have really landed on something vital, which is the role that science and technology have to play in addressing this. I was intrigued to see a completely new type of test being developed and showcased that is not about PCR-based testing; it is almost a matter of taking an electron microscopic picture of the total virus, which as scientists we can agree is much more likely to be an infectious agent than a string of RNA, and applying AI to it for rapid and speedy tests. These things are all under development, but could you comment on the likelihood of that happening, because it solves a lot of the problems? Professor Heneghan, this Government's strategy is to back our scientists and invest in the technology that really fixes the issue.

Professor Heneghan: What fixes the issue is having a strategy around care homes. That is where 40% of the deaths occur.

Q1289 **Katherine Fletcher:** Is non-PCR-based testing something you have come across?

Professor Heneghan: It is unlikely we will get tests that solve all of the problem, unless we integrate them with a clinical and evidence-based approach going forward.

Q1290 **Katherine Fletcher:** Professor Richardson, is non-PCR-based testing a moonshot, or is it not going to happen?



Professor Richardson: There is a lot of research on new technology for the development of tests, but they will need to be evaluated very scrupulously. I totally agree with Professor Heneghan that they need to be used with a particular strategy in mind.

Testing is not going to solve the problem. What solves the problem is having an objective and using the best testing strategy for that, given the current tests that we have at our disposal. There is a lot of research, and new things will come along that will be more accurate. Of course, they are welcome, but I completely agree that the strategy and the objective need to be quite clear, so that scientists and public health can develop an integrated approach.

Q1291 **Katherine Fletcher:** I want to give Dr Waite the opportunity to come in.

Dr Waite: I do not recognise the test that you were describing, but rapid tests, both ones that can be undertaken in the lab and out in the community, could be real game changers for how people get their results. The crucial thing is how they are validated in the lab to understand their accuracy, because single decimal place changes for the accuracy of a test can make massive differences when tests are used at scale.

Chair: Thank you very much indeed to our three witnesses. We could have gone on for much longer, which is an indication of our interest and the expertise we have had at our disposal. We may have some questions that we will follow up in writing, but we are very grateful to you for your time today.

Examination of Witnesses

Witnesses: Baroness Harding, Simon Thompson, Dr Susan Hopkins and Lord Bethell.

Q1292 **Chair:** I am very pleased to welcome our second panel of witnesses. Dido Harding, Baroness Harding, is interim executive chair of the National Institute for Health Protection. Her colleagues, who are joining us virtually, are Dr Susan Hopkins, chief medical adviser to NHS Test and Trace, and Simon Thompson, managing director of the NHS Test and Trace app. Thank you very much indeed for joining us this afternoon.

Baroness Harding, what is the current capacity of the diagnostic testing system?

Baroness Harding: As we stand today, the capacity for both NHS testing, which we call pillar one, and the national testing programme, pillar two, stands at 242,817 tests per day.

Q1293 **Chair:** Why has that not been published since 10 September?

Baroness Harding: It is being published at 4 o'clock today, as I understand it.

Q1294 **Chair:** Why the gap? They were published all through the summer, but



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mysteriously they stopped on 10 September.

Baroness Harding: We have worked really hard over the last four months, since I arrived, to make sure that we validate the data we publish, so from time to time we double-check and make sure that, as this organisation grows really fast and adds new data feeds from new labs, the data is accurate. That was the only reason for the pause.

Q1295 **Chair:** Something went wrong that you had to put right.

Baroness Harding: No, it was simply a question of validating the data and making sure that we were not putting into the public domain data that was not accurate.

Q1296 **Graham Stringer:** Internally, the NHS uses constrained and unconstrained capacity. Which capacity are you referring to?

Baroness Harding: This is total capacity. If you would like the split between the two, the NHS capacity, the pillar one, as of today is 82,817. That is for all four nations of the UK. For pillar two, it is 160,000.

Q1297 **Chair:** Will they be published every day now?

Baroness Harding: Yes.

Q1298 **Chair:** I am still not entirely clear why there was a period this week when, for the first time, they were taken off without explanation.

Baroness Harding: It was simply a question of validating data. Remember how fast this is growing. For context, on Monday 7 September the total was 226,773, so we are adding new capacity all the time. We just need to make sure that the data feeds are accurate.

Q1299 **Chair:** During the days of this week, has the total capacity gone up or gone down?

Baroness Harding: On Monday the 14th—I think it is only Wednesday today—we stood at 231,921, so we have added 10,000 capacity in the past two days.

Q1300 **Chair:** That's increasing?

Baroness Harding: Yes.

Q1301 **Chair:** What is the current level of demand for tests?

Baroness Harding: It is quite hard to give you an accurate figure for the level of demand. It is obvious that there is significantly more demand than there is capacity today. The best way we have of estimating the total demand at the moment is the number of people calling 119 and the number of visits to the website, but that is not going to be completely accurate; it is a proxy.

Q1302 **Chair:** You must make an estimate, I assume.



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Baroness Harding: We make an estimate. The number of people calling 119 and visiting the website would be three to four times the number of tests we currently have available, but there will be some double-counting in that. People call from their home line and then their mobile.

Q1303 **Chair:** If you are managing the system, you must have a view of what the real demand is and what the capacity is. What is your estimate, leaving aside people having to call multiple times because they cannot get through? Strip that out. How many people want a test? Then we can relate that to how many tests are available.

Baroness Harding: It is multiples of the total test capacity that we have today.

Q1304 **Chair:** Multiples?

Baroness Harding: Bearing in mind the question you ask about demand, the number of symptomatic people who should be coming forward for a test will be significantly lower than that. We know from surveys in our testing sites that up to 20% or 25% of people coming forward for a test do not have any symptoms.

Q1305 **Chair:** You say, "coming forward for a test," but in order to register you have to have symptoms, do you not? In order to be given a test place, if there were one available, you have to report one of the three symptoms.

Baroness Harding: We ask people to confirm that they have one of those symptoms.

Q1306 **Chair:** How do you know that 25% of people who register for the test have no symptoms?

Baroness Harding: Because we have been running some surveys outside our testing sites. After they have registered and turned up at the testing site, we have asked people whether or not they actually have symptoms. We surveyed 24,000 people at 25 regional and local testing sites between 1 and 4 September—the Secretary of State referred to this earlier today, and the data will be published online—and 27% said they were there because they had been in contact with someone who had tested positive, but they did not have symptoms themselves.

Q1307 **Chair:** But in order to be there, to have got to the test centre and be allocated a test, they have had to declare that they have had symptoms, so you are saying that 27% of people lied.

Baroness Harding: I completely understand why people are worried and scared of coming forward for tests.

Q1308 **Chair:** But in effect you are saying that 27% of people lied about their symptoms.

Baroness Harding: I am not. At our local testing sites you do not need to make a booking; you can just walk up. Some people just walk up to



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get a test, because they are worried because a colleague or family member has tested positive. That is totally understandable.

Q1309 **Chair:** They would not be allocated a test. They would be advised that they needed symptoms to have a test, would they not?

Baroness Harding: They ought to have symptoms.

Q1310 **Chair:** That is not a demand on the test; they are not using tests. They would not have been given the tests in those circumstances.

Baroness Harding: Generally, if people walk up having either booked a test or asking for one, our brilliant people who are manning the hundreds of testing sites across the country do not want to push away people who are scared, but we have a significant number of people who are coming forward for tests and do not have symptoms.

Q1311 **Chair:** Why have we had this sudden increase in demand? I assume you would agree that there has been an increase in demand.

Baroness Harding: There has definitely been a substantial increase in demand.

Q1312 **Chair:** Why is that?

Baroness Harding: Professor Heneghan and the witnesses in your earlier session referred to some of this. It is an entirely human thing to be scared and worried and to think that the answer is to get a test. To give you some examples, a restaurant owner contacted me yesterday. One of their staff had tested positive and they then asked all the staff to go and get tested, whereas actually, unless they had symptoms, they did not need to be tested.

Q1313 **Chair:** That could happen at any time. There is no reason why in September we have seen this increase in demand.

Baroness Harding: As Professor Heneghan pointed out, with all our children going back to school, we have seen a very marked increase in the number of young children coming forward to be tested. There has been a doubling of the number of children under 17 coming forward to be tested, and more than that in the five-to-nine age group. I completely understand it. I have children at school myself. The temptation is that one of your children has a temperature and needs a test, but then the rest of the family gets tested as well.

Q1314 **Chair:** We knew that children were going back to school in September, did we not? It did not come as a surprise.

Baroness Harding: Yes, we did, and we planned for a sizeable increase in testing capacity. As I have just described, we have been adding testing capacity every day and every week over the course of the last few weeks in anticipation.

Q1315 **Chair:** But not enough by multiple factors.



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Baroness Harding: As the Prime Minister said yesterday, plainly we do not have enough testing capacity today and we are doing everything in our power to increase it.

Q1316 **Chair:** One of the reflections this Committee has made, and our purpose in conducting these inquiries, is to learn lessons that can be useful for decisions further down the road. In the early days of testing, lots of decisions had to be made very quickly. It is understandable that not all of those were the right ones, and no particular blame can always be attached to that, but I think we established consensus that we ought to have anticipated the need for increased testing and put that in place before the Secretary of State made his personal commitment to surge it during April, so it is dispiriting to find that in September we are in circumstances that were entirely predictable. People are going back to school and work, and the right capacity was not put in place during the quieter times of, say, June, July and August. Why didn't that happen?

Baroness Harding: I don't think that is true. At the end of May, we had capacity for 128,000 tests a day; today, we have 242,000, so it has not been a quiet summer for NHS Test and Trace at all. We have doubled the size of our testing capacity, which is exactly what we committed to do, and we are on track to double it again to 500,000 tests a day by the end of October.

Q1317 **Chair:** During the month of April, the Secretary of State increased testing from 1,000 a day to 100,000 a day, a hundredfold increase. What seems to be apparent is that you have not prepared for the increase in demand that has transpired. It may have doubled, it may have increased, but it has not surged to the extent that was done before, and clearly ought to have been done for September. Why wasn't that the case?

Baroness Harding: As the Prime Minister said yesterday, plainly we need to expand testing capacity. I really understand the frustration and worry of people who were trying to come forward for tests.

Q1318 **Chair:** Is there a problem with the assessment of demand? Will we be able to have accurate predictions or assessments of what demand will be in future?

Baroness Harding: Could I answer the previous question? We built our testing capacity plans based on SAGE modelling. We published our business plan at the end of July and we are absolutely on track to deliver that. We are doing everything in our power to bring that forward. Today, we have more tests per 100,000 population than any other major country in Europe. We have, in total, tested more people per million population than any other country that has been hit badly by Covid, other than Israel.

Q1319 **Chair:** We understand that, and you have made a very important point. The capacity you have created has been the capacity that SAGE told you was needed at this stage?



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Baroness Harding: We built our capacity plans based on SAGE modelling for what we should be preparing for in the autumn.

Q1320 **Chair:** That assessment was SAGE's rather than NHS Test and Trace?

Baroness Harding: Yes, indeed.

Q1321 **Chair:** Capacity is going to be increased to 500,000 a day, we understand from the Prime Minister.

Baroness Harding: Yes, that is correct. By the end of October, we will be able to offer 500,000 tests a day.

Q1322 **Chair:** Will that be enough?

Baroness Harding: I am certain that we will need more as we go beyond the end of October. We announced this morning two further laboratories that will be opening, one in Newcastle and one in Berkshire. Those laboratories will not be on stream by the end of October, so we are already laying the foundations for expanding capacity beyond the 500,000 at the end of October.

Q1323 **Chair:** You must have made an assessment, as it would be necessary to make one. In so far as you can project it, have you set the 500,000 figure because that is what you expect demand to be by the end of October?

Baroness Harding: We have set it at that. Those were our plans, but it is clear from today that demand is significantly outstripping our capacity. We will all need to work on this together. We need to make sure that we protect the testing capacity we have for the people who most need it, which means that people who have symptoms are the people who should be coming forward to be tested.

Q1324 **Chair:** In terms of future demand and capacity, we know from scientists on SAGE that the number of people in the population who display Covid-like symptoms during an ordinary winter when Covid is not present is 500,000 a day, so the capacity you will have by the end of October is only enough for the coughs and colds people have normally. It does not address the extra demand that comes from a pandemic, and perhaps the extra concerns and sensitivity of people, in that they may notice symptoms more if they know Covid is around.

Baroness Harding: As I said, we have plans to go beyond the 500,000 a day, and we announced the opening of new labs today that will contribute to that. Our work on capacity-building beyond the end of October is based on clinical and scientific modelling of what the country should need in a winter season rather than the summer season.

Q1325 **Dawn Butler:** A vital point is how you measure total capacity. The Prime Minister said there was capacity of 375,000. You have told the Committee today that there is capacity of 242,817. That seems to be a reduction in the capacity referred to by the Prime Minister. How do you measure



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capacity, and do you need to revise how it is assessed?

Baroness Harding: The figures I have quoted are antigen testing; the figures the Prime Minister was quoting are combined antigen and antibody testing, so they are completely consistent.

Q1326 **Chair:** Clearly, you did not prepare enough for schools coming back and people going back to work. Was the target date for getting the capacity in place the end of October because you expected a second wave, as it is sometimes called, to be in October? Has it come earlier than you expected? Is that the problem?

Baroness Harding: I do not think anybody was expecting to see the really sizeable increase in demand that we have seen over the last few weeks. In none of the modelling was that expected. That is why I say that we all have to think really hard about how we prioritise the use of these tests and that we are clear that you should only get tested if you have the coronavirus symptoms: a fever, a new and persistent cough, or loss of the sense of taste and smell. We will all have to play our part in managing the constrained capacity, even as we double it and keep going beyond that.

Q1327 **Chair:** That has been the guidance for months. The rationing is within people who have symptoms. Certain people with symptoms will not be able to access it for the time being. Is that not right?

Baroness Harding: As I said, we see quite a lot of people coming forward who do not have symptoms. I really understand why they feel like that. They want to believe that if they get a test they will not need to self-isolate, and that if one of their family members has tested positive and they get a test they will not have to isolate with them. Sadly, that is not how the virus works, and it is not the medical guidance.

Q1328 **Chair:** If you strip that out, you still do not have enough capacity. The Secretary of State said this morning that people would need to be prioritised among those who have symptoms.

Baroness Harding: Yes, and we are very clear on our prioritisation. We are prioritising support for NHS clinical care—NHS patients—so we test hospital patients, including all admissions. That is the No. 1 priority. Our No. 2 priority, which Professor Heneghan referred to, is to protect those in care homes. That is the one group of people we are testing who do not have symptoms. We know that the best way we can protect our loved ones living in care homes is to make sure that we regularly test care home workers, residents and all new admissions. Of our testing capacity, roughly 50% goes towards NHS clinical care and testing in social care.

Q1329 **Chair:** Hospital patients and social care. What is the next priority group?

Baroness Harding: NHS staff, including GPs and pharmacists, where possible. That is the third priority. I am sorry, but I misquoted. Let me get it right. The three priorities of NHS patients, social care and NHS staff make up about 50% of the total testing capacity today.



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Below that, once we move to testing the general public—community testing—we are prioritising additional testing capacity for outbreak areas. We look to have more mobile testing units and more tests in local testing sites for areas with very high disease prevalence. Finally, we come to the broad general public where, given the very large demands, we are now looking to prioritise within that key workers, particularly teachers.

Q1330 **Chair:** Is there a hierarchy within key workers?

Baroness Harding: As I say, we are currently working on that, but, as many people have said, prioritising education, particularly teachers, so that schools can remain functioning would be likely to be top of that list, although the work is ongoing.

Q1331 **Chair:** To be clear, 50% of the capacity you expect to be taken up by NHS patients, NHS workers and social care workers.

Baroness Harding: As of today that is 50%.

Q1332 **Chair:** The remaining 50% will go, first, to outbreak areas. As of today, what proportion would you expect to be consumed by that?

Baroness Harding: If I could answer the question slightly differently, on average across the country we are testing in each local authority roughly 100 people per 100,000, and in our outbreak areas we are testing at roughly two to three times that level. That is the way we look at it.

Q1333 **Chair:** Of the remaining 50%, what proportion will be mopped up by the outbreak areas?

Baroness Harding: I do not have that figure in my head, I am sorry. The number of outbreak areas changes from day to day and week to week. I can share that with the Committee.

Q1334 **Chair:** I would appreciate it if you could let the Committee know that and, therefore, what the residual is for the other key workers.

Baroness Harding: One other element of testing that runs underneath this, which your previous witnesses mentioned, is the surveillance and research programmes to make sure that we understand the prevalence of the disease: the ONS and REACT surveys.

Q1335 **Chair:** That is not useful in isolating and treating.

Baroness Harding: No, but it is using testing capacity, and it is important that it does.

Q1336 **Mark Logan:** I represent Bolton North East, which has been the epicentre of the pandemic for the last two weeks. Testing is not working in Bolton. How can we have confidence that what has been happening in Bolton will not be the case for the rest of the country?

Baroness Harding: I appreciate the concern and worry about testing capacity everywhere, particularly in areas like Bolton where the disease prevalence is so much higher, but yesterday we did 1,093 tests in Bolton;



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over the last seven days we have conducted 6,968 tests; over the last 14 days we have conducted 13,179. That is roughly two to three times more testing, on average, than we are doing in the country. While I understand that everyone wants to have the maximum number of tests available, we are doing our utmost to prioritise, within that allocation for the general public, testing in Bolton and in the other areas of higher prevalence.

Q1337 Mark Logan: I cannot say to my constituents that we are doing our utmost when, for example, the first mobile testing centre that was launched last weekend in Bromley Cross in my constituency was full of errors, and it did not go to plan. What are we doing to make sure that does not happen in other parts of the country?

Baroness Harding: We are rolling out more and more testing capacity and broadening our distribution network every day. If you step back and look at the scale of the testing platform we have built, we are on track to have 500 different testing locations across the country by the end of October, particularly in areas such as Bolton. We are deploying more mobile testing units and opening more walk-in testing sites in our inner cities, making it easier for people to access testing. That is all in the plan. We are accelerating every bit of it as fast as we possibly can. We are all working day and night, seven days a week, to try to deliver the testing capacity that the country needs.

Q1338 Mark Logan: But are you finding that mobile testing units in other parts of the country have the same problems that happened in Bolton? For example, the testing centres have capacity to test one person every five minutes in Bolton. However, when they were first opened, they were averaging only three per hour.

Baroness Harding: The reason for that is that the constraint in our end-to-end testing system is the processing in the laboratories. The footprint we are building—the 500 different local testing sites across the country—will be able to scale up more and more as the processing capability grows. We have to restrict the number of people who are taking tests in the testing sites so that there is no risk of those tests going out of date when they are processed in the labs.

I understand how frustrating it feels when you arrive at a testing site and it does not look very busy and you see it could do more, but the capacity constraint is not in those testing sites; it is back in the lab. It would be very dangerous to send too many samples back to the laboratory, for them not be processed and for people not to know what their results were. That is why we have to restrict the demand where we all come to get tested.

Q1339 Mark Logan: People from Bolton cannot get a test. A lot of people have been contacting me both on social media and by email. They are saying that those living outside Bolton can get a test in Bolton or, if they put in a postcode for Wigan, for example, they can get a test in Bolton eventually. What would you say to that? Should people just turn up at a walk-in



service?

Baroness Harding: We have been making changes and learning and improving with each passing week. One of the things we have done over the last 10 days is reduce the geography, and you can book a test in advance. We make our local walk-in centres open simply for people to walk in, for exactly the reason you are describing, to encourage local residents, and we will continue to work with places such as Bolton to see how we can ring-fence more of the testing capacity to our most high-risk areas.

Q1340 **Chair:** You are moving that capacity from places of comparatively lower risk to those of higher risk, I assume.

Baroness Harding: Yes, and that is done at local authority, regional and national level. We work very collaboratively with local authorities, regional public health teams and Public Health England to deploy the mobile testing units based on prevalence and outbreaks.

Q1341 **Chair:** Is it the case that you told the chair of London Councils that there would be a 20% cut in London's testing capacity?

Baroness Harding: To give some figures, yesterday we tested just under 10,000 people in London. We are averaging circa 10,000 a day. London's tests per 100,000 per week are slightly above the national average and, as a result, over the last few weeks London has seen the absolute number of tests allocated come down, precisely because London has lower prevalence than Bolton and other areas in the north-west and, now, in the north-east.

Q1342 **Chair:** Is that 20% figure accurate?

Baroness Harding: I am sorry, but I do not have that with me.

Chair: Perhaps you can provide it afterwards.

Q1343 **Dawn Butler:** It is quite ridiculous, isn't it, that there are no tests available in Covid hotspot zones? In the 10 top Covid-19 hotspots in England, there were no tests available and people were sent far away when they had testing centres on their doorstep. How do you define the capacity? How do you work out the capacity?

Baroness Harding: It is not that there are no tests available in our hotspots, quite the opposite. There are two to three times more people being tested in the areas of high prevalence than the national average.

Q1344 **Dawn Butler:** That is not the experience of people who live in areas that are on lockdown, for instance. LBC conducted an investigation into that, and it is not the case. The Government say they have capacity of 375,000 tests. The actual number of people being tested at the start of this month had stalled at just 437,000 a week. That equates to just 62,000 tests a day. When you take what you say is the capacity and how many people are actually being tested, why is there a problem with



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testing?

Baroness Harding: I am afraid that is not true. Today, 207,000 people were tested. Yesterday, 213,000 were tested—sorry, on 14 September, Monday, it was 213,000. On 7 September, 170,000 people were tested. I do not know where your numbers come from, but those are the validated, ONS-checked numbers of people who were tested.

Q1345 **Dawn Butler:** Even on those numbers, it is still less than you say is your capacity.

Baroness Harding: You will never run at exactly 100%. For a couple of days in the last week our laboratories ran at over 100% capacity, which we are very concerned about. These are large and complex end-to-end operations. Our laboratory in Milton Keynes is processing over 30,000 tests a day; that is 30,000 packages with a swab in them and personal details that have to be physically unpacked, prepared, processed, put through the testing machine and logged back into the system.

Q1346 **Dawn Butler:** We understand the delays with the lab testing, and it is quite clear that is why you are trying to delay people taking a test. I know that a research institution has loaned some PCR machines until the end of the month, which I am sure are included in your testing capacity. Do you have plans to extend the loan of those PCR machines? If not, what will happen if those machines are taken back?

Baroness Harding: I am afraid I do not know the specific example you are referring to, but if we look at our path from the 242,000 capacity that we have today through to 500,000 at the end of October, there are a large number of different elements that make up that path. Our existing laboratories are, as we speak, implementing more robots that unpack and prepare the tests ready to go through the PCR machines. That will expand that capacity. There are a number of laboratories across the country that we are adding to the network. That is acquiring more testing capacity. As I said, some of the larger labs we announced a month or two ago are also coming on stream, so there is a whole range. I cannot speak to your specific example.

Q1347 **Dawn Butler:** If any machines are on loan, will you extend that loan so you can continue to increase capacity?

Baroness Harding: It is a mixture, because some of them might genuinely be needed by their universities, for example.

Q1348 **Dawn Butler:** Can I ask about Randox, which won a £133 million testing contract unopposed at the start of the outbreak? They disposed of 12,401 used swabs in a single day, on 2 September, and have voided more than 35,000 used test kits since the start of August. The company has not denied charging the taxpayer for voided results. Can you confirm that the taxpayer is being charged by Randox for those voided tests?

Baroness Harding: You are referring to a couple of incidents that are ongoing. At this stage, I cannot confirm or deny that. We are working



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with Randox and MHRA to understand the root cause of what actually happened.

Q1349 **Dawn Butler:** Sticking with Randox, up to 150,000 unused coronavirus testing kits were taken out of the system because of safety standards. What were those safety standards? What was wrong with them?

Baroness Harding: That is an issue currently under investigation, together with the MHRA.

Q1350 **Dawn Butler:** Randox employs the MP Owen Paterson at £500 an hour. Do we know what he does for Randox?

Baroness Harding: I am afraid you would have to ask Owen Paterson rather than me.

Q1351 **Dawn Butler:** We are talking a lot about people who are symptomatic taking tests, but we know this is an asymptomatic disease and it spreads asymptotically. When Professor Bell gave evidence to this Committee, he said that it "is largely an asymptomatic disease, which means you have to be careful about a track, trace and isolate strategy that relies on symptoms because you will miss 70% of the people." How do you square that with the current strategy you are employing?

Baroness Harding: That is exactly why our second testing priority is care homes. We are running a very large asymptomatic testing programme where we test all care home workers in adult social care every week for exactly the reason you describe. We place that as a higher priority than general population symptomatic testing, because we have learned from the past nine months how this disease attacks the elderly and most vulnerable in our society, and how it is really important that we protect them in a closed environment in care homes by ensuring the disease does not come in.

Q1352 **Dawn Butler:** Instead of criticising people who might work in care homes and who go to get tested and are asymptomatic, we are going to start encouraging them.

Baroness Harding: I am not criticising care home workers; I am not criticising anyone at all. Care home workers receive tests once a week today and have done so over the course of the summer, and the Government are very committed to maintaining that care home asymptomatic programme for the reasons I have just given.

Q1353 **Chair:** To follow up on one of the answers you gave Dawn, in terms of increasing the lab capacity, you are building these new Lighthouse labs and making use of other labs in this country. Are you making use of overseas labs as well?

Baroness Harding: Yes. We have a number of other labs both in the UK and overseas that we would deem surge capacity labs that we can bring on faster, and we are doing some of that as well.



Q1354 **Chair:** What would be the capacity of those overseas labs?

Baroness Harding: A relatively small proportion of the increase. We are talking low order—tens of thousands.

Q1355 **Carol Monaghan:** What is the ultimate target for lab capacity per day?

Baroness Harding: It is 500,000 a day by the end of October, but we are not stopping there. We have already started committing to opening more labs and expanding capacity beyond that, but we do not have a formal target beyond 500,000 at this stage.

Q1356 **Carol Monaghan:** The daily test figures you quoted today are way below that, and you have talked about increases of tens of thousands. How are we getting to 500,000? I am assuming we cannot keep increasing by tens of thousands every single day, so how are we getting to 500,000?

Baroness Harding: It won't be a completely linear journey of 10,000 a day, but what you will see are substantial increases every week between now and the end of October. You will see it from a variety of different programmes of work. Our existing labs, particularly those in Milton Keynes, Alderley Park and Glasgow, will be able to increase their capacity significantly as they implement the new robotic processing capabilities.

Our labs in NHS trusts across the country are also significantly increasing their capacity as they implement new technologies and processes. We are adding laboratories. We announced a laboratory at Newport some six to eight weeks ago. That will be coming on stream during October. We are also adding more lab capacity from smaller labs across the country in Public Health England and other universities. A number of different initiatives, step by step, very clearly take us to 500,000.

The testing team have hit every one of their testing targets over the last six months as they have grown the industry from 2,000 tests a day to over 240,000 today, so we are very confident that we will deliver on our 500,000 by the end of October.

Q1357 **Carol Monaghan:** What about the turnaround time? At the moment, there is a target of 24 to 48 hours. Will it still be that?

Baroness Harding: Yes, absolutely. You are completely right. In the spirit of openness, we have seen test results take slightly longer than usual over the past week or so. From the results published this morning you can see that.

Between 3 and 9 September, 64.7% of people who were tested face to face received their result the next day. That is below our target of 85% to 90%. We have very consciously, in the last couple of weeks, when we have seen very significant increase in demand, made use of every single day of the seven days of lab capacity to try to maximise the total number of people being tested. That has meant that for some people the testing turnaround times have gone out a bit. As we bring on more capacity over the next week or two, I would expect some of that additional capacity to



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go not to more people being tested but to the turnaround times being reduced. It is a balancing act that we monitor in every lab across the country several times a day to make sure that we are maximising the number of people tested and trying to keep to those turnaround times.

Q1358 Carol Monaghan: We have already had a discussion about symptoms. If people have a symptom, they have to get tested or they should request a test. Surely, we should be looking for two symptoms. If I have a dry cough, it does not mean I have Covid.

Baroness Harding: On that, I would refer to Dr Susan Hopkins on the panel. We take clinical advice from the CMO, Susan and her colleagues as to which symptoms and in what way we should prioritise testing.

Dr Hopkins: We review the symptoms regularly and have done so at least every couple of weeks since the start of the pandemic. Our most recent review, a couple of weeks ago, looked at the three symptoms. Cough, fever and a change in smell and taste were the three priorities. That will give us a rough sensitivity of about 80% to 85%. It will not pick up everyone, but it gives us specificity of about 55%, which means that we are not testing anyone with one small symptom, but we are focusing on the people most likely to have the disease.

We do not talk about a dry cough or a wet cough; we talk about it being a continuous cough, for the reason that the cough can change over the course of the illness. We wanted something that was simple to communicate to the public. Those still feel like the right symptoms. We have looked at both the ZOE app and other information coming out of ONS and REACT, and what they are finding in their surveys. We feel we have the right sweet point for testing at the moment. We will continue to review that.

Q1359 Carol Monaghan: It will still be the advice that, with one symptom, you get tested?

Dr Hopkins: It is. We have looked at combinations of those symptoms, but that reduces the number of people who would be eligible and would significantly reduce the number of those who are the right people to get tested in the community. It would drop down our sensitivity markedly.

Q1360 Chair: On timing, isn't it the case that the Prime Minister promised in June that there would be 100% turnaround within 24 hours?

Baroness Harding: We have delivered next day turnaround times in the 80s to 90s per cent. through the summer. As I said, it has dropped down over the past couple of weeks. That was a conscious decision to try to meet more of the demand, and I would expect to see the turnaround times improve as we increase capacity over the next few weeks.

Q1361 Chair: On home testing kits, the figure is 9% turnaround within 48 hours, and one in five, or 20%, within 24 hours at local test sites, so it is very substantially below the target that was set.



Baroness Harding: The 64.7% of next day turnaround that I am referring to is for people who have taken the test in person, whether they have come to a mobile testing site, a local testing site or a walk-in site. You are absolutely right that the turnaround times for home testing kits have always been longer because the test has to make its way from your home. It is a slower delivery turnaround.

Q1362 **Chair:** A test is a test. The purpose of the test is to contact-trace and inform where the infection is spreading.

Baroness Harding: That is exactly why we have been opening more and more testing sites so that fewer people have to rely on a home test if they are feeling ill. The home tests are particularly useful for patients going into the NHS—to get a test in advance of having an operation—where you are testing not to see if you have the disease but to make sure that you do not have it.

Q1363 **Chair:** Are you moving away from home tests?

Baroness Harding: If you look at the mix, because we have opened so many more local testing sites and mobile testing sites, it is shifting to more physical face-to-face testing.

Q1364 **Chair:** Is it a policy decision to prefer that?

Baroness Harding: Yes, because the turnaround time will always be faster.

Q1365 **Chair:** Earlier in the pandemic, in evidence to this Committee, witnesses from Public Health England and, indeed, Ministers talked very positively about the mass mailing of home tests as being a way in which you could improve the level of testing.

Baroness Harding: At that point in the pandemic, when the testing platform was going from only 1,000 or 2,000 a day to 100,000 over the course of a very small number of weeks, it was entirely appropriate to be doing that. Home testing has a really important role in the overall testing platform, but if you have symptoms and you are in the general population and want to get a test result as fast as you can, it will be faster if you go to one of our face-to-face testing sites, which is why we are opening so many of them.

Q1366 **Graham Stringer:** I do not envy anybody who has a senior position during this epidemic, but would you like to tell us how you became the acting executive chair of the new National Institute for Health Protection?

Baroness Harding: Of course. I did not apply to do the job I am doing at the moment; I was asked to serve by Ministers. Like everybody working on the Covid response, I suspect, I felt it was the appropriate thing to do to serve my country and say yes to that request.

Q1367 **Graham Stringer:** I know you have accepted the position, but do you think it is right that you should accept a position without open



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competition? Even though it is an interim job, it encompasses three previous agencies and is a very important position. Do you not think there should have been a competition? There has been a lot of criticism that your experience at TalkTalk and in retail, which may have been fine in those areas, is not appropriate for this position?

Baroness Harding: As you rightly say, this is an interim position, and an unpaid one. We have started the open competition to recruit the permanent appointment. Given it is important that there is immediate leadership, regardless of whether or not it was me, making an interim appointment without open competition is the way to ensure you have such leadership. That is the process. It was not my decision at all; Ministers chose that process.

The skills the team need to do the job—this is a huge team effort—are clinical, scientific and operational. This is an enormous consumer service, with huge logistics, data analytics and data flow. I have an amazing team of people. I do not for a moment pretend that I have all of those skills. Of course I do not; this is a team effort. None of us likes talking about ourselves, but all my working life has been in large consumer-facing services. I have a lot of experience of retail and logistics, and I have spent the past three years as the chair of NHS Improvement. While I am not a clinician, and have only three years' experience, I understand the NHS and the public sector, coupled with my logistics, retail and technology experience.

Q1368 **Graham Stringer:** With your previous experience in this area and the month you have spent as acting executive chair, what do you think this new body will do better than was done by the three agencies previously?

Baroness Harding: To clarify, what do you mean by the three agencies?

Graham Stringer: Public Health England, the Joint Biosecurity Centre and what is the other one that has been put into it?

Baroness Harding: NHS Test and Trace.

Graham Stringer: The most obvious one.

Baroness Harding: NHS Test and Trace and the Joint Biosecurity Centre have been one entity since they both began, which is why I wanted to clarify that.

The immediate benefits we are already seeing are accelerated collaboration and joint working. The three organisations were working very well together, but it has been rather extraordinary to see that, in the space of a few weeks, knowing that our long-term future is together, it is encouraging professionals in the clinical, scientific, data analytics and operational teams simply to work together faster. In the fight against Covid, those small benefits in team working and problem solving can make a very big difference.

Q1369 **Graham Stringer:** How would you measure that?



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Baroness Harding: That is a very good question. I think you measure it by our ability to act faster over a broader landscape. For example, today I was at the gold local outbreak management meeting chaired by the Secretary of State, which is a hugely collaborative process between the test and trace team, the Joint Biosecurity Centre and Public Health England. In the course of the last three weeks, objectively we have seen much broader coverage of the country, much more work done collaboratively and a much clearer local voice because of the integration with Public Health England.

I appreciate that is not an output measure, but three weeks in I probably could not give you one. However, we are seeing a much more integrated system. Dr Susan Hopkins on this panel is a great example. She is a joint appointment to both organisations and is leading our clinical and medical team in the fight against Covid under the national institute.

Q1370 **Graham Stringer:** Can you explain to me, because I am genuinely not sure, the relationship of the new body to the Lighthouse laboratories? Do you determine the contracts that are let to the Lighthouse laboratories? Do you determine their policy and day-to-day work? What is the mechanism?

Baroness Harding: The Lighthouse laboratories are contracted by NHS Test and Trace.

Q1371 **Graham Stringer:** Effectively, you let the contract?

Baroness Harding: And we work very closely with those partners as they increasingly implement new technologies in order to speed up and expand capacity.

Q1372 **Graham Stringer:** When Serco's contract was renewed over the summer, had they met all their key performance indicators?

Baroness Harding: There was a full and comprehensive review of the performance of all our contact tracing suppliers, of which Serco is one. The re-contracting process was led by our commercial teams in normal Government processes.

Q1373 **Graham Stringer:** That doesn't quite answer the question, if you don't mind my saying so.

Baroness Harding: I'm sorry. I do not have all the KPIs in my head. I am very happy to write to you to set that out.

Q1374 **Graham Stringer:** I was not asking you to have them in your head. I just wondered whether they had met all of them.

Baroness Harding: The nature of good commercial management is that you set your commercial partners a large number of challenging targets, so the only reason I am hesitating is that they might have hit 99% of them, and then I would not be giving you a truthful answer. That was all. They have done a good job; they stood up a service very fast. We have



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not talked about contact tracing at all. From numbers published this morning, we have reached 417,000 people thanks to them, NHS professionals and local public health teams.

Q1375 Graham Stringer: What part of those contracts are public? You say you will let us know what the assessment was. What level of detail will we get about these very significant contracts from the public sector to the private sector?

Baroness Harding: I will need to go back to my commercial colleagues and make sure I share what is appropriate to share publicly given that these are commercial arrangements. We would need to do that in the full, normal and transparent process.

Q1376 Graham Stringer: My view is that some of the things that have gone wrong with test and trace and the whole response to Covid is that it has been too centralised, and the Lighthouse laboratories have over-competed to the detriment of many of the private and local NHS laboratories. What would be your response to that point?

Baroness Harding: What we are trying to build is a local and a national system, and we need both. The NHS and smaller university labs have done magnificent work in scaling up testing. Our local public health teams, both in local government and in Public Health England, have also done magnificent work. We need both. The model that we are trying to build is local by default, but also nationally supported. We could not put on 250,000 tests a day of extra capacity in the next six weeks entirely through the NHS, but the NHS is playing a huge part in that.

Likewise, we could not have contacted 417,000 people in the last four months entirely through local action. We need both the national and the local. What we are seeing increasingly, particularly in areas like Bolton, Oldham, Leicester and Blackburn, is real collaboration between local leadership teams and the national test and trace and Joint Biosecurity Centre teams working together.

Q1377 Graham Stringer: Nevertheless, the mobile laboratories were handed over to G4S, not to local authorities.

Baroness Harding: Do you mean the mobile testing sites?

Graham Stringer: Yes.

Baroness Harding: In order to be able to move them, so that we have some flexibility.

Q1378 Chair: We want to come on to contact tracing and the app. To return briefly to the question of the turnaround of tests, the target you were given by the Prime Minister is 24 hours. The figures you quoted to us were next day. Can you kindly give us what the performance of the system has been, in the most recent figures, within the 24-hour period against which you are measured?



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Baroness Harding: It is quite a lot lower. I am afraid I don't have the figure in front of me. The reason I don't is that a 24-hour turnaround time would mean we would be measuring whether people get their texts and emails in the middle of the night.

Q1379 **Chair:** Was the Prime Minister wrong to do that?

Baroness Harding: No. I am just saying that the operational statistics that we measure and focus on have been the next day, simply because that is a way of ensuring that people get the test in order to be able to go to work or back to school.

Q1380 **Chair:** The figure is 33%.

Baroness Harding: As I said, it is significantly lower.

Q1381 **Chair:** Two thirds do not meet the target of 24 hours. The reason why that is relevant is, first, it is the figure that governs your work; it is the figure that was given by the Prime Minister. It was in your report published this morning, but it is also the case that it is not a random number. SAGE has been very clear. Right back on 1 May, SAGE said that "any delay beyond 48-72 hours...before isolation of contacts, results in a significant impact on R."

There is an obvious chain. If you have a delay in getting a test and then a delay in getting the results of the test and in the time that it takes to trace those contacts, the smaller and smaller will be the proportion of people who test positive and are symptomatic and have their contacts tested. In other words, according to SAGE, it drives an increase in the R number. Isn't it the case that the failure of the testing regime, which I hope is temporary, is driving the increase in the pandemic across the country?

Baroness Harding: I strongly refute that the system is failing. As I said earlier, we made a conscious decision, because of the huge increase in demand, to extend the turnaround times in order to process more tests over the course of the last couple of weeks. Whether you get your test results at 2 am or 8 am, our judgment—it is a judgment—was that it was better to meet more of the people who were really worried and scared and wanted a test. We flex that across each channel and each laboratory several times a day, seven days a week, and, as we bring on more capacity, I would expect those turnaround times to go down. But it is a balance. The whole system is an end-to-end balance; it is about us playing our part in expanding testing capacity, but it is also about all of us playing our part in only coming forward for tests if we have symptoms.

Q1382 **Chair:** The Committee has called for the expansion of testing, and we are very supportive of the surge that took place in the spring. We recognise the efforts that have been made. When I refer to failure, it is the current failure. It seems to me that, if two thirds of people are not getting their test results in line with the target, that needs to be addressed.

Let me put it this way. If SAGE says that you need to have contacts



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traced by 72 hours, should you have a measure as to how that is being adhered to, given that your organisation has been formed and is now responsible for the whole pathway, if you like, from testing people to identifying contacts? Should that 72-hour target, so as not to increase the prevalence of the disease, not be what you should be judged against?

Baroness Harding: We are judged by quite a lot of metrics, and we try to be as open and transparent as possible and publish all of them each week, as you know. We measure not just the turnaround time for testing; we also measure and report on how fast we reach contacts, and we measure the percentage of contacts that we reach. SAGE sets us a number of other targets as well. It sets us a target to reach 80% of people who test positive, and last week we reached 79.8% of those. It also sets a target to reach 80% of contacts, and we reached 86.6% of contacts where we had communication details of the people who were named as contacts.

You are absolutely right that the end-to-end turnaround time is also important, but so is whether or not we keep everybody flowing through. All of this is about balancing each of those different operational measures.

Q1383 **Aaron Bell:** You have nicely anticipated some of my questions, Chair. I want to turn to tracing, Baroness Harding. We have focused a lot on testing, and rightly so. You just gave us some of the statistics. Taking it all in all, from the top, of the people who were transferred to you in the first place, what percentage of their contacts are you reaching overall, once you go through all the stages of contacting them and trying to contact them again where they are complex—not the ones you are trying to contact at each stage? What proportion do you estimate you are reaching from positive tests?

Baroness Harding: It is hard to do that because we have to estimate how many people our index cases have actually told us about. I hope we will get a chance to talk a little about the app, because one of the big gaps in our measurement is people you have been in close contact with but you do not know. Index cases—sorry, that’s horrible language. People who have tested positive can tell you only of the people they know, whereas, if you are an app user, it should significantly improve our effectiveness. It is hard to answer your question because of that unknown.

Q1384 **Aaron Bell:** Of the known contacts, if you are not reaching around 17% of people in the first place and, in a number of cases, you are not reaching their contacts because they do not have the details or whatever, does it end up being more like 50% than 80%?

Baroness Harding: I might defer to Susan on this, because it is very standard for contact tracing. It is a well tried and tested public health intervention for a whole range of infectious diseases. While you are right



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that it is a percentage of a percentage of a percentage, that is how you break the chains of transmission. You will never get 100% at each stage.

Dr Hopkins: In an ideal world, when an individual recognised they were positive, they would be able to know exactly who they had been in contact with in the time when they were potentially transmitting infection. About 85% of people come forward for contact tracing, and the others do not answer their phones or emails. There is very little we can do for those. Some local authorities have started door knocking where we have postcodes for those individuals, but we will never get 100%.

Secondly, when they give contact details, sometimes they may have the wrong phone number for an individual, or they may not have the correct name. We do everything we can to try to find them, including door knocking, where they can give addresses, in local authorities that have initiated local contact tracing.

All of this brings the app into sharp focus. With the app, it does not matter whether you know someone's details; it gives you an estimate about whether you have been in contact with somebody and is able to tell other individuals whether they are at risk and what they should do next. Simon might be able to clear up exactly what the app is doing.

Q1385 **Aaron Bell:** We will talk about the app in a moment. Baroness Harding, you reach a certain proportion of people and ask a number of them to self-isolate. What do you do then? Is that the end of the line as far as the tracing app is concerned, or do you monitor whether people self-isolate?

Baroness Harding: We have been conducting some trials over the summer to understand how people cope with self-isolation, because it is really hard for a number of different reasons. It is understanding what support makes a difference, and what the triggers are that mean people might not stick to it.

We have been running a number of different tests by calling people, sending them text messages and making sure they have support from local government. We have learned over the summer that it is very hard. Most people try their best to do the right thing, but if they have caring responsibilities, or feel the need to pop out to grab something from a shop, or just want some fresh air, a meaningful percentage of people find it hard to stick to self-isolation during the full 14 days.

Q1386 **Aaron Bell:** You are saying that a large percentage do not stick to it completely. Are there some who disregard it altogether as far as you are aware?

Baroness Harding: I do not have hard data for that, but it is safe to assume that, across an average, there will be some people who do not. We need to impress on people that the way we all get back to a more normal way of life is that, if we are at very high risk of being infectious and have been in close contact with somebody who tested positive, we follow the advice of NHS Test and Trace and self-isolate.



Q1387 **Aaron Bell:** What proportion of the people you ask to self-isolate go on to develop Covid?

Baroness Harding: I do not have a statistic for that. We do not test people who are in self-isolation. We actively do not want them to come forward for testing, for two reasons. The first is nervousness. If you test negative at some point in your 14 days, that will be another reason to believe that you will be okay to go back to normal life, whereas the virus, unfortunately, does not work that way, as I am sure Susan can talk us through.

We do not test during self-isolation. As we described earlier, that would not be one of our priority uses of testing. I am not able to give you quantitative data, although again my clinical colleague Susan may have more evidence.

Q1388 **Aaron Bell:** I understand the logic of what you have just said in terms of the impact on the individual, but from a scientific perspective isn't it worth knowing whether self-isolation is keeping Covid cases out of general circulation?

Baroness Harding: Perhaps I could refer that question to Susan.

Dr Hopkins: What we know in looking at the case details is that the people you are most likely to transmit to are your household contacts, and the next groups are those you are in close contact with. We try to match data from contact tracing to the testing records, but we do not find very many people who come forward for a test. That may be due to the fact that many people have asymptomatic infection, and we have asked them to self-isolate for 14 days to prevent transmission to others.

Q1389 **Aaron Bell:** Baroness Harding, from a scientific perspective, you understand where I am coming from. The Royal Statistical Society has recommended improvements to the data, including random sampling and record linkage. Have you looked at taking those recommendations on board?

Baroness Harding: We are looking continually to improve our service. Remember how new this is. The test and trace service is only five months old. We are continuing to understand how we improve our ability to break the chains of infection. I am sure Susan can talk to some of the research work we are doing with academics and statistical partners across the country.

Q1390 **Aaron Bell:** You acknowledge, as I do, that it is hard for people to self-isolate. If we are aware that the most obvious people who need to self-isolate are immediate family, it seems that the only fair and sensible way to approach a pandemic that we are having to manage and not completely eradicate is assessing whether the kind of people we are asking to self-isolate is doing any good. Unless we have information about whether those people ever had Covid, it seems we will not refine the system. Do you agree with that?



Baroness Harding: As Susan said, there are two things about this virus that are incredibly counterintuitive for a layman like me. The first is that it is counterintuitive to believe that you are most likely to catch the disease from your friends and family. It is instinctive to believe that strangers are more dangerous than the people you live with, yet all the evidence is that your household contacts are the most likely people you will either infect or be infected by.

The other counterintuitive thing is that we all want to believe a test will set us free and that if we test negative everything is fine, yet the way the disease incubates means that is just not true. A negative test on day two, three, four, five or six of self-isolation does not mean you will not infect your friends and family at some point during the 14 days. We know those two things, and Susan can give you the academic foundation. We know that our intuition is not how the disease works. If we are to break the chains of infection and get back to a more normal way of life, we need to follow the clinical guidance.

Q1391 **Chair:** I invite Lord Bethell, the Minister, to join us. I have some questions for the Minister as well as Baroness Harding on the contact tracing app. Before we turn to that, we have been talking a lot about the increase in capacity and the 500,000 a day target by the end of October. Minister, is that all antigen testing or does it include antibody testing?

Lord Bethell: The 500,000 is for the test and trace programme on antigen testing.

Q1392 **Chair:** Pure antigen testing. That is what helps people to detect when they have the virus in order to be isolated and have their contacts traced.

Minister, I think you are planning to relaunch the contact tracing app next week. It was trialled on the Isle of Wight, and you did not launch it nationally. Do you now feel confident that it is going to be in a position to work?

Lord Bethell: I am incredibly confident. I will ask Simon to say a few words. I have the app on my phone and have been using it for the last three weeks. It is very impressive. I have brought with me a copy of the QR code from my office. If you had the app on your phone, you could check in at my office when you came and had a cup of tea with me, and it would tell your phone where you had been at that precise point. It will play an incredibly important part in the contact tracing process. One of the really encouraging things about the trials is that businesses have stepped forward in the areas where we have been trialling it, downloaded the QR codes and pinned them up. Getting the downloads of the QR codes will be an essential part of the success of the app.

Q1393 **Chair:** Could you describe very quickly the main features of the app?

Lord Bethell: I could, Chair, but I suggest Simon would be a better person to do that.



Simon Thompson: There are some key features of the app that are designed to do two things. The first we call a set of Me features, which help citizens manage their own individual risk. We have a capability called Alert, which will give you an awareness and a warning of what is going around your post district area. That means that, as you leave your house, you understand what you should do based on the medical advice.

Its second feature, which Lord Bethell touched on, is a system called Check-in. By using the QR code, the Check-in system means that, if for any reason there was an outbreak in an area where you had been, we would be able to get in touch with you by sending a message to that device.

We have features that we call We benefits where we try to help the user manage the risks for others. We have a symptoms checker, which, using a very simple questionnaire, will let you know whether you are okay or whether you may well have the coronavirus. You can book a test online through the app. It also has an isolation companion, which I think we have talked about a little on this call. Based on the advice we have, the app will be there as your companion to let you know how long you need to isolate. Maybe it is 10, nine, eight, seven, six, five, four, three, two or one days, and then it could say that, as long as you do not have any symptoms, you are free to go back to what you were doing before.

In addition, it is a contact tracing app, which means that, when people have the app on their device, it sees how close they have been to somebody and for how long. If somebody should test positive, and only if they test positive, for coronavirus, it will notify you if you have been a high-risk contact.

That, in essence, is how the device works. We have the Me benefits of Alert and Check-in, the We benefits of a symptoms test and an isolation companion, and it is also fundamentally a contact tracing app.

Q1394 **Chair:** That is very clear and helpful. To be absolutely clear, I assume that people are not obliged to download the app; it is a voluntary service.

Simon Thompson: It is indeed voluntary.

Q1395 **Chair:** If it tells you that you have been in proximity to someone who has tested positive, and that you should self-isolate pending a test, are you obliged to follow that instruction, or is it advisory?

Simon Thompson: We would say that, if the app notifies you to self-isolate, you are at risk and you should follow the advice provided. The app will notify you only if you have been near an individual.

Lord Bethell: We have not mandated it in law, but compliance by the public is something that relies on their confidence that it works. We are impressed by the public's adherence and are relying on that for the moment.



Q1396 **Chair:** In terms of sensitivity, does it detect proximity to someone at 2 metres for 15 minutes? Have I correctly understood the threshold of exposure that triggers an alert?

Simon Thompson: It is triggered based on the medical advice, so it is about 2 metres for about 15 minutes.

Q1397 **Chair:** If someone has tested positive and your phone detects that you have been in less than 2 metres' proximity to someone for more than 15 minutes, you will get an alert. Is that right?

Simon Thompson: That's right. You will only be alerted if somebody has been tested positive and you have been close to them for a significant period of time within a date range that the app is monitoring.

Q1398 **Chair:** How can it tell that there has not been, for example, a Perspex screen between you and the person? Sometimes, in shops, screens are installed, so you might have been very physically proximate, but with a barrier there. Can it detect that?

Simon Thompson: Based on a lot of the feedback we have had—the use case you referred to has been mentioned to us several times—we allow you to switch off contact tracing simply by pressing a button on the front of the device, under three conditions. The first is that perhaps you are wearing PPE; the second is that perhaps you are working behind a Perspex screen, as you highlighted; and the third, which is another use case we have seen, is that people might be leaving their device in a locker when they are going off to work. They are the three cases where we would recommend that you switch off the contact tracing. We have done it on the front of the device so it is super-clear.

The other thing we learned from the trials, which we did not have on the device at the start of them, is that when it was switched off people asked, "Could you please give us a reminder to switch it back on?" This is why the trials are so important. If you switch it off, it will ask the user when they would like to be prompted to switch it on again, so it is there as a notification and reminder. That is how we are handling the use cases you have articulated.

Q1399 **Dawn Butler:** Lord Bethell, when the Government first announced the £11 million for a centralised app, many people—programmer, et cetera—were very clear that a centralised app would not work because it would not have buy-in from the public to download, it was clunky and cumbersome, and no other country had a centralised app. For people who are tuning in, what app are we currently talking about?

Lord Bethell: You are right that in the early stages of our app development we learned a huge amount. There was a lot of comment at the time that we needed to take a different approach, and we learned from that and we have taken a different approach. This is a decentralised app of the kind you allude to, and there are benefits to that. One principal benefit is consumer confidence. The consumer can rightly



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believe that their data is secure on the device and is very heavily protected, and they can carry the app in full confidence that it is fully private and is held by them and them alone.

Q1400 Dawn Butler: Do you think we needed to spend £11 million to get to that conclusion?

Lord Bethell: There were really good reasons for going down that route, mainly epidemiological. The benefit of going down the centralised route is that we got a lot of data, and it was a time when we did not have any data at all. We now have REACT and ONS. We have a phenomenal amount of epidemiological insight every week coming from our surveys, so we know a lot more about the spread of the disease. Earlier in the year, we were flying completely blind. Therefore, the emphasis on getting that data was much stronger. Now we have the other data, it is a lesser priority.

Q1401 Dawn Butler: What has been the uptake of the app?

Simon Thompson: We have been very encouraged. We did testing in three areas. We went to the Isle of Wight, to NHS volunteers up and down the country and to Newham. For people who may not know them well, the Isle of Wight particularly and Newham are a very different reality in terms of the population, how they move and their age and demographics, so we were really keen to see that.

Having visited both of the areas very recently and spoken to the local team, which has provided awesome support in helping us out, the adoption has been very encouraging, in particular on the Isle of Wight, on the grounds that it was the second time we had gone back there. From my own perspective, we thought we should see whether people were happy to go round a second time, and they were very happy to do that. In Newham, by working with the local authorities, which did a super job, we have learned many things about how to encourage uptake.

The overall message is that we should definitely be encouraged based on our learnings in the Isle of Wight and Newham and from NHS volunteers. I will say it again: there are differences between Newham and the Isle of Wight, and the adoption has been very encouraging and the learnings are invaluable.

Q1402 Dawn Butler: Are you going to publish assessments of Newham and the Isle of Wight?

Simon Thompson: Yes. We have always said that all of our evaluations will be published. We always said that it would be as soon as practicable after our launch, and we are planning to launch next week.

Q1403 Dawn Butler: Baroness Harding, I hope this comment is helpful in terms of Graham's earlier question. The Government's flagship NHS Test and Trace system missed its key targets nine weeks running. Serco missed their targets, and it was quite a surprise to people that they had their



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contract renewed. They were paid £192 million to provide 18,500 call handlers. It is another case of the Government trying to have a centralised approach, as opposed to a decentralised one, which would have been more effective. I hope that is helpful.

Baroness Harding: We have a local and a national approach rather than a centralised one. We have doubled the number of people working in local health protection teams over the last four months, and we are continuing to recruit and expand. We work hugely closely with the Public Health England health protection teams as part of an integrated tracing system. There is a temptation to describe it as national, but these are people working in their homes, in their kitchens and their studies, calling people who are at risk of infecting their loved ones.

Serco, Sitel and NHS Professionals, who together stood up the national contact tracing service, did so in the space of three weeks, and between now and then have contributed to our contacting over 400,000 people. I do not think that is a failing service at all; it has delivered exactly what it said it would.

Q1404 **Aaron Bell:** Lord Bethell, is it fair to say that the original goal of a centralised app that would give us lots more information is now completely dead?

Lord Bethell: It is true that the old approach has been changed to a decentralised app, but a lot of the learnings are still in place. One of the original ambitions was to combine various different elements, from booking a test to Bluetooth contact tracing and various risk assessments. One of the things I am particularly pleased about is the way in which the app team has combined several functions in one platform, bringing a broad user experience to people. I think it will play a key role in our effort.

Q1405 **Aaron Bell:** Northern Ireland and Scotland have got ahead of England based on the same technology and, I understand, are doing roughly the same thing with contact tracing. Why has there been a delay in getting the app up for England and Wales?

Lord Bethell: I do not know that there has been a delay. We have moved quickly in order to get the app that we need right. I celebrate the fact that others have their own versions. We will learn from each other. Interoperability is critical. We have worked really closely with the DAs to make sure that we can get the apps to work together. In time, interoperability with other countries will be important, when we come to the point that borders will be reopened and risk assessment between countries becomes really important.

Q1406 **Aaron Bell:** What assessment have you made of the Scottish data so far?

Simon Thompson: It is early days for the launch in Scotland. We speak on a regular basis because we share learnings. I am mad keen to catch



up with the team and see their assessment of progress, but from everything I have seen so far I think they should be optimistic. It is great for us. As you said, they are using the same base technology. It is great to see that the team there also has the confidence that we have in the technology.

Q1407 Carol Monaghan: Simon, can I ask you about the trials in the Isle of Wight and Newham? What was the percentage uptake in terms of population?

Simon Thompson: This is information that we will definitely share in our evaluation after the launch, as soon as is practicable. Based on the international uptakes you will have read, which are between 10% and 30%, and the results we have seen, we should feel optimistic about what we can do. It is similar to what we have always said: the more people who use the app, the better. The thing we have really focused on, which Lord Bethell touched on earlier, is making sure that citizens have confidence that it works and is bringing them a real benefit. Based on the trials we have seen, we believe that that will be the reaction we get.

Q1408 Carol Monaghan: Are you not able to give a percentage uptake?

Simon Thompson: No. We definitely will as part of our evaluation, which, as I said earlier, we will definitely publish as soon as is practicable.

Q1409 Carol Monaghan: The app was launched about a week ago in Scotland and there has been an uptake of about 1 million, which is about 20% of the population, and it has already given 100 alerts. It should be noted that the level of trust in Nicola Sturgeon is probably a lot higher than has been seen in social media regarding the potential launch of the app in England. How important is trust? You have talked about levels of confidence among the population. How important will be trust that this app is going to do what it says and will not infringe on people's personal data?

Simon Thompson: We are using the same underlying technology as Team Scotland.

Q1410 Carol Monaghan: Now you are. I am trying to tease out whether that information is getting out there, or whether there is still mistrust among the public about the idea of the app.

Baroness Harding: Although the English app does not launch until Thursday, the QR code system is live and businesses are today getting ready for it. We have already seen up to 15,000 organisations download QR codes, so we have real evidence in England before our app launches that businesses are getting ready and accepting it. That is different from the Scottish app. We use the same contact tracing capability, but we have integrated the QR code system as well. It is very early days, as Simon says, and I think both nations should be really encouraged that our collaboration looks like it will deliver another tool in the toolkit for the fight against Covid.



Q1411 **Carol Monaghan:** Is there going to be some big launch with questions being asked by people about their personal data? Is that going to take place? It took place in Scotland, and I think that was part of the reason why people felt confident to download the app on to their phones. Are these big messages going to get out, because there has been a change in terms of what the app will do?

Baroness Harding: Absolutely. I do not know whether Simon wants to talk to that. I completely agree that reassuring people that their data stays on their phone is a very important element, and we certainly saw that in the trials in Newham and the Isle of Wight and with NHS responders.

Simon Thompson: The point raised is an excellent one. What you have said is absolutely true. We realise that trust is important, but based on the results we have had, we should feel confident about that.

Q1412 **Chair:** The distance criterion in the app is 2 metres for 15 minutes. The WHO advice is that it should be 1 metre for 15 minutes. Why have we chosen a different metric?

Lord Bethell: We have assessed it in a lot of different ways. A balance needs to be struck between getting the positives right and the negatives right. We cannot have an app that throws off so many false positives that trust is undermined. In all of these epidemiological efforts you are trying to get something that is both effective and trusted, and we think 15 minutes and 2 metres strikes the right point in that balance.

Q1413 **Chair:** Perhaps you could write to the Committee with the evaluation of why you rejected the WHO's advice that it should be just 1 metre for 15 minutes, and you have gone for one that will capture more people.

Lord Bethell: I would be glad to. I would like to add that these things can be reviewed. As we learn more and more about the app, it may be that we seek to tweak it as we go along.

Q1414 **Chair:** We will draw stumps on that. We are very grateful to our witnesses, and we say goodbye to our online witnesses and thank them for their testimony.

We have covered a lot of ground on other matters, but, since we have Baroness Harding and Lord Bethell with us, perhaps we could take a couple of minutes to reflect on some things related to the ministerial oversight of NHS Test and Trace. Starting with the testing strategy and who is responsible for it, the Committee held its last session before the summer with the Secretary of State, when he was very clear that the testing strategy was not set by NHS, NHS England or Public Health England at that time; it was set by Ministers. Would you summarise and give a concise view as to the strategy on testing now, as we approach the autumn and winter?

Lord Bethell: The strategy remains with Ministers, but there is much broader collaboration across Whitehall and much greater involvement in a



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variety of different Departments. For instance, when it comes to the international element of test and trace, the DFT is much more involved. The Cabinet Office provides an enormous amount of insight, and we work very closely with Downing Street in all matters.

In terms of the priorities, the watchword, the mission, is to break the chain of transmission. That is how all our metrics are ultimately focused. We are trying to stop the spread of the disease. We have to weigh that up with trying to return people's lives to something that is akin to normal and get the economy restarted. It is striking a balance between the most effective measures possible and using diagnostics and isolation to make interventions that break the spread of the disease, but at the same time release people as much as possible to do the things they love and to lead productive lives. That would be the strategic balance we are trying to strike.

Q1415 Chair: After we have got over, as we hope we will, the problems besetting the testing system now, and capacity catches up with demand, do you aim to be able to get back to what we were starting to be able to do during the summer, which is to make tests available to asymptomatic people more generally?

Lord Bethell: The work that Dido has largely focused on is dealing with technology that is not only provable and workable today but is industrially available and applicable. Those things are really important because we have to deliver speedy, accurate and affordable tests every day of the week.

On the horizon, there are incredibly exciting developments. Having been involved in testing for six months, I have been astonished by the rate of improvement in testing. Using our existing base technology, it has been largely about automation and the use of data to accelerate the speed and turnaround of tests and to be able to put machines together and make them work at speed.

There are new technologies coming in that use different ways of measuring the virus. There are tests using saliva or even breath. They are tests that at this stage are largely bench-based, innovative and unproven in clinical trial, but offer huge promise. We are focused on a parallel stream to try to support those innovative tests to give a completely different level of diagnostics.

Q1416 Chair: That is the moonshot, isn't it? It is what the Prime Minister described as the moonshot.

Lord Bethell: Yes.

Q1417 Chair: Is that part of the strategy?

Lord Bethell: Yes. I am the Minister for innovation, and I have a spreadsheet of dozens of companies from all around the world that have



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remarkable propositions that are moving incredibly quickly from conceptual to applicable to industrial.

Q1418 **Chair:** Is the target of 10 million a day in the strategy?

Lord Bethell: I have to admit that I do not know exactly where the 10 million came from. That is not something I am familiar with, but in order to enable the return of the population to a life that is economically productive, and where schools and colleges can be confident about going back, there is the potential for having massively more tests.

Q1419 **Chair:** The 10 million is not something you recognise?

Lord Bethell: It is not one I recognise, no.

Q1420 **Chair:** Baroness Harding, what you said earlier was very interesting. You responded to the assessment of demand that was given to you by the modellers in SAGE, and it turned out to be an underestimate. Given your current interim responsibility for the programme, and we recognise the voluntary public service you are giving and all the pressures that come with that, and given your wide experience of the commercial world, will you be making your own assessment within NHS Test and Trace of what the demand is likely to be in the future, or will you continue to rely on modelling estimates that have turned out to be so wrong?

Baroness Harding: We continue to work with a wide range of experts: SAGE and SPI-M, and our modelling colleagues in SPI-B for behavioural science. They in turn draw very widely. Dr Waite described in the first session that it is very important when you look at modelling to have multiple teams doing the work and then to compare. The one thing you know about any model is that it is highly unlikely to be precisely right. What you want to do is take a number of different teams and assess and evaluate. That is exactly what we are doing and will continue to do.

Q1421 **Graham Stringer:** Minister, I have a series of questions very similar to the ones that were asked of Baroness Harding earlier. We are short of time, so I will not repeat them. Is there anything Baroness Harding said about testing capacity—the demand for it and the recording of the number of tests conducted compared with capacity—with which you disagree?

Lord Bethell: There is one thing Baroness Harding did not say that I would have loved her to say. She expressed very clearly the frustration and regret that demand is currently above capacity, but what she did not express was the pride I have in how far we have come so quickly. It is a difficult time to be saying this, because obviously a lot of people in the country are frustrated and, rightly, very angry, but there is a bit of me that is genuinely enormously impressed by the way in which British business, British academia, the NHS and Government have moved so quickly to stand up an incredibly impressive testing outfit. It seems a shame to me that this session might go without that being said.



Q1422 **Graham Stringer:** It is fair enough for you to say that, but it leaves the door open to me to ask, what is the biggest mistake that has been made?

Lord Bethell: That is always a very difficult question, Graham. We have made plenty of mistakes along the way. Where we are sitting right now, we have to be really clear with people about the way in which this infection works and is harboured in the body, because there is a temptation to believe that having a test somehow is a cure or, if not a cure, is a way out of your commitment to isolate. The test and trace programme is effective only if people isolate when they have tested positive or have been in contact with those who have tested positive. Trying to convey that message is very challenging, and getting it right is still something on which we have a lot of work to do.

Q1423 **Graham Stringer:** I agree with you, Minister. Clarity of message is absolutely vital in getting public buy-in to protect people and public health. I think Ministers have muddied the waters on a number of occasions by not being clear, or by obfuscating.

To take an example over the past few days in terms of the distance people have been asked to travel to testing centres, the Secretary of State and the Prime Minister gave the mean for the distance travelled. You do not have to be a statistician to know that the mode and the median would statistically give you a better idea of what was going on, and how many people had not gone. Do you take that point? It might be easy for a Minister to push the details to one side so that they do not have to say they got it wrong, but don't you think it would be better, on a simple case like that, if people were statistically honest and gave the median and the mode as well as the mean, and how many people hadn't actually travelled because it was too bloody far?

Lord Bethell: I am in favour of statistical candour. Earlier today, we published a huge amount of statistics. We run an incredibly transparent—

Q1424 **Graham Stringer:** No member of the public is going to read that. They may see the Prime Minister on television, and they may see the Secretary of State on television, or they may listen to him, but they are not going to read that.

Lord Bethell: I completely understand the public's frustration. I have friends and family, and I can see what is going on. People are extremely frustrated, but when it comes to the statistics we really could not be more transparent than we are. I remind everyone that there will be more than 1 million having a test this week and most of them—the vast majority—will have a benign experience around it.

Q1425 **Graham Stringer:** You were here for the earlier session with Professor Heneghan, who in a very thoughtful and academic way cast doubt on the changed rules in the north-east, and Oldham and Bolton in particular. Could you give me your initial thoughts on what he said?

Lord Bethell: He spoke very interestingly about the difference between having a trace of infection and being wildly infectious. We are aware of



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the difference between the two, but everything the clinicians tell me is that you have to be very careful about trying to create false differences between the two. One person might have a small amount of infection today and a large amount tomorrow. If you try to create big differences between the two, you may store up problems for yourself in future.

Q1426 Dawn Butler: Thank you both very much for being here today. In July, the Secretary of State for Health and Social Care told this Committee that reform of Public Health England was not a priority, and he was focused on preparing for the winter, which, as we have heard today, is vitally important. However, less than a month later, PHE was replaced by this new National Institute for Health Protection. Minister, what changed?

Lord Bethell: What the Secretary of State said earlier is right. Change for change's sake is not our interest, but Baroness Harding has explained clearly how the operational benefits of getting the three teams working closely together have yielded massive results. We had a quiet point in all this when we could mend the roof while the sun shone, as it were.

I think it was the right decision. It was a tough and courageous decision but the right decision to try to grab those operational benefits while we could. I work closely with all three teams and I can tell you that they are working much better together, that it is an enormously collaborative atmosphere and the benefits are coming through. I think it was a wise decision and the right one.

Q1427 Dawn Butler: But what changed? Did he not have those thoughts before? What changed in those four weeks?

Lord Bethell: To answer you directly, what changed was that the assessment of what the benefits of those operational dividends would be became clearer and more apparent.

Q1428 Chair: It helped the capacity chase that you are now in rather than hindered it—the change from PHE.

Baroness Harding: Absolutely.

Q1429 Aaron Bell: To what extent is our current overall strategy, and what you set out to the Chair about mass testing ideas and all the rest of it, predicated on hanging on for a vaccine? To put it another way, if we did not think there would be a vaccine in the next six months and thought it might be more like two years, would we be doing things differently?

Lord Bethell: That is a very good question. I am extremely hopeful and optimistic about the vaccine. If you listen to Kate Bingham running through the options, you will be really inspired by the pace of scientific change and how far we have to go, but everyone who has spoken to virologists knows that developing vaccines for coronaviruses, particularly ones with a respiratory affliction, is really tough and they do not always work. We have to cover our bases.



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One of the things we are doing with test and trace is creating a fall-back plan if the vaccine and therapeutic drugs do not come through as we hope they will. If they do not, we have an amazing infrastructure that can lean really heavily into the disease and enable the return of both the economy and the important bits of our normal lives, like the return to school and university. We are hedging our bets. One of the reasons we are investing so heavily in test and trace is to make sure we have that back-up plan.

There is a long-term benefit, which is a reboot of the national approach to diagnostics generally, putting diagnostics at the heart of our overall life sciences strategy of early intervention in disease. I would be glad to talk about that either now or later.

Q1430 **Aaron Bell:** SAGE has advised that repeat testing could be a way of shortening the quarantine period. Are the Government considering that approach, and, if so, how will it be implemented and when?

Lord Bethell: We are working closely with DFT colleagues, airlines and airports. I would love to see the reopening of borders when we can, but the CMO is clear. We have already had very tough outcomes from people coming into the country bringing disease with them. We have to rely on people complying with quarantine, and the evidence suggests that that is a very difficult thing to rely on. Until we have a truly reliable, affordable and proven system of quarantine, we have to be really cautious about taking on any new responsibilities in that area.

Q1431 **Aaron Bell:** Could you extrapolate from the hint you gave there that it is difficult to rely upon people to quarantine? Is it similar when relying on people to self-isolate? Do we have data on both of those?

Lord Bethell: I think Baroness Harding alluded to that. We rely on compliance. We have had a consent-based system through the epidemic that has been extremely powerful. We have been huge beneficiaries of public good will through all of this. We would never have achieved what we have done if the public had not been on our side, but people get tired and people who travel are travelling for a reason. They have a high motivation for wishing to leave their home and do the thing they are travelling to do. We have to be realistic about those motivations. Until it is proven to me that we have a way of reliably booking people in and making sure that they do not circulate until their quarantine is done, I am extremely sceptical about whether we should be going down that route.

Q1432 **Aaron Bell:** Do we have a measurement for how many people are observing quarantine? Are we trying to follow that up through random checks? Do we have a number?

Lord Bethell: We are analysing it. If it emerges that we have to do more in that area, we will develop policy to address it.

Chair: I thank our witnesses, in particular Baroness Harding and Lord Bethell, our final witnesses of the day. We appreciate the immense



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hard work, and the pressure, stresses and strains, of both of your roles. We recognise that you are giving public service at a time that is probably unprecedented, certainly in recent decades, in terms of the decisions that have to be made under uncertainty.

We are keen to understand why decisions have been taken, principally to be able to reflect on them and learn lessons because there are other decisions yet to be taken. One of the themes we have discovered through our evidence sessions during the pandemic is that there is always something round the corner, and the need to anticipate that has been common to many of the challenges and policy difficulties we have had, hence the question about capacity for the autumn. But following autumn there will be winter, and then perhaps there might be positive aspects of anticipation as well, if we get a vaccine and treatments and manage to wrestle the prevalence to the ground. That is one of our themes.

We are very grateful to you for the candour you have given the Committee today. We will reflect on it and make recommendations that will be entirely in the spirit of helping you to do your work, which is to keep the nation safe and well. Thank you very much indeed.