HOUSE OF COMMONS

Public Accounts Committee

Oral evidence: COVID-19: Supply of ventilators, HC 685

Monday 12 October 2020

Ordered by the House of Commons to be published on 12 October 2020.

Watch the meeting

Members present: Meg Hillier (Chair); Olivia Blake; Sir Geoffrey Clifton-Brown; Barry Gardiner; Shabana Mahmood; Sarah Olney; James Wild.

Gareth Davies, Comptroller and Auditor General, Andy Nichols, Audit Manager, NAO, and David Fairbrother, Deputy Director, HM Treasury, were in attendance.

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Witnesses

I: Alex Chisholm, Permanent Secretary, Cabinet Office; Gareth Rhys Williams, Government Chief Commercial Officer, Cabinet Office; Sir Chris Wormald, Permanent Secretary, Department of Health and Social Care; David Williams, Second Permanent Secretary, Department of Health and Social Care; Dr Emily Lawson, Chief Commercial Officer, NHS England.

HOUSE OF COMMONS

Report by the Comptroller and Auditor General

Investigation into how government increased the number of ventilators available to the NHS in response to COVID-19 (HC 731)

Examination of witnesses

Witnesses: Alex Chisholm, Gareth Rhys Williams, Sir Chris Wormald, David Williams and Dr Emily Lawson.

Q1 **Chair:** Welcome to the Public Accounts Committee on Monday 12 October 2020. We are here today to consider an investigation by the National Audit Office into how the Government increased the number of ventilators available to the NHS in response to Covid-19. To recap, at the start of the pandemic, ventilators were believed to be one of the main ways of treating patients sick with Covid-19. Lessons had been learned from other countries that had been through a peak. It was a crisis time when there were not enough in the NHS to cope with the projected numbers.

In the middle of March, the Government set out to acquire more ventilators in two ways. One was to buy as many existing ventilators as possible, mostly from abroad. The second was a novel approach. This is a focus of what we are looking at today, the ventilator challenge, which turned the production lines of UK businesses to design and manufacture ventilators where that was not their normal expertise. It was very fast paced, so there were a lot of questions about money. Money was secondary to getting the ventilators in, so, unusually for us as a Committee, that was not the main issue for Government at the time, and avowedly so.

We are going to be asking officials from the main Government Departments, the Cabinet Office and the Department of Health and Social Care, as well as the NHS, how well that worked. I want to welcome our witnesses and then we have some questions generally about Covid at the top end.

Welcome back to Alex Chisholm, the Permanent Secretary at the Cabinet Office, who was with us last Thursday. You are on a season ticket, Mr Chisholm, here in person. I am pleased to have all our witnesses in person. Gareth Rhys Williams is the Government chief commercial officer at the Cabinet Office. It is a while since we have seen you, Mr Rhys Williams, so welcome back. Sir Chris Wormald is the Permanent Secretary at the Department of Health and Social Care. Emily Lawson is the chief commercial officer at NHS England and the senior responsible owner for NHS procurement, so very key in this area. David Williams has also recently been in front of us and is back again, the second Permanent Secretary at the Department of Health and Social Care.

We have five witnesses in the room. It does not mean you all have to say the same thing. If someone has said something you agree with, you can always agree with them in short order so that we can get through the

important business. I wanted to pick up first on test and trace. Can you give us an update on where we are with NHS Test and Trace?

David Williams: We continue to make progress against our plan to increase daily PCR testing capacity to 500,000 tests a day by the end of October. Current capacity stands at just over 313,000 tests per day in the UK. We continue to invest in new technologies to see how we can expand testing capacity and meet additional use cases beyond that initial end of October target. The capacity has grown by around 100,000 tests a day over the past month. The mismatch between demand and supply issues that we touched on when I last gave evidence to the Committee has eased, although we are certainly not complacent there.

On contact tracing, it remains our ambition to identify index cases and their contacts and to deliver the message about needing to self-isolate for 80% of those contacts in quick order. We continue to make progress against that headline target as well, as we head into the winter. The volume of cases we are now dealing with and the number of contacts that need to be traced are rising as the underlying prevalence of the disease in society increases.

Q2 **Chair:** You talk about getting to 80% in quick order. Where are you at today and what do you mean by "quick order"?

David Williams: The latest published information I have, from Thursday last week, shows around 74% of contacts being traced in the timelines we set ourselves, so just short of that 80% benchmark.

Q3 **Chair:** When you say "the timelines we set ourselves", can you be clear what those timelines are for contact tracing?

David Williams: I am just checking. I think it is within 48 hours of a positive test result.

Q4 **Chair:** You talk about the 313,000 a day, but one of the challenges is the flow of those tests and where they are. London went down at one point because they were needed elsewhere in the country. London has gone back up. We know that. How are you doing in terms of getting that flow through? The bare numbers do not tell us, for example, how many people are getting the results in the right order and which sectors are being covered. Where are the problems? That is really what I am asking.

David Williams: As part of our increase in capacity, we are bringing on new Lighthouse labs in Newport, Newcastle, Charnwood and Brants Bridge. The first of those is now live. We have increased the number of testing sites to 500 and the geographical footprint of those tests is widespread. As you would expect, when there are particular outbreaks, where we have mobile or rapidly deployable testing capacity, that is moved around in response to particular geographical needs. It is a mix of an underlying coverage of the country with surge or rapidly deployable capability that is moved to allow us to test in areas of higher prevalence or greater concern.

Q5 **Chair:** In terms of specific areas, we know that schools were issued with 10 as an emergency supply for pupils in difficult need and they are getting more now. Are there any plans to roll out more tests to schools to save whole cohorts of young people having to isolate?

David Williams: The prevalence of the disease in school-aged children is not the area where we are seeing increases. In terms of the risk-based response—

Q6 **Chair:** If they are not being tested, how do you know that?

David Williams: From the surveillance data that we have, alongside the diagnostic tests, we can see that the positive test rate in school-aged children is relatively flat. The age groups where we are seeing increases are in young and older adults. Nevertheless, as part of our investigation of new testing technologies, we are looking to see whether some of our new rapid testing kits might well be a solution to in-school, in-classroom testing. That remains something that we are working through.

Q7 **Chair:** The significant point I am trying to raise is that, if a child is self-isolating, out of the classroom again, having lost a lot of education over the last few months, and they are not tested, they could be self-isolating for no particularly good reason. From what you are saying, you are looking at getting more testing into schools to prevent that from happening.

David Williams: Yes, we are looking at that. As I say, in terms of where the disease is currently growing most rapidly, that is not in school-aged children.

Q8 **Olivia Blake:** Mr Williams, last time we met I asked some similar questions to those that I am going to ask today about recruitment. Thank you for the letter that you responded to the Committee with. However, I am still very concerned about recruitment, the level of vacancies that you have in the current testing laboratories and any particular issues with sickness. Many of these areas where scientists are based will be having local outbreaks. I wanted to understand how much impact that might be having, particularly on the Birmingham lab.

David Williams: As part of our expansion of the Lighthouse labs and the arrangements we are also making with universities, ensuring that they are properly staffed to do the testing activity that we require of them is an important part of establishing and setting up those laboratories. We are in the process of recruiting hundreds of new staff to support that expansion. I would have to get back to you with detail on sickness absence in each lab. That is not information I have to hand.

Q9 **Olivia Blake:** I was wondering if you had put in place any of the further support that was outlined in the letter you sent. You mentioned sending some tests abroad and I wanted to understand what level of flexibility there will be if the need was to dramatically increase.

David Williams: We have surge capacity access to testing facilities in Europe. We have previously used surge lab capacity in the US. There is an

operational balance of having access to that lab capacity set against the fact that, as you might imagine, the turnaround time of processing tests in continental Europe or the US is longer than we can manage in the UK. We have agreed some cool-off contracts and then it is an operational decision on a day-to-day basis by the testing team on where they need to supplement UK-based capacity to get through testing volumes.

Q10 **Olivia Blake:** I also wanted to know about volunteer numbers. I have asked a couple of parliamentary questions on this and I have not yet had a response. I recognise that a lot of furloughed scientists were volunteering in the Lighthouse labs. I would appreciate it if you could get back to the Committee with numbers over the months and how that has changed.

David Williams: Yes.

Q11 **Olivia Blake:** Finally, how might local authority staff be better deployed to support the tracing element of track and trace? What discussions have you had with MHCLG about changing the track and trace system to allow for that, if any?

David Williams: We have had an approach in place for some time that looks to optimise the balance between national contact tracing resource, regional resource through Public Health England, regional directors of public health, out into local authority directors of public health and, indeed, other local resources at a local or community level.

As of today, we are supporting 93 separate local tracing teams across the country and we expect that number to hit 100 during the course of this week. It is not so much an either/or of national versus local, but a blended approach where capability and capacity at the national level marries to local knowledge and, in particular, local boots on the ground to knock on doors and track down those otherwise hard-to-find contacts, to give us our best bet of identifying those people who need to self-isolate.

Q12 **Olivia Blake:** International students have been working in some of those laboratories. Have you given any consideration to working with the Home Office to extend their visas while they have stepped up during this crisis to support our labs?

David Williams: I would have to take that away and come back to the Committee. I am happy to write on that.

Chair: Of course, a lot of students will be in lockdown even if they are supposed to be leaving, so there may be a double benefit there.

Q13 **Sir Geoffrey Clifton-Brown:** Good afternoon, Mr Williams. I suppose, one way or another, technology is going to come to our aid in beating this Covid virus, so can I ask you one or two questions about that? In response to Ms Blake, you talked about having testing done in Europe and America. What are we doing to increase the laboratory analysis capacity in this country so we can rapidly upscale the amount of tests we do?

David Williams: Sending tests abroad is a short-term surge capacity issue only. We are establishing additional Lighthouse labs, so four new labs, of which the first, in Newport, is already live and starting to process samples. We are also increasing our partnership work with other laboratories in the wider public sector, academia or, indeed, the private sector. For example, we have a partnership with Birmingham University that is now online, as well as a new partnership coming on stream with laboratories in Queen Mary, UCL, King's and Imperial, a network of universities in London. PCR lab capacity is increasing, but we are also looking to deploy rapid tests that do not need that cycling through lab capacity.

Q14 **Sir Geoffrey Clifton-Brown:** I will come on to rapid tests in a second.

Sir Chris Wormald: I will be corrected if I have got this wrong, but I think the 500K tests by the end of October is entirely UK-based tests.

David Williams: Yes, that is correct.

Q15 **Sir Geoffrey Clifton-Brown:** I wanted to clarify this area. In the figures you originally gave the Chair earlier, was this increase in laboratory analysis included in that capacity of testing that you were talking about?

David Williams: The increase in UK laboratory capacity, where it has come on stream, is included in that number of just over 300,000 tests a day. That is today. That does not include surge capacity abroad, as I understand it.

Sir Chris Wormald: To be absolutely clear, that is the number we can do today. The new facilities that Mr Williams is describing are what get you to the 500K by the end of October.

Q16 **Sir Geoffrey Clifton-Brown:** The original moonshot idea, where millions of people were going to be tested, was more or less an intergalactic dream, was it?

Sir Chris Wormald: No, that is a different thing, using different technology.

David Williams: There is a specific target to increase PCR-based laboratory capacity to 500,000 a day by the end of October. Beyond that, we are looking at whether we can increase that capacity further in time for winter, so potentially up to 800,000 tests a day or beyond. We are also looking at alternative testing technologies, which could be used for a mass population testing programme. The specific figures, as I think I mentioned in the hearing last time, that have been reported in the media of 10 million tests a day and costing £100 billion are wildly inaccurate. Nevertheless, we continue to see how we might be able to develop a reasonable mass testing programme beyond PCR lab testing.

Q17 **Sir Geoffrey Clifton-Brown:** Can I stop you there, Mr Williams? It seems to me that this is the really possible solution, as you say, a mass testing situation, where people can do their own tests and get their own results

fairly rapidly. How far off that sort of system are we?

David Williams: Ramping up the ability to do that on a population level still remains some way off. I would suggest months at least. Nevertheless, there are tests that could be used in those kinds of scenarios, which we are trialling now and for which we have made some initial orders. We can refine the use case as we get them and try them out in different settings or scenarios.

Q18 **Sir Geoffrey Clifton-Brown:** I have a lot of ground I want to cover, so give us quick answers, please. The other half of the track and trace testing is the tracking. Can you give us an update on the NHS app and how well the tracking is going?

David Williams: Some 17 million people have now downloaded the app in England and Wales. It is working as we expected it to. I personally do not have data on positive identification of contacts or cases to self-isolate through it, but I am happy to check with the team.

Q19 **Sir Geoffrey Clifton-Brown:** There is a lot of talk in the media about whether it is better done on a national or a local basis. What is the thinking around that?

David Williams: That relates to the previous question about the balance of humans in the loop, rather than the app itself. Our preferred approach is a blend of national resources doing those elements that can be done through relatively quickly available contact details, complementing more locally based approaches involving local authority directors of public health and other public sector workers within local authority areas. You get a blend of national and local to deliver what we want to.

Q20 **Sir Geoffrey Clifton-Brown:** This is the final question from me on technology and what is probably the most important bit of the whole jigsaw, vaccines. Can you give us an update as to where we are on vaccines?

Sir Chris Wormald: As you know, there are a number under development. It is actually our colleagues at BEIS who are leading on this. We have orders in place for a number of different potential vaccines around the world. The expectation is that vaccines may become available towards the end of this year or the beginning of next year. There is a significant piece of work underway, led by the NHS on how vaccines are then deployed.

I am sure the Committee will look at this in detail at some point. This is an incredibly complicated type of rollout, because the different vaccines under development do different things, need to be deployed in different ways and need to be stored at different temperatures. Any deployment of a Covid vaccine needs to be co-ordinated with the flu vaccine. One set of that timing is fixed and the other is mobile depending on vaccine development. We are pleased with the way vaccines are developing around the world and our plans, but there is still a long way to go before we have vaccines in people's arms.

Q21 **Chair:** I understand that there has never been a successful vaccine for a coronavirus so far and of course the virus can mutate. You talked very confidently about a matter of months, the end of this year or early next before it is logistically rolled out. Are you confident it will be a vaccine that will still work?

Sir Chris Wormald: We have not brought any of our scientists, who would give you a much better answer, but yes, we are confident that there will be successful vaccines. You are correct that there has never been one for a coronavirus before, but the kind of resources that have been put in around the world to get a vaccine have never been deployed on a coronavirus before.

The point that the Chief Medical Officer always makes when speaking about vaccines, which I will repeat, is that we cannot think of a vaccine in the way that some vaccines work to basically eliminate an illness. We are much more likely to get the type of vaccine that we get for flu, which is an important contribution to the control of something but does not end the disease, as we all know. Then we would expect vaccines to improve over time. We should not be thinking in terms of a magic bullet that will make all this go away. Just like the treatments, the track and trace system and the better ways of dealing with patients that we have developed, this will be an important contribution.

Chair: Our sister Committee, the Science and Technology Committee, will be looking in detail at a vaccine, I know.

Q22 **Sarah Olney:** This is a question for Mr Williams. Part of my constituency is in the London Borough of Richmond, which saw an unprecedented spike in infections in the last couple of weeks. There has been a bit of analysis of the postcodes of where those tests have been carried out and it appears that lots of them were done in places like Durham and Newcastle. The suspicion is that it is students at universities getting a positive test at university but the test result is being recorded at their home GP in Richmond. Do you think that is a plausible explanation for the spike in infections being recorded in Richmond?

David Williams: I will have to confess that I do not know the details of the spike in Richmond, so it might be a plausible explanation. Where the tests are processed also depends on lab capacity on a particular day. I am happy to take that away and find out how the home GP versus university presence is playing out more generally.

Q23 **Sarah Olney:** I would be really grateful if you could get me more details on the Richmond situation in particular. I am concerned about the absolute importance of the location of the disease. If we are not sure whether the specific borough's results are reflecting what is actually going on in that borough, or may in fact be feeding in data from all over the country, how can we be certain of what we are seeing in Richmond, or indeed anywhere else? How much confidence can we have in the data if we are not sure about this?

David Williams: The data we look at, which is analysed continuously by our joint biosecurity centre, is drawn from a number of feeds. In terms of the data that is being presented for decision around local interventions and local support, I am confident that we will adjust for that geographical effect that you describe. I just cannot say what the precise circumstances in your constituency are

Q24 **Sarah Olney:** We are really concerned. This appears to be the explanation for the spike in infections in Richmond and yet it is actually reflecting infections elsewhere in the country. That could have very serious consequences for how we approach the control and management of the virus in Richmond. I would really appreciate a speedy follow-up on that. Potentially, it raises larger questions for how the various positive tests are being recorded. That is something that needs to be looked at.

Sir Chris Wormald: We do look at those things. As Mr Williams says, the way we look at individual areas is a triangulation of data between ONS surveillance data, what we get from our test and trace programme, hospital data and a whole range of other data, including 111 calls. Where we see results that are curious and do not appear to fit with existing patterns, that is one thing JBC looks at. Then we look at individual areas. The issue you raise is important. We have seen media reports of that happening and we will ensure it is looked into.

We want to reassure you that, when we are taking decisions about particular places, we do not rely on a single data feed to do so. We also do so in discussion with local directors of public health and people who know the individual area. There is not an automaticity—I cannot say the word—between a particular piece of data and a particular intervention. We try to look round the problem.

Chair: I have to say, in the mandarin lexicon, that is a new word for me. We will add it to our list to tick off.

Sir Chris Wormald: You know what I was trying to say.

Q25 **Chair:** I know what you are trying to say, Sir Chris. I think we have the point. Ms Olney raised a very important point. If you are transparent with us, Parliament and the public about the data as quickly as you can be, that helps us all work through this. As much information as you can share would be great. You have pledged to get back to Ms Olney about the situation in Richmond, which surprises me too as an area for a spike.

I am going to move on to PPE. We have a spike coming up now. According to the Minister, there is a PPE sourcing unit, staffed by over 400 people, securing supply lines from across the world. How is it going?

Sir Chris Wormald: Am I doing PPE? Emily can do PPE.

Chair: As long as somebody is dealing with PPE, I think we would be massively reassured. Is that you, Dr Lawson?

Dr Lawson: I am happy to give a couple of headlines. Perhaps you can tell me if you would like more detail. The PPE strategy published on 28 September indicated that the focus of the cross-Government PPE cell has been on building up sufficient supplies for the winter. For most items, there is already four months of supply, either in the country or with UK-based manufacturers. We are 99% sure that that will be the case for all items by the beginning of November. We are working with trusts to make sure they do not just have a set of items, but the particular items that are required, given what they are seeing. We are also continuing to develop the portal so smaller users such as GPs and smaller social care homes can order exactly what they need via the portal.

Q26 **Chair:** Do you know what rough percentage is now able to be manufactured in the UK?

Dr Lawson: It varies tremendously by item. For things like visors and aprons, it is more than 100% of our predicted needs. For gloves, it is very low. We have no onshore manufacturer for gloves at the moment.

Q27 **Chair:** Is there a particular reason for that?

Dr Lawson: It takes about 18 months to set up a gloves production line because of the complexity of the tooling, et cetera. It is something that the team is still looking into. For gloves, the resilience is based on purchasing and bringing stuff into the country. Where we can do UK-based manufacturing, it is a mix of purchasing abroad and purchasing in the UK.

Q28 **Chair:** Do you know what the point price is for gloves, whatever unit price you pay for them now? Presumably it is going up.

Dr Lawson: It is actually not as high now as it was earlier in the year. We have kept track of the market price throughout. I could not tell you precisely what it is today, but there is a register of prices that includes what the market price was at the time.

Q29 **Chair:** It would be very helpful if you could share with the Committee the normal price of gloves before Covid, through the peak, which we recognise was a challenging time, and now. We have no control over it in the UK, so there is an issue as we compete with people around the world. There is a lot more I could ask about this, but could I ask one particularly important question? Social care was struggling at times, as were other sectors like pharmacists, in getting PPE. What is the situation for social care?

Dr Lawson: Chris or David may want to comment particularly on the social care needs. The total supply has been modelled. When I say there is four months' supply of a particular item, that is the total modelled demand across health, social care and, in some instances, for other Government Departments as well. It is not just for the NHS, so the supply is there. The focus has been on setting up different distribution systems to meet the needs of the different users, such as the portal, for example, versus the shipments to trusts, because they are single large users.

Chair: Yes, that was one of the problems before.

Q30 **Sir Geoffrey Clifton-Brown:** Further to that answer, do I understand that the Department is now offering care homes free PPE? That is different from the old model of them having to go out into the market and purchase it. Is it just that the Department is procuring it for them and they still have to pay?

Sir Chris Wormald: No, we are providing a certain amount to each care home free, as we did throughout the epidemic. Yes, the business as usual situation is that care homes buy their own PPE on the open market. Throughout the crisis, we have been providing a certain element free.

Q31 **Sir Geoffrey Clifton-Brown:** Can we be really clear, because these care homes will be watching this session? Any care home that wants PPE will be able to get it from the Department free of charge.

Sir Chris Wormald: It is not any PPE. Correct me, Emily. We do a certain amount.

Q32 **Sir Geoffrey Clifton-Brown:** What does that actually mean, so they can have clarity?

Sir Chris Wormald: Shall I write to you?

Sir Geoffrey Clifton-Brown: Yes. It is really important.

Chair: Please write to us with the details, because it is important.

Sir Chris Wormald: I am sorry I do not have that information with me.

Sir Geoffrey Clifton-Brown: Care homes in my constituency had a really rough time.

Q33 **Chair:** It is a bit like schools having 10 tests. That was never designed for full testing. Having 10 tests is not the same as having tests.

Sir Chris Wormald: We are seeking to ensure that every care home has enough PPE to meet its needs.

Q34 **Sir Geoffrey Clifton-Brown:** Do you or the local authorities have sufficient data to do that?

Sir Chris Wormald: I would not say it is perfect. As you know, the care home sector is highly variable, but that is certainly our objective. Shall I write to you with the details?

Sir Geoffrey Clifton-Brown: Thank you.

Q35 **Chair:** Yes, please. We know that colleagues round the House have been very concerned. Sir Geoffrey has been quite a champion of the care homes that were struggling in the first stage of the peak, so we are very keen to hear from you on that. My final question to Mr Williams is about your accounts. Well done, you have managed to get them through, haven't you?

David Williams: No, not yet.

Chair: No, not quite, but nearly. Sorry, I am about a week out, I think.

David Williams: You know something from the NAO that I do not.

Chair: I think the last time you were in front of us they were about to happen and I spoke to the NAO about it. It is very soon.

David Williams: It is mid to late November.

Q36 **Chair:** You are nearly there anyway. That will not include Covid costs. Can you give us an estimate of the total extra costs to the Department and NHSE of Covid?

David Williams: The accounts, which cover the last financial year, just include a small element of ramp-up and preparation.

Chair: It was about a week, wasn't it?

David Williams: That will be in the order of around £600 million, I think, for the NHS side of things. On the overall cost to the Department for Covid this year, I would probably refer the Committee to the NAO Covid cost tracker that comes out each month. As you know, we have agreed large envelopes for particular areas of spend, so £15 billion for PPE, more than £10 billion now for test and trace, as well as specific envelopes for support for social care, the independent sector support to the NHS, the Nightingales and so on.

A range of other cost are incurred by the NHS on a daily basis and we are agreeing reimbursement of those through the year and through guidance that goes out to trusts from colleagues in NHS England at key points of the cycle. I would prefer to keep my counsel for now on the overall cost of Covid for this year. We will come to Parliament in the usual way at supplementary estimates with our full, collated view of this year's costs. It will be substantial, given the numbers I have already set out.

Chair: We know. We will be crawling over those accounts of course, as the NAO will, next year, but it is useful to get an idea.

Q37 **Barry Gardiner:** Mr Williams, the Chair just mentioned the 10 tests to schools. Can you expand on how many tests are going to be available to care homes now and what your intention is for that?

David Williams: As part of our testing strategy, we send 120,000 test kits to care homes across the country on a daily basis.

Q38 **Barry Gardiner:** How many does that equate to for each care home? The point is that, if you are in charge of a care home, you need to know what capacity you have to test your staff.

David Williams: The allocation between care homes is not something I have the detail on at my fingertips.

Barry Gardiner: Could you write to us then, please? Thank you.

Sir Chris Wormald: I think it is based on the number of staff. There are approximately 600,000 people working in care homes. We aim to test care home staff once a week, which is why 100,000 or so tests go to care homes a day. It is related to the number of staff.

Chair: Okay, so it is per capita.

Sir Chris Wormald: Yes. I think we test residents monthly at the moment. Care home testing is right at the top of our priority list, for reasons we have discussed before. As you will see, it takes up a considerable proportion of even our enhanced testing capacity. It is one of the reasons why we sometimes have limitations in other areas. I will send you the full breakdown, but those are the basics.

Chair: We will certainly hear if there is anything going wrong because colleagues around the House, led ably by Sir Geoffrey, are very much watching this.

Q39 **James Wild:** This is probably for Sir Chris or Mr Williams. The funding was confirmed 10 days ago for 40 new hospitals, with a further eight to be selected. My constituents were particularly disappointed that the Queen Elizabeth Hospital in King's Lynn was not on that list when it is in need of urgent modernisation and is of the same age and RAAC plank design as two hospitals in the region that were selected. Given there is a compelling case for QEH that I am supporting, can you give some clarity on the process and timing for the further eight hospitals?

David Williams: We are still working through that process and will communicate to individual NHS trusts, which are likely to want to pitch into it, and to MPs and other stakeholders, once we have decided how to do it. It is likely to be for hospitals beginning construction after the end of the next spending review period, so 2025 onwards. That means we have a little time to think about the selection criteria and the balance of national-level activity on procurement set against local pressures. It will come. I think it will come soon. I am not suggesting you watch this space until 2025, but taking forward the detailed planning for those hospitals that we are making progress on in this Parliament is the No. 1 task. No. 2 is setting out how that process for the eight follow-on hospitals will run. We will keep you informed.

Q40 **James Wild:** Would you expect to have that in place by the end of the year?

David Williams: By the end of the financial year? I do not want to speculate. I do not know. If we can get guidance out on how the process will work by the end of the financial year, that would be quite helpful, but then we will need to give hospitals and trusts time to respond and time for us to evaluate.

Chair: Now we move on to the main session, which is to look at the supply of ventilators during the first wave of the Covid pandemic, so perhaps those purchased from overseas and those obtained through the innovative

approach of the ventilator challenge.

Q41 **James Wild:** I should declare an interest, in that I was a special adviser in the Cabinet Office before being elected to Parliament. Sir Chris and Mr Williams, what contingency plans did you have in place for increasing the number of mechanical ventilators in an emergency for the NHS?

Sir Chris Wormald: This was not part of our previous plan, as I think the National Audit Office Report sets out. We do not routinely hold a stockpile of ventilators in the NHS, and, as you know, we do not run the NHS with spare capacity. Going in, there was not a specific plan for the provision of further ventilators.

Q42 **James Wild:** Once the need for ventilators became clear, you looked at the data and you did not know how many you had. Why did you not have that data to hand?

Sir Chris Wormald: I will pass on to Emily on what we did and did not know about the ventilators.

Dr Lawson: In February, we did not know the number of ventilators because those are individual trust purchasing decisions and there is no central inventory of that equipment. There usually is not; there is now. We knew that there were 4,123 critical care beds, all of which would have a ventilator. We did not know what the remaining surge capacity would be. That is why there was a data collection started in late February, which reported back in the first week of March, giving us the number that is in the Report of 7,357 ventilators. That was both what was existing at the time in adult and paediatric and what was able to be brought on at surge. That included transport ventilators and repurposing paediatric for adult care.

Q43 **James Wild:** I think the first case of coronavirus in the UK was confirmed on 31 January, but you did not put out a call for how many ventilators we had until a month after that. Is that right?

Dr Lawson: The work that was done during February was to look at the capacity across the NHS in multiple areas. I am sure there was other work done in other parts of the health and social care system. The absolute inquiry about specifically how many mechanical ventilators were available was done at the end of February.

Q44 **James Wild:** Sir Chris or Mr Williams, is this a wider problem around the visibility of NHS assets? What other things are there where you do not know how many you have and you should know? Is there a programme in place to capture this data? I appreciate it is held at trust level, but you got it in this instance. Are you looking at other areas where we will need that data in the future?

Sir Chris Wormald: No, I do not think so, specifically, unless the NHS is doing so. The focus has been on those things we need to manage the pandemic. I do not think we are doing any more general exercises. As

Emily has set out, most of these decisions are taken at the level of individual trusts, not at national level. Unless we have done a specific collection, we would not know for individual trusts. No, we have focused on the things we need for managing the pandemic.

In terms of the timetable and what action was taken when, events in Lombardy, which transpired mainly across February, made it clear that there was going to be pressure on ventilators. At that point, it became clear that this pandemic was going to put particular pressure on that aspect of the NHS.

Dr Lawson: To go back to the original question, because of the range of learning that has happened about the disease and what is required to treat it since March, we now have a lot more information about not just ventilators but related pieces of equipment, including haemodialysis equipment, ECMO machines, et cetera, and much better visibility on other aspects of the supply chain, including medicines. It is right to say that, if there was something that was not involved in the pandemic response, we have not launched additional data requests, but it is not just ventilators where there is now the better end-to-end view of the data. We have a daily sitrep now on the use of all different kinds of not just mechanical ventilation but NIV, for example.

Q45 **James Wild:** Why was it not the case until early March that you were looking to buy additional ventilators? What was happening in February, accepting the points about the inventory that was seen later? Ventilators were going to be part of the solution here. Why was it not until March that we started buying them?

Dr Lawson: I would refer back to Sir Chris's previous statement. There was a huge amount of work done at that time to understand the disease and what was likely to be involved in the treatment of it, as well as to start the audits we have just spoken about. As soon as it was clear from Lombardy that mechanical ventilation was likely to be a major treatment modality, the team was set up to buy, first through the existing frameworks and then, secondly, outside of those through international purchasing.

Q46 **James Wild:** NHSE&I was saying on 12 February that we might need as many as 59,000 ventilators. What happened after that warning came through? Why was it a matter of weeks before we tried to buy more ventilators?

Dr Lawson: There was modelling on 12 February and then on 1 March. The modelling on 1 February looked at the critical care percentages, as opposed to specifically ventilation. Yes, modelling throughout indicated that mechanical ventilation might be needed. Those were the reasonable worst-case scenarios. As I said, as soon as it was clear that there was going to be a real need to purchase additional machines, the team was set up, on 3 March.

Q47 **James Wild:** Mr Chisholm, clearly DHSC was doing its bit. Why did it take

until the middle of March to call on UK manufacturers to be part of the ventilator challenge to develop more?

***Alex Chisholm*:** That was the point at which it became clear that there was not going to be enough stock between what was available in the UK, some 8,000, and what was available in the international market. The deficit was going to need to be made up through manufacturing in the UK. That is what caused the launch of the ventilator challenge in the middle of March.

Q48 **James Wild:** What was the actual process? How did the challenge come to be launched? Were there submissions. Was this an informal conversation? What actually kicked this off?

***Alex Chisholm*:** Could I invite my colleague, Gareth Rhys Williams, to answer? He was there right at the outset.

Gareth Rhys Williams: I think it was 12 March when there was a COBRA where very large numbers of deaths were anticipated. I think the SAGE modelling at that stage was talking about 90,000 units. That is when it became very clear to me and colleagues in DHSC that we needed to try to manufacture some, given that DHSC and NHS were already buying as many as they conceivably could. The same thought occurred to the Secretary of State at the same time.

It is fair to say it was an informal start. My background is running engineering and product development companies. I did not get much sleep that night, but by Friday morning I had worked out how we might be able to make some, which turned out to be an incorrect approach, but none the less it started the process. We then talked to Cabinet Office Ministers and started the programme. Then the Prime Minister, a couple of days later, had his first call to arms for the relevant parts of industry and some of the people we thought could help.

Q49 **James Wild:** Dr Lawson and Mr Rhys Williams, when you contacted the suppliers, how prepared were suppliers to increase their ventilator manufacturing capacity?

Gareth Rhys Williams: There are two manufacturers of ventilators in the UK. One makes paediatric equipment. It ruled itself out fairly early on because they are not suitable for adults. There is a very small manufacturer in the west country that only exports products to Africa. There are two very small manufacturers of ventilators in the UK, so we ran several tracks. First, could we scale them up? Secondly, could we design from scratch? Thirdly, which turned out to be the most profitable avenue, are there manufacturers of allied, similar equipment that could be modified to work as ventilators? Those are anaesthesia machines, which are like ventilators. It is like the difference between a diesel car and a petrol car, so similar but not the same. We successfully amended two of those for subsequent scale-up.

Q50 **James Wild:** Dr Lawson, you had your existing supply chain in place.

Were the limitations in providing more ventilators due to their inability to scale up? Were there any contractual framework issues here that meant they were not able to move rapidly to do that?

Dr Lawson: The issues were not with the framework. There were 2,200 mechanical ventilators and 2,100 transport ventilators that were bought through the existing framework straight away in the first 10 days of that team we were just discussing. There was a roundtable held with the existing manufacturers to discuss whether it was possible to speed up the manufacture of things that would have been available through that framework. The feeling at the time was that it was not possible.

Q51 **Chair:** When you say "the feeling at the time", was that what they said?

Dr Lawson: They said that. I am sure Gareth will want to come in on this; he is very expert at it. These are complex supply chains. These machines are usually built at the point they are ordered and they arrive two months later. They are not sitting on the shelf, unlike some of the other items we purchased.

Gareth Rhys Williams: There are half a dozen or 10 manufacturers globally of items at scale, none in the UK. Those manufacturers were trying to meet a worldwide demand. They were scaling up as quickly as they could. The fact was that we bought the large numbers that we managed to buy, our fraction, or perhaps slightly more, of that scaled-up volume, but that still left a huge deficit against what we thought we would need, which is why we started off the challenge, because we had to try.

Q52 **James Wild:** To go back, Dr Lawson, you mentioned non-invasive ventilators. When did you know that CPAP machines were going to be useful?

Dr Lawson: If you talk to clinical colleagues, and the relevant national clinical directors were part of the daily team calls, it was always known that NIV and other forms of ventilation would be helpful. Early on, when we could not purchase so many mechanical ventilators as we wanted to, the team also purchased other forms of ventilator equipment, including oxygen concentrators, which turned out to be extremely useful later when mental health facilities that do not usually supply oxygen needed to be able to supply oxygen. The team bought a range of equipment, based on clinical guidance at the time.

Q53 **James Wild:** We were looking for these machines. Everyone else was looking for the machines. The EU then launched its joint procurement approach, which has been much reported and commented on in this Report. This is probably for Sir Chris. Why did the EU not have up-to-date contact details?

Sir Chris Wormald: I could not really tell you. As I understand it, we had supplied new contact details to the EU. It is as set out in the Report. They used some quite old ones that were not only of members of staff who have gone but on our old email system. It was the DH system, not DHSC, so the

messages were never received. The story is exactly as set out in the NAO Report. To be honest, given that this procurement was running a long way behind the procurement that Emily Lawson described, I am not sure how significant this issue is.

Q54 **James Wild:** Do you share my surprise that they sent an email, given the importance? No one picked up the phone and asked, "Hey, UK, do you not want to be part of this?" Do you find that bizarre?

Sir Chris Wormald: It is not a question that I can answer. As I say, I do not think in the real world this issue particularly affected anything. As I understand it, the EU procurement has not been dramatically successful. Even if we had had the chance to participate, I do not think it would have affected the number of ventilators we have. What we were doing unilaterally was running quite a long way ahead of this procurement. As I understand it, that is true for most European countries. It is an unfortunate incident. Because it has Europe in the title, it gets a lot of coverage, but I do not think it materially affected anything.

Q55 **James Wild:** I think the Report also makes that point. Can you confirm the UK is part of a JPA for some of the drugs, for example? There is no ideological opposition to being part of these things.

Sir Chris Wormald: No, not at all. I think I am right in saying that we are involved in three European procurements. Is that correct, David?

David Williams: Yes, for therapeutics, for remdesivir and for vaccine-related consumables. Those are the three we are involved in.

Q56 **James Wild:** Perhaps we could come on to talk about targets. Figure 3 in the Report refers to some of this. Sir Chris and Mr Chisholm, how concerned were you at missing all the targets that were set to procure ventilators?

Sir Chris Wormald: How to characterise it? As the Report sets out, at all stages we were ahead in terms of the number of ventilators that we had, compared to the actual need. At that level, our ultimate ambition was to ensure the NHS never ran out of ventilators, which it did not, and then to build up a supply of ventilators that we could use for any subsequent spike in hospitalisations. As the Report sets out, we are in a position to do that. It is clearly concerning when we are not hitting targets. The Report very clearly sets out the sets of actions that we took to maximise both our procurement and our make strand. How I would characterise it overall is that the targets did their job in galvanising a significant amount of action. They achieved their ultimate goal of us staying ahead of the virus in terms of need. Ideally, we would have hit every target on the day we set it.

Q57 **James Wild:** Mr Rhys Williams, the target was set at 30,000 ventilators within two weeks. Was that ever realistic?

Gareth Rhys Williams: It was aspirational. We were trying to do the impossible as regards the manufacturing. The Report calls this out, but it is worth underlining. Draeger, the European market leader, says it takes it

five and a half years to develop things. Talking with its R&D head, they were amazed that we developed five machines from scratch in eight weeks that were regarded as very credible. The original target of making 30,000 was unrealistic, but I think it was taken in the spirit in which it was meant, in that what we achieved was a group of designers and manufacturers who really galvanised themselves and came together in the most collaborative way I have ever seen. Normally, these companies, both the designers and the manufacturers, would compete tooth and nail with each other. The tone that we managed to set and was set by that very aggressive target meant that they collaborated with each other. That helped with the speed in a way I have rarely seen before.

Q58 **James Wild:** It was always a wake-up call. You were never expecting to get 30,000 in that period.

Gareth Rhys Williams: We could have made 30,000 of the most simple sorts of ventilator.

Q59 **Chair:** When you say "the most simple", be clear, because we have lots of options here in the Report.

Gareth Rhys Williams: Excuse my using a colloquialism. We had a fantastic panel of clinicians from the NHS who worked with us. The most simple forms of ventilators, in mechanical ventilation, and there are items on the website easily available, are effectively a bag squeezer. They squash a rugby ball-shaped bag. We could have made 30,000 of those, but the clinicians very rapidly moved from saying, "Any form of ventilator is better than nothing", which is what we were all thinking when we were watching the TV, looking at Italy and so on.

The point about a ventilator is that the patient is unconscious when they are on it, so if the ventilator fails the patient dies. The clinicians were very clear that a ventilator that might go wrong is lethal. Therefore, instead of the most simple sort, they would rather have had a medical student pumping the rugby ball. We could have made those, but within a day or two it became clear that patients were likely to be on a ventilator for some weeks and therefore they needed the more sophisticated end of the spec that the MHRA had put out. It was not possible to make 30,000. That took us eight weeks.

***Alex Chisholm*:** When you look back, the strategy that was settled on then of a mixture of procurement and production looks to have been a good one. At the beginning, procurement was the main route, because that was the easiest, quicker way. That is where most of the machines came from. That hit a limit quite soon because everybody else around the world was trying to procure. Then the production stream came in more strongly in the second part of the overall period, going out to June and July. It ended up producing twice as many through new production than we were able to procure on the open market.

Q60 **James Wild:** I am interested in the basis of the 18,000 by the end of April

and then 30,000 by the end of June, I think it was. On 12 February, NHSE&I was forecasting 59,000 would be needed, then 90,000. By 24 March, it was saying only 17,500 would be required. Then, on 8 April, SAGE's reasonable worst case was a peak of 7,400 by early May. How were you looking at that data and coming up with this 18,000 and 30,000 number?

Sir Chris Wormald: Gareth and Emily might want to chip in. I was about to say you have correctly identified this, but it jumps out of the page. The numbers were moving a lot at this period. The modelling being done was based on very incomplete information. At all points in this, projections were being done on a reasonable worst-case basis, i.e. something that we only thought was 5% to 10% likely to happen.

Absolutely crucially, and this is how the decisions were made, on this element of the pandemic there are two moving parts. There is the capacity of the NHS and then there is the level of non-pharmaceutical interventions, social distancing, that we put in at the same time to reduce the disease. The Government's objective throughout was to raise NHS capacity while bringing down the level of infection.

As the modelling changes, you see the difference between unmitigated models, i.e. those that assume no social distancing and no reduction in the R rate, and then two factors. One is the effect of those social distancing measures in bringing down the infection rate until it eventually comes below NHS capacity, which was the aim, and better information and knowledge about the actual course of the disease. Over time, you see that reasonable worst-case scenario coming down for those two reasons.

In terms of the NHS capacity side of the equation, the Chair said it right at the beginning. Our objective was to raise NHS capacity as much as we could. We set our targets with that objective. It was quite clear in the early modelling that we were never going to be able to raise NHS capacity to that level. We aimed as high as we could because that gives you the greatest margin of error on the social distancing measures. At the time, we did not know what the impact of those social distancing measures would be. We were trading between those two moving parts and therefore we decided to stick with, at points, higher targets than the modelling was suggesting we needed.

Q61 **James Wild:** Was the 30,000 a DHSC forecast or was it Mr Rhys Williams and his team who came up with that?

Sir Chris Wormald: That flowed out of the SAGE modelling, but it was then what we thought was the right number to do the kind of galvanising of the market that Mr Rhys Williams has described.

Gareth Rhys Williams: There are two different thirty-thousands. There was 30,00 initially, which we covered a second ago, and I think the 30,000 you are talking about is when the Secretary of State asked us for 18,000 by the end of April and 30,000 by the end of June. That 30,000 was based

on what Sir Chris has talked about, but with a view to the possible size of a possible second peak.

Q62 **James Wild:** On 8 April, SAGE's reasonable worst case was 7,400 being needed by early May.

Sir Chris Wormald: This was the point of my answer. At that point, we decided, as a matter of policy, to stick with the higher targets that we had had previously, even though we were by then projecting that the NHS would be well clear, for the reasons we have set out. We wanted to, first, give ourselves a margin and, secondly, put ourselves in a position for any subsequent reoccurrence of the disease, such as the one we have right now. We then had, in this aspect of the NHS response, spare capacity.

That is the approach we took and Simon Stevens and his colleagues have taken across the piece. It is why we had extensive Nightingale facilities that we are very grateful were not very much used in the first peak. It was to build the capacity to deal with anything, as it were, as opposed to saying, "We are all right from 14 May", or whichever date in the first peak you picked.

Q63 **James Wild:** Did you consider lowering the targets? If we look at the Report, the peak was 14 April, when about 4,000 ventilators were used. About 3,000 of those were Covid patients, at which stage the demand was lower than what we had at the start of the crisis.

Sir Chris Wormald: For the reasons I have set out, we consciously decided to stick with our higher targets. It would clearly have been possible at that point to choose some other numbers, but we concluded at the time that the safest course of action was to proceed as set out in the Report.

Q64 **James Wild:** Did that include a value for money assessment as well, or was it the public health as the absolute priority?

Sir Chris Wormald: Public health, as the Chair set out at the beginning and as is set out in the Report, was the driving factor of the decisions. As the Report also sets out, we did not lose sight of, at any point, cost or value for money. As the Chair said at the beginning, our overriding objective here was the public health one. As the debate is played out, probably as we speak, the trade-off between how much capacity you have in the NHS to deal with issues and how much damage we do by lockdowns in other ways means that the gearing effect of having NHS capacity is very great indeed. Your basic point is correct: we were looking at the public health need and how we best buy for that. We do not lose sight of those money questions, as the NAO has pointed out in its Report.

Q65 **James Wild:** Mr Rhys Williams, in terms of the challenge as you were proceeding, were you looking at the data coming from SAGE or was it that you had your number, were focused on that and let those other figures be what they were?

Gareth Rhys Williams: In the first part of the challenge, we were definitely looking at the number, because we did not have enough machines. That was a very clear focus. When you talked earlier about missing the 18,000 target, that was because a couple of the designs that we had initial high hopes for fell over in the run-up to that date. We were acutely aware of those targets. When we got into the volume manufacturing phase, that target, the 30,000, had been set and that is what we built to. We were trying to change the mix of products, cognisant of what Dr Lawson was buying, so we got the best possible mix for the NHS within that 30,000, within the spend envelope.

Q66 **Shabana Mahmood:** I wanted to move us on to the approach that was taken to the procurement of ventilators. Dr Lawson, this is primarily for you. What were your main challenges in procuring from overseas markets, such as China?

Dr Lawson: The challenges were the ones that we mentioned here. They were captured well in the Report. Although we were somewhat ahead of other countries in moving to international procurement, everybody followed very rapidly, based on what happened in Lombardy. There was huge competition for these devices. As Mr Rhys Williams has explained, they have complex global supply chains, with components coming from lots of different related supply chains. It is extremely difficult for manufacturers to scale up quickly to make such devices.

Q67 **Shabana Mahmood:** Given what you have just said about intense international competition and complex global supply chains, with the benefit of hindsight, do you think you could have identified more quickly that intermediaries, after your call to arms, were not likely to be a very useful or fruitful way forward, given what you knew about what it takes to build ventilators and procure them from these specialist markets?

Dr Lawson: Yes, that is a reasonable point. We moved away from intermediaries quite quickly. It was only a matter of days where intermediaries were a main focus. We were advised by the British embassy in Beijing that there was a limited number of manufacturers in the market. As soon as possible, we moved to speaking directly to manufacturers.

Q68 **Shabana Mahmood:** The call to arms was 16 March and it was 1 April when you moved to dealing with them directly. It is figure 4 of the NAO Report, at page 28. The call to arms was on 16 March and it was 1 April when the Department changed its policy to deal only with the manufacturers directly. It was not quite the speed that you suggested in your answer.

Dr Lawson: I have got my timing wrong, apologies. It felt that things were moving quite fast at the time. We certainly were not not talking to manufacturers in the intervening period; put it that way. We were trying to explore all the areas.

Gareth Rhys Williams: It is one timeline, but there are two strands. The call to arms was about UK manufacturers, whereas the intermediaries and

manufacturers Dr Lawson was talking about are overseas manufacturers, so the two dates do not quite hook up.

Q69 **Shabana Mahmood:** Yes, but it was that call to arms that led to the deluge of 1,000 emails coming in that officials from both DHSC and the Foreign and Commonwealth Office were required to triage and respond to. I am now on page 30 of the NAO Report.

Dr Lawson: There was a huge deluge of exchanges. We had people offering beforehand. Given the situation we were in, I would not have wanted to look any opportunity in the mouth and reject it. We wanted to make sure we properly investigated everything that came to light. Indeed, some of the intermediaries proved fruitful. We explored it as much as we could and then, as you say, moved to working directly with manufacturers wherever possible. Certainly, the first question to any intermediary was specifically, "What devices come from what manufacturer? Are they already made or do they need to be produced?" We were trying to get insight into the supply chain as we went.

Q70 **Shabana Mahmood:** I understand that. I think it was only one intermediary that proved fruitful. You just said there were a number.

Dr Lawson: From that particular batch that came in immediately after the call to arms, yes.

Q71 **Shabana Mahmood:** Given the speed with which you were moving, how did you check that suppliers would be compliant with the Government's procurement regulations, in particular around modern slavery and other criminal activity? What process did you have in place for that?

Dr Lawson: We followed a very speedy but still robust process to look into the company through all the standard procedures, to look into their financial record, any investigations they had been part of, anything published about them. As soon as we had any information about a company, we started that search process, as well as looking specifically into what was being offered, in terms of the specifications of the machine and whether it was available already. Those all had clinical oversight to make sure all the certificates et cetera that were being presented were reasonable. As is laid out in the Report, usually these devices would be inspected in person, but we could not do that, so we had to move to alternative mechanisms like videoing the warehouse.

Q72 **Shabana Mahmood:** I understand. Did any of your checks on financial records and anything you could find out about those companies throw up any information that meant you refused to work with somebody?

Dr Lawson: Yes.

Q73 **Shabana Mahmood:** Was that because of criminal activity or modern slavery concerns?

Dr Lawson: I am not aware, but I am happy to check with the team whether there are any modern slavery concerns with the ventilator manufacturers. There have been in other parts of the Covid effort.

Q74 **Shabana Mahmood:** Yes, I am particularly interested in the issues in relation to modern slavery. Was any part of anything that you procured, on behalf of the Government potentially from any of the camps we have been hearing about in the Xinjiang region of China? Were you able to confirm whether there is any risk to us there?

Dr Lawson: In terms of the equipment manufacture, I am not aware of any links. In terms of looking back through the supply chain, we would have to go and do that work in detail. We did not look at exactly where every component in the machine was produced.

Q75 **Shabana Mahmood:** It is possible that part of the ventilators we procured could have been manufactured in some of the forced labour camps the British Government are very concerned about in the Xinjiang region of China.

Dr Lawson: We did not check at the time. We may have that information to hand. I am not aware of it right now. I would have to check.

Q76 **Shabana Mahmood:** Is there any checking going on now?

Dr Lawson: We have not done any further checks because we have finished buying ventilators through this route. I am happy to investigate as far as we can. Some of the supply chain aspects may be quite difficult to investigate, but I am happy to ask the team to look into that in detail.

Q77 **Shabana Mahmood:** Thank you. That is very helpful. Is that normally a lead for you or for the Foreign Office, or do you work in conjunction? I am trying to understand what role the Foreign Office had in advising you about where there would be risks in terms of modern slavery.

Dr Lawson: In this instance, the British embassy stood up support to purchasing, which it would not usually do. The Foreign Office is not usually buying on behalf of people in the UK. It was a specific effort put in place by the Department for International Trade and the FCO to try to support the Covid effort.

Q78 **Shabana Mahmood:** Were any of those conversations about particular concerns about Xinjiang province?

Dr Lawson: I was not part of a conversation specifically about that province, but I was not speaking to the China team every day. Other members of the team were doing that, so I cannot say definitively whether they were.

Shabana Mahmood: It would be helpful to more fully understand what conversations were happening and between whom.

Chair: I think we all agreed that, on page 31, around paragraph 3.11, that kind of conversation in the Report, there are quite a lot of interesting hints

at what was happening overseas at that point.

Q79 **Shabana Mahmood:** There would be intense interest in the House as to what conversations were happening and who was ultimately responsible for them.

Can I move you on to some of the sums of money that were paid in this procurement process? You will know that in the NAO Report we are told of Vg70 ICU ventilator units that, between 18 March and 24 March, cost around £9,000 per unit. About a week later, that cost had jumped to around £50,000 per unit. I appreciate that there is a little difficulty around comparing those figures because of transport, other issues and what those figures actually involve, but it is still a big jump in the space of a week. How can you justify paying such vastly different and inflated sums of money in such a short period?

Dr Lawson: I can see that it looks extreme. We were dealing with daily enormous leaps in price in the market. We know that we were gazumped in several instances because we would not go above certain levels, including in the same week being offered ventilators at upwards of £100,000. Often, where we were offered ventilators, we were told, "Somebody else will buy them". We said, "We have to complete the following checks before we transfer money" and then they were gone. That £50,000 was not the top of the market in that particular week, because everybody was competing for the same ventilators. It goes back to what we were trying to optimise for, which has been covered in previous questions.

Q80 **Shabana Mahmood:** I understand these are extreme circumstances, so you were bound to see these extreme jumps. I was trying to understand that, at this point in the process, we are not experiencing the demand for ventilators that we were expecting. You already know your targets are going to be missed unless something completely miraculous happens, both on procurement and on manufacture. What was the range that you were prepared to go to? £50,000 is still a big increase for targets that you already know are going to be missed and a demand that you already know was not there.

Dr Lawson: We still had the overall target set for the team, which was far in advance, as you pointed out, looking at figure 3, of where we were. The intent was that we still needed to buy mechanical ventilators, even if the current peak was not doubling at the same rate we had experienced in the previous week. We were still seeing huge number of patients being admitted to hospital et cetera. There was no change in the target that we were working to.

By mid-April at least, if not the beginning of April, it turned out that the ventilator challenge was going to be able to produce ventilators. At that point, we stopped entering the market at those high levels. There was an example in the same week of where we placed an order for ventilators at that same price. We got a call from the manufacturer later that day, saying,

"We have been offered more. Do you want to up your offer?" We said no and we did not get them. We were absolutely trying to optimise.

Q81 **Shabana Mahmood:** What was the sum they had been offered that they quoted to you?

Dr Lawson: What was the additional offer?

Shabana Mahmood: Yes.

Dr Lawson: That one went to £65,000 that evening. As I said, we were offered ventilators at upwards of £100,000. There was huge speculation going on in the market. Often, I have to say, those rapid price rises indicated the ventilator did not actually exist at all. They were being offered multiple times and they were fictitious. There was one where a deposit was paid, which Mr Williams will remember, and it turned out it was a fraud and we were able to get the deposit back again. That was the speed at which we were trying to make decisions.

Q82 **Shabana Mahmood:** How many instances of fraud did you uncover?

Dr Lawson: There was only one where we had made a payment, to my memory.

David Williams: We made a payment, which we recovered in full. But we would have to give the details of others. There were a range of financial frauds where there were issues we were dealing with, coming back to your previous question. On the £50,000 being our upper mark appetite in early April, let me add two pieces of context. First, we did not have a full degree of confidence that deals we were already undertaking would necessarily deliver or deliver in time. On this particular deal, a large volume through the intermediary that had best contacts into China gave us a high degree of confidence that we would secure a meaningful supply in a timely fashion at a price that was acceptable, but at the upper range of where we were wanting to go.

Q83 **Shabana Mahmood:** Thank you. That is helpful. You ended up paying a very wide range of prices for different ventilators of different types. How content are you that you have achieved value for money for the taxpayer, given the mix of machines you have now, the clinical need that was present at the time and what you anticipate there will be going forward?

Dr Lawson: It is summarised very well in the Report. Given the information we had at the time, the objectives that were set for the programme and the public health situation were dealing with, the NAO Report says that we made every effort to spend money appropriately, to stop doing so when it was clear that it was not the right thing to do and to get back costs where we could. That is the case for some of the Cabinet Office work.

Q84 **James Wild:** I wanted to talk a bit about the ventilator challenge process, so primarily for Mr Chisholm and Mr Rhys Williams. Would you use the challenge process again? What lessons have you learned from this

instance?

***Alex Chisholm*:** The answer is yes; we would. We were very pleased with the results of the challenge because we were able to produce probably a decade's worth of ordinary production in the space of a bit less than four months. That was a terrific response from British industry and designers. As Gareth Rhys Williams was saying earlier, it was a very collaborative effort between different members of industry, different consortia, large companies and small. It produced the intended result, which was 15,000 more ventilators to add to the 8,000 stock and the 7,000 we were able to procure internationally. We hit the target a few weeks after the intended date, but always with a big comfort ahead of demand.

Q85 **James Wild:** We have sort of covered this ground, but how did you balance the need to get the ventilators with controlling costs through this process?

***Alex Chisholm*:** In a few ways. First, as has been said, the prime motivator was public health. We were not prepared to say no to ventilator production because it was going to be expensive, but we made sure we had a wide field of different designs to choose from. In selecting from those, we looked at not only their clinical performance, as a technical evaluation, but their likely availability in sufficient numbers and the cost of that.

The main method for controlling costs was on an open book type basis, using the MoD's cost assurance and analysis services. They went through what they call the "should cost" type approach and every invoice was very carefully inspected. Overall, the cost control, if you look at it per machine made and the amount spent on that, worked out at about £10,000 ex VAT, which is good and comparable with what we were able to buy from the open market. I emphasise that we would not have been able to buy that number on the open market.

Q86 **James Wild:** Mr Rhys Williams, earlier you talked about a three-pronged strategy of new designs and existing designs in order to get ventilators. When we look at it, you spent £150 million on ventilators that were based on existing designs and I think £113 million on new designs that were never ordered. In hindsight, do you think it would have been better to focus on the former, or would you still go ahead and say it was the right call to try to get the new designs on stream?

Gareth Rhys Williams: It is tempting to think that you should back the one horse that you know is going to win in any race, but that would not have worked. There were a number of designs that we were really excited about and the clinicians were particularly excited about. I mentioned one from the west country. We were within minutes, literally, of pressing the button to assemble 15,000 of those units and it failed its final test, so the time was completely wasted. That would not have been predictable until we had assembled a few to go to test.

Q87 **Chair:** That particular one failed its final test. Was there something that could be done? It had got that far. Was there nothing that could be done to rescue it?

Gareth Rhys Williams: No, because clinical knowledge was changing at the same time. The test it failed was a stiff lung test. It did not have enough power to inflate a mucus-heavy lung. Let us put it like that.

Q88 **Chair:** It was something that could not have been predicted at the beginning. That is what you are saying.

Gareth Rhys Williams: No. That one fell away. For the unit we actually made the most of, the Penlon unit, we had to have a two-day production pause in the middle of that because there were 100 or so quite serious quality issues that needed to be ironed out.

I will give you an example. Halfway through the scale-up of that, there were 8,000 screens that we thought we had bought. Bear in mind this was a design for the chassis that was 15 years old, so we had to restart chip-making lines in the states. We had to restart lines in Mexico to make components for the machines. While it was successful, it could have easily fallen over. The example of the screens is a good one. You need a screen to be able to manage this machine and 8,000 of those turned up completely faulty from China. We had to reorder.

It would have been a mistake to have just thought, "That one will definitely work", hence why we had those other five, which is a fantastic achievement by the designers to get those ready to manufacture. Those were new but had been designed for scale manufacture so would have been much easier to scale up had we needed to, but fortunately we did not. That was a long answer but, in short, I do not think there was a lower cost way of achieving the objective.

Sir Chris Wormald: What Gareth is describing is completely common in medical innovation. It normally requires what is often described as multiple shots on goal to get a single product to market. That is true whether it is medical devices, medicines or vaccines. We have seen it during the course of the pandemic. What Gareth is describing is a much faster and more concentrated version of what is quite usual for the development of new medical products.

Q89 **James Wild:** It is actually £149 million on designs that did not get made, of which you have recovered £36.3 million already, in terms of components and things. Are you expecting to recover any more of that £116 million?

Gareth Rhys Williams: A little bit more, but not on the same scale. That is because we were able to return the components we bought when we did not need the volume. We have pretty much finished that exercise.

Q90 **James Wild:** What happens to the IP that sits within the long list of schemes that were developed? Who owns that IP?

Gareth Rhys Williams: The Government own the IP for the ones that we paid for. There are a couple that chose not to be subsidised by us during the design phase that own their own IP. For the majority of ones that we

could have made but chose not to, we own either all or a substantial chunk of the IP.

Q91 **James Wild:** You used PA Consulting to help manage this programme. What did it do for the £12 million? What was its specialist knowledge of manufacturing and supply chains when you ended up essentially buying four designs that were from companies that already had their own supply chains? What did PA Consulting do?

Gareth Rhys Williams: PA has a well-established base in Cambridge, which is where a lot of the product design companies are based. We selected it because it was able to help us rapidly identify and then work with the design companies at a time when the spec was fresh to everybody. At the peak, I think it had about 81 people working on the case and it still has half a dozen as we wind down the remaining costs.

It did a lot of the supply chain integration work. To put this in context, we bought 30 million PCB—printed circuit board—parts and just over 12 million electromechanical parts. Each of the units we ended up making has about 700 different parts in it. It is obvious that you do not want to end up with 699 parts for a machine that takes 700 and the one remaining part is being grabbed by a different design over here, which also has 699 parts but not enough to be made. PA did a lot of that supply chain work, making sure we did not get conflicted supply chains and identifying drawings that needed to be changed so we kept the supply chains separate, so we would not have a single point of failure.

Q92 **James Wild:** Was any element of their fee conditional on getting to the 30,000 target by the end of June?

Gareth Rhys Williams: No.

Q93 **James Wild:** There is no bonus for them to be paid either.

Gareth Rhys Williams: No.

Q94 **James Wild:** As the proposals developed, Ministers decided to keep five of the proposals on the table for a period after you recommended that they were stopped. Was there a ministerial direction or anything required in order to continue that? What was the cost incurred by continuing those five proposals?

Gareth Rhys Williams: There is no direction required. Ministers took a slightly more pessimistic view than I and my colleagues did about how likely we were, at that time, to be able to ramp up the machines we ramped up. Their viewpoint was entirely reasonable, given the fact that the ramp-up curve was broadly exponential. They had seen it growing very slowly and they wanted to keep more horses in the race until we had started to take off. That is a fine judgment. Excuse me if I do not have this quite right, but I think that probably cost us £1.5 million, so in the scheme of things not a huge sum, although obviously a sum.

Q95 **James Wild:** After the Prime Minister launched the call to arms, you got

5,000 responses from interested people. Did you have a sense of what you were expecting? Was that way more than you were expecting? How did you fillet down that 5,000 in a fair way to all those people?

Gareth Rhys Williams: As Dr Lawson has talked about, a number of those people were offering product. A lot of them were offering componentry for product. In parallel with that, we had some industry group meetings that the Prime Minister and Mr Gove had chaired with the people who were likely to be able to help.

As Mr Chisholm has already talked about, we paired all the designers up with a large manufacturer, usually from the automotive or aerospace industries. We felt that those people would have the manufacturing skills to scale up these designs once we had designs that were successful. A lot of the people who came in through the website and the wider call to arms were able to supply components into that network. It is fair to say that we had already identified most of the large companies that ended up helping us.

Q96 **James Wild:** Who went through those 5,000? Was that PA Consulting or your commercial service?

Gareth Rhys Williams: No, Cabinet Office colleagues and GCS.

Q97 **James Wild:** Given that it is quite a litigious area, how worried were you about legal challenges through the ventilator challenge?

Gareth Rhys Williams: There are regulations for procuring in an emergency. This was clearly an emergency and not foreseeable, so not from that point of view. As the Report calls out, the process we went through is TDA. It was rigorous and thorough. We had a hopper of designs and eliminated people every week, rather like a TV show that you could mention, based on, as Mr Chisholm has talked about, how deliverable their design was likely to be, how manufacturable their product was likely to be and how much of the spec it met. That was pretty rigorous. We have not had any complaints from people who did not proceed to the next stage. In fact, many of them rotated their people around to help the other projects that were still in the challenge. That aspect has been fantastic.

Q98 **Chair:** You talked about the 5,000 bids coming in and you had colleagues in the Cabinet Office going through those companies. What were their qualifications to determine whether someone was capable of producing what they said they would? How did you stop scammers and "pie in the sky" enthusiasts who might have been very enthusiastic but would not have been capable of delivering?

Gareth Rhys Williams: They were generally offering components, but obviously the designs we went with needed particular components. As we built out the supply chain, tier by tier by tier, those companies either were or were not able to manufacture those components.

Q99 **Chair:** As you were talking about, that large number coming through were

not trying to build the ventilator. They were trying to build the components. Whether it was the ventilator or a component, how did the people going through those lists know whether they met the specifications? With all respect, you highlighted right at the beginning, Mr Rhys Williams, that your background in engineering was helpful in coming up with the idea of this. I would hazard that it is unusual in the civil service that you would have that level of knowledge.

Gareth Rhys Williams: By the time we had the 5,000 or so offers of help, we did not have a design that we were looking to build. As we looked to build the design, we were able to look through the list of people who had surfaced and say, "There is someone who can offer us a pneumatic element," or, "Here is someone who can offer us a different element", the casing, the screen or whatever. That is part of the work that PA did, looking through them.

Chair: That was PA.

Gareth Rhys Williams: They were matching those with the manufacturers to ask, "Do we have a source? Can we identify a source?", either from people the manufacturer had worked with before or from people who had come up through the call to arms.

Q100 **Chair:** Everyone that you identified as able to produce a component was able to produce that component. There were no any scammers in that list.

Gareth Rhys Williams: I do not know the answer to that. I do not know how many of the people who presented themselves we ended up placing orders with, I am afraid.

Q101 **Chair:** It would be very helpful to know

Gareth Rhys Williams: It was not a scamming point. That is a different point from what you would get with PPE or with finished products, because these are people offering to manufacture individual components.

Q102 **Chair:** It is perhaps beyond their reach.

Gareth Rhys Williams: Possibly, because the thing that tripped up a couple of designers was the very high precision with which we needed to make a lot of the components that control the air volume that goes into a patient. That is what makes this quite different and that is where the ventilator challenge was successful in getting companies from the aerospace and automotive industry, who are used to making parts of that precision and at that volume. Bear in mind that, depending on who ended up with the majority of the business, their normal volume is 50 a week and we were doing 400 a day.

Q103 **James Wild:** I wanted to come on to Penlon actually. As you say, it was producing 40 to 50. Is it fair to say it was the Cabinet Office that effectively put it in touch with VentilatorChallengeUK, which had the capacity to make the volume that was needed?

Gareth Rhys Williams: We had a group of manufacturers and we had a group of designers, which needed matching up. That was a process of working out whom we hooked up with whom.

Q104 **James Wild:** You hooked them up with VentilatorChallengeUK.

Gareth Rhys Williams: The ventilator challenge was the whole programme and then VentilatorChallengeUK was the consortium of businesses.

James Wild: McLaren and others.

Gareth Rhys Williams: Yes, they ended up working on Penlon and Smiths product building. We paired BMW with a design we did not actually take forward, and others with others.

Q105 **James Wild:** You indemnified Penlon from legal risk as well.

Gareth Rhys Williams: There were a number of different sorts of indemnity that we notified the Chair about. One was about potential IP infringement, which in the event did not arise, either because we were using designs based on or going through the original design, or because we had designed the things from scratch. We also indemnified manufacturers in the chain if they were making components that they had not normally made because they were outside that industry.

Q106 **James Wild:** You gave them indemnity on intellectual property, product indemnity and competition and procurement law, and hooked them up with the manufacturer. How did you then justify a 15% mark-up on the direct cost?

Gareth Rhys Williams: That is a contribution to overhead. The large manufacturers in here are Airbus, Ford and McLaren. A 15% contribution to overhead will not have left them with much.

Q107 **James Wild:** At paragraph 4.16 on page 40, you asked the MoD, as a former special adviser in the MoD, and even the MoD said that this was quite toppy. You are comfortable that it was a reasonable figure when there was pretty much zero risk, because you were buying these, you had indemnified them and you had put them together with the people who could upscale their manufacturing.

Gareth Rhys Williams: Yes, 15% on a fully-loaded cost would have been a lot. Also we were asking people to work at enormous pace, so I think that is fine. If you look at other manufacturers in the medical device industry, that is a sensible profit margin on full cost.

Q108 **Chair:** You said you benchmarked it. Did you do that formally?

Gareth Rhys Williams: We had to agree that up front. This was not going to work by working out, "Give us a price for this ventilator", because the ventilator at that time had not been designed, let alone manufactured, for people to give us a full cost. We had to work on a cost-plus basis. That is why we used the MoD cost team to interrogate the costs that were

historically incurred doing work like this and incurred at the time doing work like this. We then had to add something to cover overhead and the profit element.

Q109 **Olivia Blake:** To follow up, I have two questions. Were interests registered of the members of that initial Cabinet Office committee that sifted through the 5,000 and then the subsequent TDA, to manage conflicts of interest, to be clear?

Gareth Rhys Williams: Yes, I understand. That sifting of those 5,000 was done by civil servants. We then passed the ones that looked likely to the manufacturers. Ministers were not involved in those discussions at all.

***Alex Chisholm*:** A conflict of interest was revealed by PA Consulting, which we had a particular method for handling.

Gareth Rhys Williams: PA also came up with the design. At the first stage, we were looking for anyone from the industry who had designs and PA had a team that came up with one, which was eliminated almost immediately by PA.

Q110 **Olivia Blake:** Moving on, expanding on some of the questions asked earlier, can you explain why Excalibur Healthcare found it so difficult to transport the ventilators out of China?

Dr Lawson: Would you elaborate just a little bit on the question, so I can make sure I am answering the right question?

Q111 **Olivia Blake:** For some of the excess costs around the Excalibur Healthcare units, the reason given was that they were finding it very difficult to transport these out of China. I was just wondering if you had any more detail about exactly what they found difficult about that.

Dr Lawson: Excalibur would not argue that the whole difference that we were talking about earlier was based on transport costs. It was just one of several things that were driving costs up, the main one being the availability of machines that were already made, as opposed to machines that could be delivered in June or July, for which there were lots of offers and at much lower prices.

To speak specifically to the question on transport, by the first or second week of April, it was extremely difficult to get goods out of China. We were also transporting PPE, so we were very aware of the volumes involved. Warehouses became full at Pudong airport, for example. There is a very clear process of how to export from China, which involves registering at the airport, then safety checks on equipment, checks to make sure that the manifest is correct, et cetera. They were experiencing the same challenges we were experiencing in other places.

Q112 **Olivia Blake:** Moving on to the here and now, how many of the ventilators that have been purchased have been used by patients?

Dr Lawson: I do not have that information. Some 2,000 of the ventilators have been distributed to trusts and for use, but we do not track exactly which ventilator is being used for which patient.

Q113 **Chair:** They were there ready to be operationally used in a ward.

Dr Lawson: They are ready to be operational. There was an allocation process immediately they came into the country, which is outlined in the paper. There was a daily review of patient numbers, doubling times, capacity of hospitals, et cetera. Ventilators were allocated as needed. Over the summer, there has been a review of where everything is now and what the local surge plan is at the trusts, then the system, ICS and regional level. Ventilators have been allocated specifically to trusts but also to systems, to make sure they can deploy to meet their surge plans.

Q114 **Olivia Blake:** You have taken my next question. I was going to ask about how you were currently responding to the regional outbreaks that we are seeing. Do you mind me asking how many of these currently remain in either central warehouses or warehouses where they would have to travel quite far to be deployed?

Dr Lawson: There are about 20,000 ventilators being held centrally. It is really important that ventilators are held in specific conditions and on the right kind of shelving so that they are not going to deteriorate. We know that they are safe. They need to be packaged carefully for distribution. They are being held centrally, but some have already been distributed so that regions can meet their existing surge plans. More are available to be dispatched if they are needed, on either a case-by-case or a system-by-system basis.

Q115 **Olivia Blake:** This question is for Mr Williams. To what extent will the NHS be able to use these mechanical ventilators outside of the crisis?

Gareth Rhys Williams: They were initially given emergency use rights by the MHRA. With an update that is presently going through, that will widen the scope that they can be used for.

***Alex Chisholm*:** They all have CE accreditation now, which means that they can be used.

Q116 **Olivia Blake:** Thank you for confirming that. Storage has just been mentioned. How long will these new ventilators last before they become obsolete? What is the shelf life of their individual components and how are you keeping a record of this?

Dr Lawson: Ventilators have a long shelf life. They are high-cost, multi-use items that are used for long periods of time. I cannot give you a precise number of years, but it is in the multi years, not on a months or individual years basis. These will be available for a considerable time, so long as they are stored and managed appropriately.

Q117 **Olivia Blake:** Has there been any breakdown of ventilators that were at the end of their useful life before this crisis happened, and that were in use

before this crisis happened, if you do not mind me asking that?

Dr Lawson: Are you asking whether any ventilators broke down early on or in normal NHS usage?

Q118 **Olivia Blake:** Yes, I recognise that you did not have sight on what numbers were in trusts. I want to understand if you have sight of the age of those numbers that were present before both these programmes.

Dr Lawson: No, we do not know exactly when trusts purchased each of the ventilators that they have reported to us. The medical engineers and clinicians in each trust would be doing regular safety checks on their equipment to make sure it was still safe for use. That would be a local safety issue that we managed at the equipment owner level.

Q119 **Olivia Blake:** Do you think that you will end up scrapping any of the ventilators that have been purchased?

Dr Lawson: It is too early for us to think about scrapping them. There would be lots of other opportunities to use them before that would need to happen. At the moment, the focus is on making sure we have the right ventilators in the right place at the right time to meet the current needs of the health system.

Q120 **Olivia Blake:** Will you be able to sell or gift any of the ventilators overseas if they are not used?

Dr Lawson: It is something we would consider based on what happens over the next six to 12 months in the course of this pandemic. It would be for the Department to comment on when and how it wants to look at that.

David Williams: We are currently looking into at least one request for gifting. That will be notified to the Department in the usual way if we proceed with that.

Q121 **Olivia Blake:** Is the worst case scenario still 72,000 ventilators being needed if things got out of control?

Sir Chris Wormald: Our decision making since the first phase has fundamentally changed because we have largely moved away from mathematical models and towards real-time data. The current decision making is largely driven by the day-by-day numbers we have and the knowledge we now have of how infection rates turn into hospitalisation rates and then, sadly, into people requiring ICU and other interventions. My colleagues Professor Van-Tam and Professor Steve Powis were setting out the current state of our knowledge earlier today. The presentation they gave is our best estimate of the current situation. As I say, we are much less reliant on mathematical models now and it is much more driven by the situation of the day.

How many ventilators we end up needing, as with all treatments, will depend upon the non-pharmaceutical interventions we put in and then the level of compliance with them. It is very difficult to estimate a number. As

I say, I would refer you to what Professor Van-Tam and Professor Powis were saying earlier today.

Q122 **Olivia Blake:** Do you feel confident that you have the staff and resources to run all the ventilators that have been purchased, if they need to be?

Dr Lawson: A huge amount of work was put into workforce capacity throughout the pandemic, not just in relation to staffing the ventilators. That included training, redeployment and the returners. The over 800 medics and over 500 nurses who returned to work in the NHS are still available to support critical care, for example. About 5,000 staff were redeployed from elective care into critical care.

The training programme has now been extended. Immediate, on-the-spot training was available for staff in the early part of the pandemic. Clinicians across the UK are now working with the European Society of Intensive Care Medicine to offer full training, which is partly online and partly in-person, to manage staff support for the second wave. Many staff had an incredibly difficult time doing these roles during the first wave, so one of the critical aspects of capacity for the winter is mental health support to staff, to make sure they can draw down and feel as resilient as they would like to be. That has been offered throughout and has had a huge amount of investment and helpful publicity over the last couple of weeks, since it won an award.

Q123 **Olivia Blake:** Could I move on then and ask how fair you thought the clinicians' concerns were about the ventilators that were not fit for purpose, the Shangrila 510s?

Dr Lawson: The specific issue with this particular deployment, as you mentioned, is outlined in the Report. These were ventilators that arrived right at the peak.

Chair: To be clear, because Ms Blake said it perhaps quite quickly for someone who might be following, this is the Shangrila ventilators we are talking about.

Dr Lawson: Yes, it was one particular arrival. These were transport ventilators. The doubling time in the midlands was causing concern at the time. To get ahead of that and make sure there was sufficient capacity, those were sent out without having the same checks that were usually happening for ventilators when they arrived in the country. They were sent straight to the hospital concerned, where the clinicians and the medical engineers on site inspected them and decided they were not confident to use them.

They raised concerns around, in this case particularly, the peripherals that had been supplied with the ventilators, which did not match UK tube sizes, for example. That was discussed with the national clinical director, they were withdrawn and the rest of the order was cancelled.

Q124 **Olivia Blake:** Do you feel, given that the Department of Health and Social Care processes did not have that clinical sign-off at that stage, that you

were incredibly lucky that it was only this one model that was not fit for purpose?

Dr Lawson: That is not right. The specifications were developed with clinicians and they were checked against certificates. CE marks and MHRA standards for ventilators were all used before any device was signed off. In this case, first of all, it was a transport ventilator, which clinicians only want to use in particular situations. It does not have some of the modulating modalities that are available in the more sophisticated devices. Specifically, the concern here was not the functioning of the ventilator; it was the peripherals that came with it.

It was a case of buying things at speed. The UK has different standards from China on how the pipes attach to the wall, for example. It was definitely a lesson learned. The response was pretty speedy and the national clinical director was involved in inspecting that, to make sure she was confident that the clinicians had done the right thing. As I said, we adjusted the order accordingly.

Q125 **Olivia Blake:** Moving on to the ventilator challenge, would this have been possible if it were not for the current situation we are in? Could this kind of programme have happened if we were not in a pandemic and if manufacturers were operating in the way they usually operate? With something that has a well-established technology behind it, do you feel that it would have been deliverable?

***Alex Chisholm*:** Thinking about it as procurement, the way it happened was—

Chair: It was extraordinary.

***Alex Chisholm*:** Yes, absolutely. Also from a legal perspective, we had to use this regulation 32 of the public contract regulations. That requires an urgent situation, an exceptional situation, to be recognised. That is also true for the MHRA, as the competent authority, to make an exceptional use authorisation. Both the medical and the procurement aspects reflected the particular urgent need of the situation.

Behind your question, there was this tremendously positive national response from thousands of different players, right across the whole industry, with people asking, "What can I do to help?" and then acting together in the making of that in the very collaborative way that you heard from Gareth Rhys Williams. All of those are really quite exceptional circumstances, yes.

Q126 **Olivia Blake:** How well do you think lessons can be learned from this programme? Can they be directly moved across to other programmes or is this such an extraordinary event that it is really quite limited in what lessons can be learned from it?

***Alex Chisholm*:** It is not a situation you would want to be in very many times, where you are rushing to stay ahead of demand, and trying to

procure and manufacture at incredible speed. As I said, it was 10 years' worth in four months. The team responsible was working at a tremendous intensity, working 12-hour days, seven days a week for 14 weeks. Again, those are not normal types of working, but it is great to see what we can achieve when we have to and when we are very focused on achieving a vital objective.

As you imply in your question, it speaks to the manufacturing prowess that we can call on and some very innovative approaches. The approach to combining larger manufacturers with scale-up capabilities and smaller ones with special design knowledge worked very well. Perhaps that is a model we could replicate in some other sectors.

Gareth Rhys Williams: It is a great question. In this context, the Cabinet Office and the team there were really working as a subcontractor to Dr Lawson. That has set a really constructive tone that rolled forward to PPE. We talked about the TDA mechanism of down-selecting, down-selecting and down-selecting. You can see a little bit of that in what we are doing on vaccines. A similar issue was touched on earlier about how we scale up the manufacture of testing. There are lessons that have been rolled over into other areas.

The learning that I would really hope we capture from this is the importance of having cross-functional teams working on these complex projects from the get-go. That is what has really proved successful, in the end. If we manage to underline that, that will be a useful lesson. Hopefully we will not have to use it in exactly the same circumstances again.

Sir Chris Wormald: This model of the public sector setting a public challenge in areas where the market is not traditionally delivering, although you would not do it in this way, is an approach that could be used with anti-microbial resistance. That will probably be the most obvious example where the market by itself is not delivering what the public sector or society wants. You can see how that sort of challenge approach is a really interesting one, not done in the crisis way that we did this one, but as a way of dealing with the markets.

I cannot remember what I have said to which committee, but I have certainly said this on one committee. The question we will want to look at nationally, on the other side of the pandemic, will be where we are reliant on overseas supplies and what we make domestically. Is that the right balance? That is the other obvious lesson that comes out of this, which I am sure will be picked up post-pandemic.

Q127 **Olivia Blake:** That was also going to be one of my follow-ups, about whether we had more resilience now. Would the ventilator challengers that were successful be able to take future orders or are they returning to their other manufacturing? Sir Chris, given that you have said we are dealing with the numbers here and now, how are we predicting whether we are going to need an extra 5,000, for example, given the lag for production of these ventilators?

Sir Chris Wormald: We are not expecting to need more ventilators than we currently have. Emily will correct me if I am wrong and she is shaking her head, so that is correct. We are not looking to go out into the market again. Are we going to go on? Gareth is probably best placed.

Gareth Rhys Williams: We could start up again. The reality is that the normal manufacturers of these products have also grown their capacity. The second time round, if it occurs, we now have 30,000 units whereas previously we had 7,000 units. That will be a much easier hill to climb.

Q128 **James Wild:** Given the success in delivering the target that we wanted in terms of ventilators, were any of the industry participants or any of the civil servants part of the honours announced at the weekend? Did they get recognition for what has been a significant success?

Sir Chris Wormald: I do not know.

Chair: There are a number of knights in the room.

James Wild: I was not thinking of you particularly in this case.

David Williams: The additional Covid honours are particularly for front-line workers in NHS and care settings, rather than all the other contributions to the coronavirus response, which will no doubt be a relevant factor in future rounds.

Gareth Rhys Williams: There was a particularly fine article in *Professional Engineering* last month, which I will happily send you.

James Wild: I would be delighted to read it.

Q129 **Sir Geoffrey Clifton-Brown:** I am going to end on a slightly more edgy question to Mr Chisholm, given that emergency and contingency planning is within your role at the Cabinet Office. Given that the NHS declared a level 4 incident, the most serious incident, on 31 January, it seems with both PPE and with ventilators it really took until the advice went out on 17 March to start getting geared up with both of those things. I could be being unfair on that, in which case you or Sir Chris will rebut that, but the purpose of the question is this: will you be looking at emergency planning in your Department, because we will get another pandemic or something else, so we can sharpen up our readiness or our preparedness for the next emergency?

***Alex Chisholm*:** Yes, the short answer is that I am sure we will draw lots of lessons from the whole experience of the pandemic about how we deal with emergencies of this kind. Although there had been a lot of preparation and it was correctly identified as a risk, the way in which it manifested itself was different from what had been expected. When we look back, I am sure we will draw some important lessons from that.

In terms of speed of response, what was said earlier, which squares with my experience, is that the identification of what was happening in Lombardy was the thing that put the need for ventilators into sharp focus.

The time when that COBRA meeting occurred to the first meeting of the technical design authority was actually three days. The specification was out there and issued in three days. The people involved moved with commendable speed.

Q130 **Chair:** Has there been any consideration of whether we need new legislation that would allow or enable Government to support businesses to quickly shift their production to the sort of equipment that could be needed in a pandemic or any other emergency situation? That is one of the gaps we have at the moment.

***Alex Chisholm*:** On the procurement side, we will have more scope to vary our procurement regulations.

Q131 **Chair:** It will be about regulations. It will be about procurement regulations that you would want.

***Alex Chisholm*:** That is one of the things you would look at. Actually, there was not anything we wanted to do in relation to ventilators that we could not do using the existing rules. They had enough flexibility in them. There may be scope to use procurement in future to attach more weight to the questions of resilience that my colleagues were referring to earlier, which perhaps is one of the important lessons to draw from this.

Q132 **Chair:** There could be quite a lot of nugatory spending there, but it is something to at least consider.

Sir Chris Wormald: The challenges have been more about where the nation has industries that you can convert to these sorts of things, if you take the example of gloves.

Chair: Yes, who would have thought it?

Sir Chris Wormald: They are very specialist gloves; they are not your average glove. It was not a legislative question. It was a question of what your underpinning industrial base is. As Alex says, the questions that it raises for us when we are not in a crisis, and what decisions we want to take about those issues, will be one of the big things going forward.

Q133 **Chair:** In defence, we are always asking about what resilience there is for the nation and nation's sovereign capability. Is it time for sovereign capability in this area as well?

Sir Chris Wormald: The great challenge is that every pandemic is different. The question of what resilience you would build up and where is going to be a pertinent one. As we look around the world, the lessons have been less, "What is your crisis planning?" but, "How resilient are you as a country?" You look at the areas where the UK has done very well in this pandemic around R&D, medical treatments and various other areas. They are the areas in which the UK was already strong.

As you look at the response to the pandemic, you can see that across the world where countries have excelled at the things that they were already

good at. That we are one of the greatest countries in the world for science has come out very clearly. In some of the areas we have been talking about today, we do not have the manufacturing base that would have made Emily and Gareth's lives considerably easier over the last six months.

Q134 **Chair:** Mr Chisholm, we have a national risk register. You have oversight of that. It is early days, but have you identified any other potential gaps for other risks on that register that you need to be thinking along those lines on?

***Alex Chisholm*:** It is being reviewed as we speak.

Chair: We tried this last Thursday. I am just trying again.

***Alex Chisholm*:** The new national risk register will be produced, so we can discuss it when it is available.

Q135 **Chair:** Do you have any idea of timescale, again? We cannot draw you. Well, it is a very serious point and there are potentially lessons to be learned. As Ms Blake highlighted, it is very specific, a ventilator, and there are only a narrow group of companies that could do it. My final question is on intellectual property, which one of my colleagues raised earlier. Are you actually capturing that? How are we going to keep an eye on that? You have put money into things that are not necessarily going to be delivered, but you have IP. How are you going to make sure that the taxpayer gets back on that IP?

Gareth Rhys Williams: The deal we have done with the manufacturers whose design work we paid for is that we will get a royalty if they take a unit involving that IP to market. It will be relatively easy to detect if they are making sales of those product.

Q136 **Chair:** How does that work practically? Who tracks that? Who knows whether they have sold something in the market? What is the mechanism in Government?

Gareth Rhys Williams: We will be able to see from their brochures.

Q137 **Chair:** You will see from their brochures, which begs the question, who is looking, leafing through their brochures and seeing what their sales are? You are hoping they will be honest, I am sure, and will come and tell you, but what if that is not the case for some reason?

Gareth Rhys Williams: I would hope they would be honest. We do need to check on that. Only one of the manufacturers looks like it is going to take its product further to market.

Q138 **Chair:** That is at the moment. In 10 or 20 years' time, when some of us will not be around this table asking these questions, how is the institutional memory going to be kept? I can tell from their eyes in the room that most of them think they will not be here in 20 years' time. Who will be watching that and making sure that everyone remembers that intellectual property belongs to the British taxpayer, not to the private company?

Gareth Rhys Williams: That is an ongoing governance problem with anything. We have contracted with them on that basis. I suspect we would do periodic checks, but in a 20-year timeframe those may have decayed away a bit. You are probably right.

Q139 **Sir Geoffrey Clifton-Brown:** Mr Chisholm, as well as royalties, every single Government contract that is let ought to consider the IP problem. The taxpayer generally across Government procurement is giving an awful lot of technology away without seeking to get something back for it. The way to do it is through intellectual property and licensing really. Could that be seriously considered? Can we have it on the record?

***Alex Chisholm*:** Yes, I hear your proposal and we will consider it.

Chair: The Committee is determined to get to the bottom of this one eventually.

Sir Geoffrey Clifton-Brown: I will keep raising it. I give you warning that I will keep raising it.

Chair: Thank you all very much indeed for your time. The transcript will be up on the website in the next couple of days and our report by Christmas, we hope, subject to events. Thank you very much for being here in person. Pass on the Committee's thanks to the teams you work with, in the Cabinet Office, but particularly in the Department for Health and NHS England, for the work they have done and I fear they are going to have to do all over again. We appreciate the time and effort that civil servants and those on the front line are putting in to support us all and keep our NHS safe. Thank you very much indeed.