Joint Committee on the National Security Strategy

Oral evidence: Biosecurity and National Security

Monday 7 September 2020

4 pm

Watch the meeting

Members present: Margaret Beckett (The Chair); Lord Brennan; Lord Campbell of Pittenweem; Sarah Champion; Richard Graham; Lord Harris of Haringey; Baroness Healy of Primrose Hill; Baroness Henig; Baroness Hodgson of Abinger; Darren Jones; Alicia Kearns; Lord King of Bridgwater; Baroness Lane-Fox of Soho; Angus Brendan Mac Neil MP; Baroness Neville-Jones; Lord Powell of Bayswater.

Evidence Session No. 1 Virtual Proceeding Questions 1 - 16

Witnesses

I: Dr Jennifer Cole, Research Fellow, Department of Geography, Royal Holloway, University of London; Dr Patricia Lewis, Director, International Security Programme, Chatham House.

Examination of witnesses

Dr Jennifer Cole and Dr Patricia Lewis.

Q1 **The Chair:** Welcome to this meeting of the Select Committee. I particularly welcome our witnesses. We are very grateful to both of you for coming. As I am sure you recognise, the job of this Committee is to scrutinise the workings of the National Security Council and all that goes with that, and to look in particular at things like the working of the process of the national security risk assessment, in which a pandemic was a tier one risk, something that may not be terribly likely to happen, but if it did happen would have significant impact. We were already looking at biosecurity issues and risks. We are particularly looking at the way that process is seen to have worked in the handling of the Covid-19 pandemic, which we regard as something of a test case for how what is intended to be the process of handling risks on the risk assessment when they occur has actually worked out in practice. We will try to look at that in some detail this afternoon. First, I would like to ask each of you what

you see as the headline lessons from this pandemic for our preparedness and resilience against a biosecurity threat.

Dr Patricia Lewis: I am delighted to be here. The headline is that all Governments will look back at this pandemic and wonder what they could have done better, however well they did. The other headline, of course, is that it is certainly not over yet, so there is still an awful lot to learn. It is quite clear that some Governments were better prepared for the first few months of Covid-19 than others. Some had been able to learn from previous situations, pandemics and crises, and some were able to learn from being a few months behind the infection getting into their countries. There has been a learning process throughout.

The main concern that I have had in my written evidence is that preparedness is one of those things that is always good to have in your agenda, but it is also one of those things that falls prey to the concerns of today. It is very hard to know what will be cost-effective in any crisis. It is very hard to be able to spend a lot of money on things when there are so many things that need to be spent on today. The main thrust of what I have understood from this pandemic is that we need a legislative framework, with parliamentary scrutiny, to ensure that we are better prepared for whatever might come our way—future pandemics, but also other future crises.

Dr Jennifer Cole: I agree that it is very easy to look back in hindsight and say, "What could we have done differently?", as we are trying various options as we go along. Having worked at RUSI very much on the preparedness and response side, I thought about whether most of our plans were focused more on taking the hit than they were on potentially what we could do to prevent the number of cases spreading. There were very concrete responses on that, such as building the Nightingale hospitals. It is about whether, because we were focused on those kinds of issues, we took our eyes off the ball on things like new track and trace technology that might be coming on to the market.

It is very noticeable that some of the countries that have dealt with it best are the ones that had a scare with SARS-1 and with Ebola. I have been very impressed with Senegal's response, and Senegal also did very well in closing down an Ebola outbreak very quickly. Those countries relied very heavily on track and trace technology.

I would go back to some of my concerns about the securitisation of some of these global health issues and the impact of looking at them through a security lens rather than a wider resilience lens. That also has implications for whether we look too much at fighting an enemy rather than strengthening our own protection. We have seen a lot of gaps in the UK's responses where the healthcare sector has been cut back and cut back and cut back; corners have been cut to the point where there is almost no ability to function competently anymore. The care home deaths would be very much in the NHS-supported care homes. If we looked at the number of deaths in NHS care home compared to private care homes,

which were much better funded, prepared and able to adjust, we would probably see a very large disparity in those numbers.

The two things that really come across to me are, first, whether we focused too much on taking the hit because we tend to look at things through a bit more of a security and response mechanism, and, secondly, how much this has highlighted inequalities within society. If we were a larger state and less focused on profit-making and more on equitable distribution within society, we would have been more aware of where those gaps were and we would have plugged them before a pandemic needed to expose them.

Q2 **The Chair:** That is interesting. Both of you will know—I apologise to the two of you for the impact of this—that we had expected, and indeed it had been cleared and agreed, that we would have a senior witness from Public Health England with us today as well as both of you. We were told only today that it had been decided that this was not appropriate. If I may put a personal note, I have found in the past as a Minister that that is a word that civil servants use when they either cannot or will not give a proper reason; "appropriate" is the cover-all. I will happily hear from Public Health England if I have misrepresented the fact that they stopped that evidence from being given. In the circumstances, I will nevertheless, as I would have done, ask both of you what you make of the Government's decision to replace Public Health England with a new body called the National Institute for Health Protection.

Dr Jennifer Cole: "Health protection" again sounds very securitised. It sounds like something that, if you hit it with a stick, it will go away, rather than something that, if you negotiate with, it will not. I would question whether this is the time to be doing a major restructuring of any organisation, rather than perhaps querying what the issues were in the first place.

From my experience over 10 years—this is related really to my experience at RUSI rather than in academia more broadly—in organisations such as Public Health England, DSTL and many government departments, we have seen a scaling back of expertise of the actual researchers within those organisations. Generally, the research has been scaled back and subcontracted out to consultancy firms, universities and think tanks. The people who remain within those organisations become more and more like project managers. Over my time at RUSI, I saw a loss of genuine understanding and expertise within some of those organisations; I will say that was the case at DSTL more than Public Health England. Public Health England retained more of its experts than DSTL did.

It definitely left a vacuum where sometimes I felt, as a subject matter expert at RUSI, that I was talking to project managers who were concerned about whether something was delivered to budget and on time but who actually did not really understand what they were asking for. That is where I would go back to things like being able to scan the horizon for what new research is coming out and how it relates to what

you are working on. Do you really understand the landscape not only of what is happening now but of what may happen on the horizon?

When you have project managers, are they infectious disease experts in the way infectious disease experts would be travelling to international conferences, working on projects, and mixing and socialising with other infectious disease experts? That certainly is something that I saw a marked difference in over my 10 years at RUSI. In a way, RUSI benefitted from that. We picked up some projects that, at the time I started, would have been done within DSTL. By the time I left, we were regularly getting those projects subcontracted out to us. That impacts the ability of those government agencies to do the jobs they are meant to do.

I do not know particularly what the restructuring of Public Health England will consist of. One thing that I would argue it ought to consist of is much more in-house expertise and in-house research that is done for no other reason than that it gives a legacy. People who have worked within an organisation for 10 years on the same type of projects, over and over again, really understand that in a way a project manager who supervises projects done by other people never will.

Dr Patricia Lewis: I agree very much on the issue of expertise. There is obviously a wider problem than PHE. I agree that to look at demolishing an institution and recreating another one in the middle of a pandemic is probably not great timing. Having said that, what really matters is the knowledge, expertise and abilities within whatever organisation is charged with that particular remit.

I would like to see the new organisation focus more on the issue of resilience and how to be more prepared for whatever comes our way, particularly as you look down into the commonalities of the supply chain and the way in which things get done and decisions get made. I know that the Committee has looked at this in the past for other security issues. We need to focus on how we manage the way in which we do things better going forward, whatever the titles of the organisations are.

The Chair: That is interesting. I notice that the Health Secretary said that not only will the new institute strengthen the ongoing response—in other words, the day-to-day—but it will improve resilience, as you suggested was necessary, and would in future provide what he called a permanent standing capacity to respond. That implies that Public Health England has failed to provide that capacity to respond. I am not even sure whether that was intended to be its role. Does it seem to you that Public Health England failed to provide that capacity?

Dr Patricia Lewis: I am not an expert on Public Health England. It was clear to me that there was an overall failure to respond to this particular pandemic with the agility that we would have expected to see, knowing everything that had gone on before—things like the large-scale exercises and the research that has been done all round the world on preparedness for pandemics. Outside the system and inside the academic institutions

and think tanks, we imagined that this was all going to work well, and it did not work that well. Something has gone wrong.

There were things that went right. When we look back and unpack, and we are beginning to do that, there are some things that went better than others. We all believed issues such as supply chains and stocks of essential supplies to be in much better shape than they were. Somewhere, the integration of this expertise and knowledge and the real understanding of the state of affairs was not fully understood. Maybe, if the Committee's inquiry had been able to take place a bit earlier and been able to take evidence, some of that might have come up a little bit ahead of the time. It was just unfortunate that these things were not revealed in time for the pandemic to actually hit.

The Chair: We will perhaps go into a bit more of the detail of that as we go on. Dr Cole, what is your view about whether PHE provided that capacity to respond on this occasion?

Dr Jennifer Cole: I certainly agree with a lot of what Patricia said. The disjointedness of it is definitely a lesson. Public Health England has an operational capacity as well as a research capacity—for instance, different from their equivalents in Sweden and Norway—which I have worked with on projects in the past. It can respond very well, certainly to other incidents that we have had. The scale of it was one of the difficulties here, and that again is because of the scaling down. There used to be more Public Health England centres around the country than there are now. There used to be more hospital laboratory capacity around the country than there is now. Hospitals used to hold their own supplies much more than they do now. They were not so reliant on just-in-time supply chains.

I do not think that any of the things that have gone wrong will have been a surprise to anyone. Those warnings have been there. People have been shouting, certainly for the last five years if not the last 10. It has always been, "We're in a time of austerity. The money's not there. The opportunities are not there". We knew this would happen. I do not think that anything will have caught anybody totally by surprise.

In terms of the equipment available to essential workers, again I go back to the fact that a lot of the care home workers who did not have those essential PPE supplies in particular were in the private sector. They may be NHS-contracted staff, but they were in the private sector. Whose responsibility was it not only to check whether they knew what the plans were but to make sure they had plans in place to review those plans?

Also, how does that information get disseminated down? I remember very strongly, during the swine flu pandemic, having a conversation with a friend of mine who was a GP. He was basically asking me what he should do and when he might go back to work. I said, "Why on earth are you asking me? You're a GP. Have you not read the NHS's pandemic flu plan?" He said, "What's the pandemic flu plan?" I said, "Pandemic flu is number one on the UK's national risk register". He said, "What is the

national risk register?" When I described it, he said, "Why on earth would I ever have read it? I'm a GP".

That really struck me: that there seemed to be no mechanism within the NHS, Public Health England or government to actually check if the people on the front line were aware of this, knew that they should make a plan and knew what the plan was. Similarly, where the plan had been made, it might have sat on a shelf and not been touched for five years, in which time the business continuity manager and the resilience manager might have changed. There was no real continuity within this. It is a ticking-boxes approach. There has been a very ticking-boxes approach.

Around the time of the Civil Contingencies Act, there was a huge flurry of activity, plans, writing and preparedness. Those of us who have been around since then assumed that has been carried on, and actually it has not. In some places, we are three or four generations of staff away from the person who was ever involved in that in the first place. That knowledge is gone, and people just were not aware of it.

If we are going to talk about resilience, we absolutely have to embed that properly at every level, from every GP's office right through to the head of the NHS and the Chief Medical Officer. It is not enough to assume that the Chief Medical Officer and the Civil Contingencies Secretariat know about this. It does not get disseminated down, and if it does it gets disseminated down once and then forgotten until we actually get hit by the emergency. That is embedded through exercising.

The Chair: I was thinking just the same thing.

Dr Jennifer Cole: We have seen exercises that have been promised not happening. We have seen exercises that are meant to be live exercises over three or four days ending up being half-a-day table-top exercises that half the people do not turn up to. We all then pat ourselves on the back about the fact that it happened, when actually we all know it did not. That has to be revisited and some very honest questions asked about that.

Q3 **Lord Campbell of Pittenweem:** Dr Cole, it seems to me that the problem for Public Health England was that there was no clear direction as to what it should be doing, there was no clear illustration of the policies it was following, and I thought I heard you just say that there was a problem about resources. All of these could have been cured, could they not, if there had been a proper understanding of what the consequences of a pandemic might turn out to be?

Dr Jennifer Cole: I disagree that there was no strong understanding of the consequences of a pandemic. The pandemic plans were for influenza, but the mechanisms do not change much. The plans were for a 1% to 2% case fatality rate, which is actually pretty much where we have fallen. As I said, to me, the biggest issue is that, because we made plans for a 1% to 2% fatality rate, we kind of accepted that that was what we would be dealing with. In that early period, from January to March, rather than

looking at percentage case fatality rate we could have looked at the number of cases we had. We were not looking at reducing that number of cases, we were looking at treating the people who caught it, and I am not sure that is Public Health England's remit.

This is where it comes out of the health sector. Did we know where local cases were happening? When the first cases happened in Brighton, we could have locked down Brighton. Were we really thinking that that was an option? My research had always been on the response side. I am not sure whether this is my bias and there was more prevention work that I am less aware of. In retrospect, I see massive gaps in prevention planning. I see all the planning being on the response side and all the exercises being about the response: how we would deal with bodies, how we would build hospitals, how we would quarantine people and how we would enforce those quarantines, and not how we would identify how many cases there were in the country.

It seems that one of the biggest things we had to cope with was the fact that there were more than 3,000 separate introductions of the virus into the UK from returning holidaymakers and businesspeople. We ended up dealing with 3,000 separate outbreaks. If we had been able to spot very quickly where those were, we might have been able to close every one of those down very quickly, but we did not.

Lord Campbell of Pittenweem: I wonder if we might share a conclusion briefly: namely, that if there is going to be a new national institute, it will fulfil its responsibilities only if it does all the things that Public Health England was not doing and that someone is alert enough to ensure that the policies followed are in response to the inadequacies you have just described.

Dr Jennifer Cole: We are perhaps looking at the strategic level down, whereas the failing was actually at the ground level up. How many GPs spotted an unusual influenza-like illness and were able to report it centrally to somewhere where it was recorded and these were picked up? Particularly, by the time we had the first cases on UK soil, we knew that SARS-CoV-2 was out there. We knew that there was human-to-human transmission.

We did not quite know, but we suspected, that there would be asymptomatic cases, yet nobody was really thinking of it at that ground level because there was a disconnect between the GPs whom people would be going to when they felt ill and how the GPs would deal with it, and strategically, at the level of government or the Civil Contingencies Secretariat or Public Health England, the idea of dealing with a massive outbreak.

We were not dealing with the pandemic at that stage but with very localised notifiable diseases and we did not think of it in that way. The pandemic plan never involved closing down localised outbreaks very quickly, and in retrospect I did not see that. I read the pandemic influenza plan 10 times from cover to cover. It never occurred to me that

that was a gap. I do not know in retrospect how we would spot that, but that is where we could do better in future. How do we on the ground identify these little outbreaks where we do not necessarily know where they are? I wonder about that as well.

From a strategic point of view and in a national security setting, we are looking for that bioterrorism attack, we are looking for that terrorist bomb, we are looking for the bad guys who do something very specific in a very specific place, rather than this organic, natural event that bubbles up from the surface.

The Chair: I seem to recall the Chief Medical Officer warning us about precisely that.

Q4 **Lord Harris of Haringey:** I will make an assertion and I would be interested in your comments on it. There was a mismatch between what Public Health England thought it had been created to do several years ago and current Ministers' expectations. That has been part of the difficulty: that there was an expectation that Public Health England would do things that it was never set up to do and not in a position to do. I would be interested in your reaction to that.

Also, looking forward to the new National Institute for Health Protection, this may be a semantic point but RUSI is an institute and Chatham House is an institute. Is this the right terminology for what seems to be expected to be an action body standing there in reserve to make things happen? With all due respect to Chatham House and RUSI, I do not quite see them as being there, about to lead our ambassadors into battle or lead our armed forces into battle. I do not know whether you think there is a danger of a mismatch between what Ministers want to happen and what the organisation thinks it has been created to do.

Dr Jennifer Cole: I agree completely. I am not full-time at RUSI anymore; I am not sure if you are aware of that. Part of the reason I left was because, as a global health researcher, I had had enough of what I saw as a securitisation of health, which I thought was inappropriate. This was after the Ebola outbreak. In the Ebola outbreak I saw a failure of healthcare systems and a lack of investment in healthcare—doctors, nurses, hospitals and laboratories.

This is where the problem was. The Syria outbreak, which was also a public health emergency of international concern, was because of a breakdown of the childhood vaccination programme, not a bioterrorist attack. It was the wrong terminology to me. It was the wrong approach. It was the wrong way of looking at things. This went particularly to some of my interest in antimicrobial resistance, which is where the evidence for this actually started. The terminology was focused on bioterrorism attacks, yet we had these natural events that were much more of a danger.

Again, with Covid-19 we have seen not only the failure of some of the sections of healthcare—I mentioned care homes in particular and the corners that have been cut there—but in general ill health. The people

who have been hit worst by Covid are the people who have underlying comorbidities because of years of poor health. If we had prevented those, we would have prevented a lot of the deaths from Covid. Paul Farmer said about Ebola that it is not the virulence of the virus; it is the inadequacy of the healthcare systems. We are seeing that again. That definitely concerns me in terms of health protection.

We asked a question at RUSI: "Are we talking about a security guard or a security blanket?" To me, calling something "health protection" is a security guard and we do not need a security guard; we need a security blanket. That goes to resilience across the board, not just health. I come back to flooding, which is a very similar issue, as well as housing and economic resilience. We are not providing protection; we need to be enabling people.

Dr Patricia Lewis: When I was in California at the Monterey institute, I was under a programme called the Preparedness and Emergency Response Research Centers—PERRCs—which was commissioned by the Centers for Disease Control and Prevention under the NIH in the US. It was very much a practical, pragmatic programme that was about lessons learned, and we did a number of exercises.

One of the things that came up a lot was, first, locality. It is about knowing the people in the region, knowing the languages, knowing the gaps. It is about knowing the shortfalls in the healthcare provision. It is also about responsibilities, understanding who is responsible for what and who to contact for what—having this chain of communication. Every year, when we did these exercises, that is where it fell down. The lessons got learned and the lessons got learned, but they never got learned. This is one of the big problems that we have in a lot of the way in which we do lesson-learning. I would like to come on to that as we go on in the discussion.

Talking of city and locality shutdowns, which is absolutely correct and I agree completely with Jennifer, there were also sector shutdowns, which we saw, for example, in South Korea—nightclub shutdowns and church shutdowns. This created communities of people with certain responsibility and understanding of why they were being shut down or locked down—because of the high transmission rate in those sectors. We were not looking in that way. We had a very national approach, but we were not thinking perhaps in terms of localities and sectors in the way we could have been, so I completely agree with that.

Finally, on the asymptomatic thing, I wonder if we have yet learned this lesson. Every time I listen to people on the radio, on the television or in print press talking about temperature checks as a way forward, I wonder how that is helpful with asymptomatic transmitters. If we have a large portion of people who are asymptomatic in the early stages of the disease and a lesser but still large proportion who are asymptomatic throughout the disease, that is not helpful. That is the kind of thing that can lead to a false understanding.

The other thing that we did not do in this country, which other countries did—as a physicist, this really got to me—is population testing early on. We did not get a sense of where it was and where the problems were. We did not do a statistical analysis very quickly. I felt that was a very big failing. Maybe we could have done it through collecting data from GPs; maybe we could have done it through collecting data with the NHS online. I do not know, but we did not get that full sense of the overall transmission rate and what was going on until it was much too late.

The Chair: That was very helpful. Thank you very much.

Q5 **Baroness Healy of Primrose Hill:** Dr Cole, in your view, what were the main drivers behind the emergence of Covid-19? To what extent were these known ahead of time? You have already mentioned inequalities generally. I am interested to know what other factors you think could have brought this about.

Dr Jennifer Cole: Again, it is very easy to look back and think, "What might we have done?" There was quite a lot of what we call, in academic terms, othering: that this was something that affected other people, not us, and that this was a Chinese problem. Also, certainly in the media, there was a lot of focus on what appeared to be Chinese inhumanities towards their citizens, rather than looking at, "My God, they need to be locking down like that. They need to be keeping people off the streets". Therefore, because that was something they had done, it was not acceptable for us to do the same.

We should have taken more draconian measures more quickly, not necessarily closing borders but looking at where the hotspots were that people might be coming back from. It was not only travel from China but some of the tourist resorts that Chinese tourists also went to. It was some of the conferences that people were coming back from. This goes back to what Patricia said about the statistical analysis of where the hotspots were.

One thing that has really struck me, looking at the countries and even at the cities, is that the places that have had the highest number of cases per 1,000 are largely major travel hubs. Look at Belgium and the amount of flights that go in and out of Belgium, the amount of flights that go in and out of the UK, and the amount of flights that go in and out of New York. Almost mapping where people are moving to and from very quickly might have given us an idea of where we need to be looking and then who we need to be more aware of.

Should we have been asking people not necessarily to quarantine but to be a bit more aware of their symptoms from January? From mid-January, we knew that there was human-to-human transmission. We knew there were starting to be a few cases outside China. We should have been much more aware of who was likely to be infected and how we could make them more aware potentially of not spreading that on. That goes back to my feeling that the plans were always focused on the mass

casualties. They were always focused on what happens when everybody in the population has it.

We could have closed things down so much more quickly. The countries that have done well are the countries that did that. Some of those are now having some problems exiting lockdown perhaps quite as easily. It is very much the track and trace, the movement and mobility and the network diagrams that seem to have protected the countries that have done best.

Baroness Healy of Primrose Hill: Dr Lewis, thinking more broadly than Covid-19, are there other significant risk drivers that could affect the UK's biological security in future, from your international experience?

Dr Patricia Lewis: Do you mean pathogens or activities? I was not quite sure.

Baroness Healy of Primrose Hill: Both.

Dr Patricia Lewis: Yes, both. As we know, from a lot of human activity—deforestation, urbanisation and encroachment into natural surroundings—we are seeing quite a lot of changes in animal habitat. That seems to be a factor in bringing in new diseases, new pathogens, into our own species and others. That is obviously something that we could be doing a lot of prevention for.

We could also be doing a lot of preparedness in that way. How do we anticipate what might come our way? We have had a number of different types of diseases and we can learn from this one. One of the interesting things was that South Korea learned from SARS, as did everyone else in that region, but they also learned because they had a very serious MERS—Middle East respiratory syndrome—outbreak. This gave them quite a shock. They had thought that they were very prepared, and it turned out that they were not prepared for that particular disease, so they learned a second lesson, having been fairly confident prior to that.

That was really interesting. This is the idea of anti-fragility, where you learn from small shocks and learn that a small shock can be a real help in preventing an inadequate response to a much larger shock. That is how we need to think about these things. I agree completely with Jennifer about the concept of protection. I would see securitisation from a human security perspective, which changes the framework completely. We can then merge the two quite well.

We have another security issue. I do not know if we want to get into this discussion at this stage, but essentially we have exposed ourselves when it comes to how prepared we are for a bio-attack. Hopefully, as a result of all this, we will be much better prepared in future, but there will be those who might wish us harm in the future watching and learning from this situation.

That is true for everyone around the world. Everyone is learning and watching what is going on to see where the responses have been weak,

where the gaps are and where opportunism, come the next situation, might lay us more open. During this pandemic we have certainly seen cyberattacks, including on our health services. We have seen opportunism on borders, such as between China and India. We have seen opportunism in crackdowns on human rights. As we go further down the line, we are likely to see other types of opportunism as we head into different types of crises. We have to factor that into our thinking. We have to prepare ourselves for them, be resilient to them and do everything we can to prevent them, of course, rather than essentially throw in the towel and panic.

We have to shift our framework of thinking into a framework that is much more about how we think about risk, how we manage and reduce risk and how we adapt to it. We have an opportunity at the moment with the integrated review to carry out this shift. It would be a terrible waste of this crisis if we were not able to reframe the way we think about many of these things and put them into a real practical framework for moving forward.

Baroness Healy of Primrose Hill: Are any of these drivers capable of being blunted by the UK Government acting alone, or are they only susceptible to global approaches? I feel that we have not learned lessons quickly enough from other countries. I wonder what your view is on that.

Dr Patricia Lewis: I completely agree that we will always do better if we act in concert. In my written evidence I came up with some ideas about how we might go forward internationally as well. Again, I do not know if this is the right time.

The Chair: We will come back to that.

Q6 **Lord King of Bridgwater:** You raised the issue of the risks of deliberate threats. I was very struck by one of the submissions that we had that said that there are now over 70 level-4 biological containment facilities where the most potent pathogens are stored and worked on. Thirty years ago, I had to raise with the Russian Government their activities in biological research, and they claimed at that time that they did not have anything that might in any way affect biological security. Of course, we have found out since that that was not the case. There is an interesting article about the Biological Weapons Convention. It is poorly funded, it is not properly policed and the information I have is that it needs revamping, but if you tried that in the United Nations, Russia and China will veto it. Whether that is right, it is obviously a major issue now.

That, combined with the cyberthreat that now exists of people threatening all sorts of terrible disasters, is the ultimate terror weapon. Do you have any comments to make about the need to really get a grip, not least because we know it all started in Wuhan and it is where the Chinese institute was, although of course we do not have the evidence that that is actually where it came from, whether it was leaked from there or whether it was an accident in the bat cage.

Dr Jennifer Cole: Discussion of biological weapons goes round and round security circles. Whenever you get the real scientists in the room, the likelihood of that happening is taken far less seriously. A biological weapon is a very blunt instrument. It is extremely difficult to control. It is extremely difficult to develop in the first place. There are much better ways of achieving almost anything you want to achieve than with a biological weapon.

It was very interesting in some of the work I did in India—under RUSI and funded by the FCO under a CBRN programme—that we ended up looking at radiological security and preventing something like the Mayapuri incident, which could have fallen into terrorist hands, again as an accident. One of the reasons we focused on the radiological side was because disease was so widespread in India that the idea of anybody even wanting to do a biological attack was just not taken seriously.

You can create all these science fiction scenarios, but when it comes down to what you would want to create with it and what you would want to do, sometimes you just need to disrupt a health system and these diseases emerge naturally. Certainly looking at the Biological Weapons Convention, one thing that really struck me at the time of the Ebola crisis was that the countries that had not signed the Biological Weapons Convention were largely the ones that were hit badly by Ebola. It was nothing to do with malicious intent but with absolute lack of capacity; they could not sign the Biological Weapons Convention because they did not have the laboratories and scientists to be able to sign up to it.

If we are looking for threats, we need to look at intent, ability to do it and what you would try to create. None of those points to a biological attack being in anybody's interests. There are much better ways for any terrorist to do what they might want to achieve.

Lord King of Bridgwater: Novichok is quite useful to some people who appear to be in command in Russia.

Dr Jennifer Cole: But in terms of the scale of a biological attack, that is not a biological attack but a very targeted assassination. It is a very targeted stabbing of somebody at close range. It is very different from what a biological weapon would do.

Lord King of Bridgwater: It does not get targeted to a single stabbing, as we know. It can become easily spread.

Dr Jennifer Cole: It cannot be spread anywhere on the scale of a biological weapon. We are talking about two very different things. What will you achieve? How can you control it? You can control a radiological poisoning in a way that you cannot control a biological release. Unless you are a James Bond villain who wants to rule the world and look over the devastation you have caused, what will it actually achieve?

Patricia may have a different view of this, because she is still working in a security environment, which I deliberately got out of because I feel this

so strongly. When I was working in a security environment, I felt that we were focused in the wrong place. I felt that strongly enough that I no longer wanted to work in that sector. I wanted to work in global health, somewhere where we were actually strengthening global health systems around the world. I completely admit that my take on that is biased, but if we really wanted to prevent this happening in future, we need to look at strengthening global health systems, not at closing down BSL-4 labs across the world.

Dr Patricia Lewis: I have stayed in because I also want to change the way we think about these things, so we can perhaps do it together, Jennifer. We will talk later.

BSL-4 labs are obviously really important for developing vaccines, for building capacity in knowledge and expertise in a lot of the things that your own population already suffers from, and for finding ways to prevent those diseases or mitigate their harms.

On the Biological Weapons Convention, I agree with you, Lord King, that we missed a chance in 2001. We all know why and we will not rehearse the whole history, but we missed a big chance. The protocol to strengthen the convention was setting up a verification regime, which of course would not have been a great verification regime because these things are very hard to monitor, but it would have begun a process of exchange of information. It would have begun a process of understanding each other in a different way, of being able to undertake, for example, clarification visits and so on, and we just lost that chance completely.

We also lost the chance in that protocol to develop capacity, because a large part of that protocol was about technical assistance for developing countries. That was where many developing countries really liked the protocol. They were not that bothered about the Biological Weapons Convention itself or about the verification regime, but they were bothered about developing the capacity to be able to tackle very dangerous pathogens. We lost an opportunity, and I am not sure how we can get it back. We could, but it would take a huge, concerted effort on the international front. There seems to be very little appetite to push forward in that direction anymore within the convention, which is a great pity.

I agree that you can easily explain that these types of weapons are not particularly useful. However, that does not always make a difference to those who would carry them out. I heard this argument about chemical weapons many times in my younger days, and that turned out to have no impact on the Syrian regime, for example. There we saw chemical weapons used in a particular way to damage, to terrify and to gain, in a macabre way, the territory that was completely blasted to hell. It was a way of driving people into an area in fear and then bombing them. It was a particularly insidious use of these weapons.

I would not rule out the use of these weapons, and for the little extra money that it would take under the Biological Weapons Convention we could have gained an awful lot, not necessarily on the hard-edged

security side but certainly on the capacity side. It could have made a big difference over the last 20 years.

Q7 **Alicia Kearns:** A lot of our discussion has been about conventions, and obviously that is about state actors. My concerns are primarily with non-state actors who will see this as an opportunity to add a new weapon to their arsenal, and private militaries that purport to be independent of states but, as we know full well, are often essentially arms of the state. Do we think there are sufficient mechanisms in place internationally to stop non-state actors being able to get hold of these weapons? If not, what should states be doing? Clearly, conventions do not apply to these non-state actors.

Dr Patricia Lewis: I will go back to what Jennifer said, because I think it is really important. The one thing I learned about biological weapons is that the best defence and deterrence against them is a high-functioning public health system—a healthy community and a responsive, highly vaccinated and prepared public health system. Then, if you get attacked, you are able to cope with it, but mostly you will not get attacked because there will be no point. That is the huge lesson that we learned from the Biological Weapons Convention, and I never felt that it was fully understood in government circles as much as it could have been. It makes all the difference when you are looking at biological weapons, whether it be a non-state armed group or a state that would use such a weapon.

This is the fundamental part of the whole approach to either inadvertent release—natural release or infection—or deliberate release. In a way, it does not matter. It matters what you do later on, but it does not matter at the beginning of the period in which it enters the population.

Alicia Kearns: A challenge to that is that often as a nation, I suspect, we are more likely to encounter offensive attacks where people have purposely released these weapons in countries that are not the UK. Obviously we need to worry about that, but we have interests in protecting human rights abroad and protecting the people where these health systems are not at the level we necessarily want. While we would all want a global health system that is equitable, that essentially is not that likely.

Even if you have the most prepared system on earth, ultimately it feels like we are slightly removing the relevancy of situation from the argument. Some nations will have been able to better deal with this because their environment is ultimately less hospitable to this virus and others.

There is the element of not knowing what is coming, but I am particularly interested in what we do when something like this happens on the border of Iraq and Syria. What can we be doing? Is there sufficient to make sure that non-state actors cannot deploy weapons as they will within these areas, which will not have the public health standards that are possible, as much as we would like them to be?

Dr Patricia Lewis: The answer is no, there are not the mechanisms to be able to prevent that, should a non-state armed group determinedly do that with a particular pathogen. The issue would be what sort of pathogens they could get their hands on and develop. We can go into some science fiction-type scenarios if we want.

Even if it were a well-known disease that you could import from one country into another where there would be no defences, almost zero health infrastructure, where people are already in a precarious state of health and in precarious situations, there would be very little defence against it or very little ability to prepare, other than each Government doing what they can to make sure that their laboratory facilities are secure and safe. That is all they could probably do in those circumstances.

They then need to react as quickly as possible, so they need good reporting mechanisms into WHO, into neighbouring countries and so on, so that any knowledge of such an outbreak could be detected. There could then be a collective international response to it. You would not necessarily know that it was a deliberate attack for quite a while.

Q8 **Richard Graham:** For the last few months, I have chaired the regular meetings in Gloucestershire with the heads of the NHS trusts, public health, primary care and MPs. It became clear early on that there were differences of opinion about what PPE should be used by whom, including a difference between Public Health England and the World Health Organization. It took some weeks to resolve this, and then, of course, further weeks to resolve the supply chains.

I am quite sure this had an impact on bringing forward deaths in the early months. Who was responsible for deciding what PPE should be worn by whom in what context, and for distributing that PPE to those who needed it? If, as seems clear to me, this is an important aspect of any biosecurity risk, should we not have been more prepared for this? What should we do now?

The Chair: I will let you both come in fairly briefly. I will remind you that we are not the Health Select Committee. We are not inquiring into the management of this epidemic. We are looking at it as a test case of how the national security system works.

Richard Graham: Indeed, but we would need PPE for any biosecurity risk.

Dr Jennifer Cole: The thing was that this was a novel disease. Different PPE work for different viruses and we did not know at the start which PPE would be best for this virus, so there was uncertainty. That is dependent on the particle physics of how aerosolised or not the virus is, what the viral load is, exactly how it spreads and whether you can be asymptomatic or not, and we could not possibly have known that. On the one side, you could go for full BSL-4 PPE, where everybody is dressed in complete CBRN suits and that is the way they operate. At the other end, you could go for, "We don't know what is appropriate, so we won't wear

anything", and there are various gradations in between. We did not know and it was not possible to find that out that quickly.

As soon as that became apparent, that was firmed up, so the PPE was available for healthcare staff, for instance. That is then seen in photos and is bought up by the public. There perhaps could have been better messaging as to why it was not so necessary for the public to wear respirators, for instance, as it was for healthcare staff, so it was not only, "The Government are hoarding this for healthcare staff and don't care about the public". Some of that more nuanced communication with the public could have been done better. The problem was that there was no, "This is the right PPE and this is the wrong PPE". We were learning that as we went along. In retrospect, I do not think there was any way that could have been done better or more quickly.

I mentioned care homes earlier, and one thing I would certainly ask if you have what is essentially a private sector care home that is under contract to the NHS is who is ultimately responsible for giving them their supplies. Are the Government responsible for that, or is the care home responsible for that? If the care home has slipped up and not made sufficient plans and is not sufficiently protecting its staff because it is cutting as many corners as it can to make as much profit as it can, how do you deal with that and prevent that happening in future? That is definitely a major issue.

We are having the same conversations now at my university. We go back to students and in-classroom teaching next week. Do we wear face masks in the corridors? Do we wear them in the classrooms? Do we wear face shields? Do we wear them in the toilet? Are the canteens open? Can we meet outside? There is still no absolute, definitive scientific answer and you cannot generate one that quickly.

The Chair: We are in danger of getting too much into the weeds.

Richard Graham: I have a very strategic question for Dr Lewis. If those points are all valid—I am quite prepared to accept that they have validity—is that not always going to be the case strategically: that we will always face something that we do not quite know the answer to? How, in a democracy, do you get one version of the truth of what should be done and what should be worn?

Dr Patricia Lewis: That is a really important question. As physicists, we knew quite a lot about the transmission of the particulates in relation to sneezes and coughs. I do not think we understood the significance of aerosol transmission, which we still do not fully understand and we are learning. It was clear to any physicist that a face covering, for normal people, for people who were in normal situations, for people who were on the front line particularly but for everybody, would be of benefit in at least reducing the transmission from people. That is the critical thing.

There is also some advantage, which is not fantastic or up in the high percentages, that when you combine the two, you can see the impact on

receiving transmission very quickly. It makes a difference and we are all looking at cutting risk.

This is basic hygiene. There are some basic hygiene things that almost any medical person just knows how to manage. The basic PPE, such as the gloves and masks, should have been a given. Everybody in the population, rather than going and buying them, could have been making them, and we have seen people doing that now. You can buy very nice ones to match your outfit and so on and so forth.

At the time, people were making masks for themselves, and it has become more and more socially acceptable to wear them, but early on it was thought of as peculiar and we kept giving messages that you did not have to wear them, whereas every physicist would have been saying, "Hang on a minute. Of course it's going to make a difference if we wear them. Of course it is. It's not 100%, but it will make a difference".

There is an awful lot of common sense in that and you can demonstrate that through the modelling of particulates in the air. I am sure you all saw the really pleasant videos of people coughing and sneezing. There is something to unravel there. This is obviously not the place to unravel it, but there is something to unravel there in the messaging, because to my brain it was very peculiar.

Q9 **Baroness Lane-Fox of Soho:** We move on to the Government's own risk assessments.

We have already talked about both the deliberate threats and the natural hazards. I am interested in what you think about the Government's own risk assessment processes and how they are looking at both halves—those deliberate threats but also the natural hazards. Do you think they do a good job of giving the right level of attention to both?

Dr Jennifer Cole: I have been quite vocal, in this and other forums, that when the national risk register was first made public and the manmade threats and the natural hazards were together on one risk register, that was the right approach. It was wrong to go back to separating them into threats, which were the deliberate attacks, and the hazards, which were the accidental ones. That gave an opportunity to take the eye off the ball with regard to natural threats and say, "We can't really do anything about those", when in fact we can, and to look at the security threats because they are sexier, they are easier to put money into and everybody wants to be the cavalry that solves those.

I certainly saw in RUSI that it put the security sector's nose out of joint that pandemic flu was higher on the national risk register than serious terrorist attacks, and it did not like that. Rather than showing off about that and screaming and stamping its foot until it was separated so there could be a higher terrorist threat on the top of its risk register, it could perhaps have thought about why it was higher. Actually, it was higher because it was a bigger risk, it had a bigger impact and it was the thing that had the ability to bring this country to its knees in the way that no terrorist attack could. That has been borne out.

Are we really thinking about approaches to real risk, risk that will absolutely affect everybody in going about their daily lives, which is the definition of the national risk register? It is things that disrupt our ability to go about our day-to-day lives. Nothing could have disrupted that as much as a pandemic, and yet we allowed that pandemic to be diminished in the eyes of the Security Committee and in the eyes of the risk register of the country because it was not sexy enough.

I could get really passionate and angry about that. It is the reason I moved out of that sector and went back into academia full-time. I saw that the things that will really disrupt people's day-to-day lives are not coming from deliberate threats; they are coming from the natural disasters. Again, I go back to the impact that flooding and climate change are having on people's lives and the impact not only of diseases but of air pollution, which, again, is another big driver of making Covid-19 worse.

If we look holistically at what is actually impacting people's lives, it is poverty, it is pollution, and it is not that single actor—9/11 is nothing on the scale of Covid-19 in terms of the number of deaths, the economic disruption or the amount of time it has disrupted our lives for. If we are really going to be serious about risk, we have to be serious about what the real risks are that will bring the most disruption to the most people, and those are not terrorist attacks.

Baroness Lane-Fox of Soho: That is a resounding no from Dr Cole.

Dr Patricia Lewis: I completely agree with Jennifer on this. I would just like to say that at Chatham House we did not take that view. We would have put pandemics very high up in the risk register. One of the things that we need to do is look at how we ascertain risk. We are very poor at this. Traditionally, we have looked at risk as equalling the probability of something occurring multiplied by the impact of something occurring, which is a strange thing to do. How do you measure and predict that measurement? We tend to think of it as high, low and medium in both of those and try to do a matrix about it.

The truth is that we may be able to imagine all sorts of impacts—although I would put to you that we did not fully understand the economic impact of the pandemic, in society anyway—but we are really bad at probabilities and we need to start thinking very differently about them. We tend to think, "There's a very low probability, so it will not happen", whereas with risk itself, if something is very high impact that dominates the equation, so you can have something that is very high risk even if the probability is very low.

We need to start thinking more in terms of uncertainties and what we are not certain about. How do we deal with the uncertainty of something happening? It is a much more uncomfortable framework, but it is a much more useful one for thinking about these things. It means that you are always left with that sense of uncertainty rather than feeling that you have a handle on things, which is a false sense of security.

We do not have a handle on the future. We have so many things coming our way that we can see now. There will be things that we cannot see, which we will look back on and say, "We should have been able to see them, but we couldn't see them", but we can see the climate change impacts coming at us and we can see all sorts of things to do with pollution, health and poverty. We have developed a whole range of integrated systems in the UN called the SDGs in order to be able to integrate this whole approach. This seems to me to be the framework for thinking about human security in all our societies, not just in countries that are less wealthy.

Q10 **Lord Powell of Bayswater:** I wanted very briefly to follow up with a couple of points on the comments that both Dr Cole and Dr Lewis have made.

First, the last published national risk register made a distinction between pandemic flu, emerging infectious diseases and animal diseases. Was that a sensible way to approach it or should they have looked in much broader, more generic terms when assessing overall risk, leaving the distinction between different diseases to a different sort of treatment?

Secondly, the national risk register forecasts that emerging diseases might lead to up to 100 fatalities. That does seem to have fallen a bit short of reality. Could one have done better in forecasting the scale of fatalities, or is it just too difficult to do?

Dr Patricia Lewis: That is a very difficult question. When you look at risk, it is often good to break things down and try to understand what they might mean or what they might imply. I just wonder whether, if we had the knowledge to think about these things, if we had perhaps approached it in terms of where our big uncertainties were here and actually flagged those up for more understanding and more investigation, that might have been a better way forward than to think that we have understood the risk as high, medium or low.

When people put these numbers up they have come from somewhere, but they have often come through from a whole set of basic assumptions. If those assumptions turn out to be incorrect, you end up with an incorrect answer at the end, and that is one of the problems. All the way through, whether you are doing modelling or whether you are trying to understand risk, you have to understand the uncertainty associated with those assumptions and how that then carries through into quite a large uncertainty in your final assessment of what constitutes your biggest risks.

Then a huge dose of humility is required, in that it is really hard to predict anything, particularly about the future. It is so difficult to do, and so we are all inching forward trying to understand what might be coming and trying to work out what to do, which is why we need to take a very different approach to this, so that we build in preparedness and essentially force people to think about it. When we buy a car we have to insure it, at least for third party. We are forced to do that, because the law understands that we probably will not do that. At least when we are

young, we will not do that because it will cost too much and we will hope we can get away with it.

We tend to think about a lot of our lives and what is coming down the track that way. When we start thinking like that collectively, that is when we start to make mistakes. We need some things in place to give ourselves the checks and balances going forward—have we thought about this properly, have we thought about this enough, what if this were to happen, what are the likely consequences of it?—rather than ending up just with a risk register and hoping that you have the comparative risk right.

With emerging diseases, I am sure that between us we come up with all sorts of possible emerging diseases. In some ways, this very much reminds me of the HIV pandemic. That was released in much slower motion, but it is quite similar. In the end, we have ended up not with any vaccine but with treatments. There was an awful lot of othering with that disease as well, and we are seeing that now. We have seen othering with where it started from, but we are also seeing it with the comorbidities. People are dying because they have an underlying disease, so we are othering them. This is something that we tend to do with pandemics and with very scary diseases. We pretend that it will not happen to us. Again, this leads us down the wrong pathway for thinking about these things.

Lord Powell of Bayswater: Those are fair comments, but a prediction of 40,000 fatalities might have woken the Government's attention rather more than 100.

Dr Patricia Lewis: Yes, indeed. We can think of an Ebola-like fatality rate with a disease like this. There are all sorts of combinations you can come up. Whatever is meant by a reasonable worst-case assessment—I have actually never understood that phrase—you have to challenge the underlying assumptions of what led you to that at every step of the way.

Dr Jennifer Cole: When you look at the different points on the national risk register, it is not really about influenza or Ebola; it is actually about the characteristics of that disease. Is it a reasonably mild but very widespread disease? That is actually what Covid-19 is. In disease terms it is not a particularly dangerous disease on the level of Ebola, but it is also one that we do not know very much about. The influenza plans were assuming that we would be perhaps 90% of the way towards a vaccine before a new one emerged, whereas we are not that far along with Covid-19. HIV was different again, because it was even more unknown.

Some of those different data points on the national risk register are about the characteristic of a disease rather than the name that is applied to it. That differs as to how easy it is to catch, what demographics it is hitting and how we deal with it. Once you put a name to it, people look at it as influenza and stop thinking of it as this kind of disease.

That is something that we perhaps need to look at more in the resilience circles. I see it now with my main research, which is on antimicrobial

resistance, particularly through the livestock sector. The microbiologists on the team think in terms of Escherichia coli, salmonella and campylobacter. When we talk to farmers, their cow is sick or their chicken has diarrhoea. They do not make the distinction between a virus and bacteria; they think about it in a completely different way. We need to think about risk more in terms of the impact it is having on the person on the receiving end of the risk, rather than perhaps the characteristics of the risk actor.

That would take us back to thinking about what impact it is actually going to have on society, not what the characteristics of the virus do. How does this actually affect a town? What might it have done? How might they have reacted? Who would it have hit most? Where would the vulnerabilities have been? We could then look at some of the planning and perhaps the exercising from that point of view.

Had the fact that if you ask everybody to stay in for two weeks, suddenly there are not enough delivery slots because the supermarket only has so many delivery drivers, really been thought through in the right way? Lots of people who could have gone out to the supermarket in person were terrified and did not and therefore took up the delivery slots of the people who really needed to be shielded and could not be. We have talked about whether we are strategic or down in the weeds. Sometimes by being too strategic and not playing those exercises through, we have missed the problems that are caused in the weeds.

Q11 **Baroness Neville-Jones:** You have just been describing the inherent difficulties of risk assessment. I would like you to talk to us about SAGE. The problem with SAGE is that, as the E implies, it comes into being when there is an emergency. Is that the right moment for the advice to come in? Are these people involved in the assessment process itself, or is it a different set of individuals? If it is a different set of individuals, is that sensible when it comes to trying to link the assessment process, the likelihoods and the impact? Is that a separate process from the medical advice about how you then deliver some kind of control and resilience? Could you talk about that: whether the same people ought to be involved in assessment, planning and delivery, or whether you think those are separate functions?

Dr Patricia Lewis: That is a great question. One of the things I would say about SAGE is that, even if you were going to keep these roles separate, one of the things that you probably need to do is look at not just diversity of disciplines but diversity of knowledge and experience—bringing different groups together to test, for example, the underlying assumptions in the risk register or what the outcomes would be of certain policies and strategies.

One of the problems when you are in a particular community is that there is a natural groupthink. It is just natural that this happens. You need people from outside to be brought in to challenge and to have the authority and the legitimacy, and for it to be acknowledged that they have that legitimacy to challenge the underlying assumptions and really

put people through their paces. That is a very difficult thing to do, but it seems to me to be absolutely fundamental.

This question is something that we really need to explore going forward, not just in pandemics but in all the ways in which we think about the way we frame our security and our foreign policy. It is about making sure that we have not bubbled ourselves into a particular frame of mind, so that we have not seen what is actually going to hit us from reality, which someone else might more clearly have seen because of a different set of knowledge and experience.

Dr Jennifer Cole: Certainly from my understanding and what I know of SAGE, it is an ongoing process. The people who are on SAGE are the people who are involved in certainly every influenza planning conference I have ever been to and every bit of work we did at RUSI or at Chatham House. They are what I would call the usual suspects. If I had had to guess who was on SAGE, I pretty much would have named those people. It is not a group of people who came together just for this emergency; they are the experts who have a long history and long experience of thinking about these issues.

I would certainly agree with bringing in diversity. All these policies and groups in general can be ivory towers, to use that term. Matt Hancock at one point made some comment that if you have a family, the uninfected family members should use one bathroom and the infected family members should use the other. What proportion of the UK population lives in a house with two bathrooms? That was clearly a discussion going on in a room of people who had no conception that the vast majority of houses in the country do not have two bathrooms.

It is sometimes about playing that down in the weeds with community groups and having proper emergency planning exercises that involve the whole of society. Schools would be a great way to do it, as with the "What if" campaign that Rosanna Briggs ran through Essex County Council, where you actually ask people what this would mean to them and how they would do that, and have somebody who can say, "Hang on a minute. I don't have two bathrooms in my house". I do not have two bathrooms in my house, and I am a university academic. If I do not, I can guarantee you that half the staff down my local Tesco do not. Do people really understand what this means at the bottom level? That is really important.

It goes back to testing the planning assumptions at a whole-of-society level and having the different groups involved. There are volunteer forums. The London Volunteer Forum was a great body for really understanding what it is like working with vulnerable communities and with care homes. Again, I go back to flooding. We sometimes did flooding exercises at RUSI, where we would deliberately try to bring in a care home to say, "What would this mean to you? How would you evacuate? Where would people go? Could you do it?"

Baroness Neville-Jones: If they had been involved, as you seem to

imply, why was there apparent disagreement inside SAGE about what they should do? Why did we not do better, if they had been as involved as you imply?

Dr Jennifer Cole: It was happening very quickly in real time, and it was not a known quantity. There are lots of conflicting views. I would go back to what Patricia mentioned about the aerosol particles from a particle physicist's point of view. There was a lot of discussion in behavioural science about whether, if you mandate mask-wearing, people stop doing other things, such as staying two metres away, which is the best way to make sure that you do not get hit by the particles, or washing their hands as often. These things play against each other and sometimes it is not as simple as it appears to be from one discipline.

You do not necessarily know which disciplines might need to be involved, so you can go very easily from a group of eight people to 50, and you still do not have all the disciplines that you need to be involved. If you do an exercise in retrospect on what you would have needed to have planned the response to Covid-19 perfectly, you would have needed doctors, medics, intensive care nurses, cleaners, supermarket staff, taxi drivers, care home workers and PPE manufacturers. Before you know it, you have a group of 250 people and you are still probably missing some of the disciplines that would have had the right answer.

There are things that we could do differently. One thing that, again, perhaps could have been done earlier is lessons identified from around the world. We could have looked very quickly at case studies of how different countries were dealing with this and what appeared to be going right and what appeared to be going less well. It is then about bringing all those together and seeing how we could address that, but also within local contexts.

Going back to masks, we have seen the insane politicisation of mask-wearing in the US. One thing that the UK Government have done brilliantly is avoid that happening in the UK by saying that masks are appropriate in some situations and you do not need to wear them in others, with there being a reasonably grey area in the middle where people have the agency to make their own decisions. Ironically, what people hate the most is being told exactly what to do, and that appears to be what has happened in America. If people are told what to do by a politician they do not like, they will do the absolute opposite. No matter how much what that politician is telling them to do might appear to be common sense or appear to be complete nonsense, they follow that behaviour.

There is a huge behavioural aspect in this, which is completely separate from how the virology, the particle physics or the hard, natural science of it works, which, again, makes this a much more complex problem. That will change from country to country, so what is right for one country is not right for another. It may be about what is right for one city, one sector, one demographic or one age group. At the same time, we are trying to negotiate all this to give a message that is broadly acceptable to

most of the population and that will lead to most of them doing the right thing.

Baroness Neville-Jones: Is the range of talent, experience and expertise inside SAGE right, then? You are saying that you need a very wide level of expertise. Does SAGE have that?

Dr Jennifer Cole: You can never have expertise broad enough for the response to have been as good as you would have wished it to be in retrospect.

Baroness Neville-Jones: We hardly got it right, did we?

Dr Jennifer Cole: It depends on what we got right and what we got wrong. We brought it under control very quickly. In retrospect, we could have not allowed it to have ballooned so much, but a lot of the cases we ended up with were to do with the connectivity of the UK with other areas of the world and the number of returning Britons and returning holidaymakers coming in, so there were several little outbreaks. We were allowing it to spread within the country when we could have been identifying local outbreaks and closing it down more quickly.

Q12 **Lord Harris of Haringey:** We should draw a distinction between scientific advice and sensible management, which means consulting, for example, intensive care nurses and so on.

My question is about identifying risks. I am very interested in the role of chief scientific advisers, who seem to be the gatekeeper in trying to determine some of this horizon-scanning, and whether there is a feeling that they may, because they are within a department, end up going native and losing some of that independence. I am not saying that is necessarily the case.

Dr Patricia Lewis: I would have thought not in terms of going native, because scientists tend to care much more about what other scientists think of them than what any other community thinks of them. Therein lies another problem: it is really hard to challenge a group of scientists who have come to a decision on something.

Harking back to Baroness Neville-Jones' point, and linking the two, we need a battle of the ideas. As Jennifer was saying, we can add in lots and lots of extra pieces, but that will not necessarily get you much further, although with diversity in a different way, not just in scientific discipline but in age, you get different viewpoints and you get challenges from different points of view. Gender is also really important. Different parts of our communities with different knowledge and different experiences will bring something else into that discussion, but these findings and conclusions then need to be challenged by another group who have other different experiences and knowledge sets.

This is where we could get a very interesting exchange of ideas and different ways of thinking about things, where you go, "Oh right. I never even thought of that". When it comes to the wearing of masks, I did not

think about whether that would mean that people would decide they did not have to obey a two-metre distance. It might mean that they did and that it does not matter particularly, because in a closed environment that might not be your biggest problem. It might be aerosol transmission, which is a different issue altogether.

You have all these things that need to be challenged all the time, and that has to be a long process. In the midst of a pandemic and a crisis is probably not the time to be doing it, but in the lead up to that, in all the discussions that go on among these communities, they need to subject themselves to challenge.

Q13 **Darren Jones:** I am conscious of time, so I will group my two questions into one in the hope that both our witnesses can ensure an answer to both. I am interested in how we learn lessons from these episodes and how that affects our plans. The first part of my question looks back and the next part of my question looks forward. When we look back, the 2015 SDSR said that we had learned lessons from overseas infections, like SARS, MERS and Ebola. Could you comment on what lessons you think were learned, and therefore how we changed our response to Covid as a consequence of those lessons being learned?

The second question is with a view to the integrated review later this year. What should we see in that that shows that we have learned the lessons from Covid, so that we are more prepared for dealing with these crises in the future?

Dr Patricia Lewis: When I worked in the UN we had a joke about learning lessons, because that was all we ever seemed to do. We called it learning the lessons learned, because it seems that is a process that never seems to work. There is always an element of fighting the last war and fighting the last peacekeeping disaster, whatever it was that we were looking at.

Did we learn the lessons from Ebola? It is interesting that the issue with Ebola was very much about tracking. It was about finding out who was nearby, finding them and isolating them. We did not do that, so it seems that we did not learn that lesson at all, and we are still in a process of trying to get that right.

Did we learn the lesson from SARS? Possibly, but the lesson from SARS was not particularly useful for this particular type of SARS. MERS might have been better because of its much worse mortality rate, but again it is a very different disease. There are some lessons that we can learn and some generic lessons that we can learn from other pandemics that occurred 100 years ago or more, because there are some basic hygiene things that work across, and even if they do not work across you do no harm in adopting them because they are passive defences and so are useful.

In terms of the integrated review, as I said I would love to see a different approach to thinking about how we manage these situations, so that we find a way to reward long-term planning. It is a problem that we have in

our societies, particularly societies where we have a high turnover of expertise in our Civil Service and a high turnover of expertise in various groups that we charge with doing these things. We have a high turnover of decision-makers due to elections, et cetera, so we tend not to give the weight to long-term planning and thinking about long-term resilience that we might otherwise do, because we may be thinking of decades or even a century ahead, but we need to be thinking about that now, not when we get there.

This is what I would like to see the integrated review take up as a framework: thinking about how we manage that with the very real problems of today and what we have to do today, because it is no good thinking about tomorrow if we cannot get through today, obviously.

I would like to see us doing this much more internationally. I would like to see us, for example, working through a peer review mechanism with other countries. I have seen this in the nuclear security area, where there is a peer review mechanism whereby plans for the safety and security of civil nuclear plants are then subject to peer review. If you can do it in nuclear security, you can do it in almost any other field. Again, we need to subject our assumptions and the mechanisms in our plans to those who will conduct a friendly, supportive but critical and constructive peer review, and we do it back to them. It works really well and it will help us going forward.

Dr Jennifer Cole: I agree with all that. One thing with the nuclear industry is that they are very good at dealing with risks that are unlikely but would have a high impact if they happened. The mechanisms they have internationally to plan, exercise and discuss those are excellent. I definitely agree that that is something that we could bring into healthcare.

Interestingly, SARS, MERS and Ebola were all diseases that were much more serious if you caught them but were much harder to catch. There was definitely that learning from that track and trace. A few years ago I was part of the data sharing on health information that Chatham House ran. Health data is crippled by the privacy lobby. We need to get past that. We do not need a track and trace system; we could get the data from Google. My eight year-old son gets an email from Google every month that tells me exactly where he has been for the last month. That data is out there. If we need to share it in an emergency, we should be able to and people should understand why that is important.

I completely agree with the point about long-term planning. I have also mentioned before some of the legacy understanding of resilience. Resilience managers come and go. There is not really a career path within government or in policy for people who are genuinely interested in and genuinely get resilience to stay in resilience roles.

One of the things I remember at RUSI is that we worked a lot with the fire service, which used to say that one of the things that they found the most irritating was that the policymakers changed every two or three

years. They felt that they had just got to the point where somebody really understood their issues and then they moved on and they were back to square one.

Taking resilience seriously so that people want to see it as a career path so that they stay in for 20 or 30 years is important and perhaps something for the Government to look at as part of a review into how these can be made into careers, rather than a job where you move from one policy sector into another. You may stay in resilience and move between different government departments, but you actually understand resilience and you were there for the supply chain issues, whether it was flooding, Ebola, SARS, pandemic flu, Covid-19 or a fuel strike. You look at the consequences of those and you know how to deal with them.

If there was one lesson that we learned from Ebola, it was that a good healthcare system went a long way. Again, have we really had that in place? Since Ebola we have allowed the NHS to be chipped away. There is no resilience left in the systems. We can talk about what resilience should be. At the end of the day, if it is not there, it is not there. Again, if we are really serious about resilience, we need not only to talk about it but to enact it on the ground, and with proper funding and proper support.

The Chair: One of the things that might also be relevant is the principle of subsidiarity.

Q14 **Baroness Henig:** I would like to turn to national-local relationships. Can I just say, Dr Cole, that I have been very interested in your emphasis on the front line and the dangers of being too focused on the high-level strategic assessments? In a way, that comes into national-local issues. Can I ask two questions? The Government speak of a resilience model that operates on the principle of subsidiarity and they say that national risk assessments support local authorities and local resilience forums to prioritise resources and make their own local plans. In your view, first of all, how helpful have national risk assessments been in supporting local resilience? Secondly, do you think the Government got the balance right between central and local decision-making?

Dr Jennifer Cole: The process is very good. On paper it works very well. In practice, again, the resources are not there. One thing that we heard again and again from local resilience forums at RUSI is that quite often they would write the plans but there was nobody really to assess them. There was nowhere they could send the plans to be assessed. They would make a plan and want to have an exercise, but there was no funding to have it. There was a gap, almost.

Again, the local resilience forums, the local resilience planners and the emergency managers would make emergency plans that would then sit on a shelf. How do you distribute those down to a GP's office and check that the GP had even taken the letter out of the envelope and read it, let alone if they understood what they would need to do? That part of it did not seem to be in place.

When the Civil Contingencies Secretariat started off the community resilience programme, RUSI did a piece of work for them, part of which was an assessment of different countries' approaches to resilience. The countries that did it best were the ones that had absolutely integrated resilience plans that went down to a street warden on-street level. It was the hurricane states of America, where every person had a storm cellar and a grab bag to take into it, and they knew what to do and who to call when it happened.

In China it was equivalent with the way the earthquake response was set up, where there was essentially a street warden on every street, but if an earthquake happened people knew what to do. When it was embedded down at that level, it did not really matter what happened then. Some 90% of the response was already there. With China being able to build the hospitals that we saw in this crisis, all that planning came from planning for an earthquake during the Olympics. We saw that planning being put into place in the Olympic planning. It is there because they have earthquakes. They regularly have to build large bits of infrastructure. It is about being able to embed that and not only to have it on paper but to actually practice it and have it in exercises.

Israel does it very well all the time, and Israel does it for bioterrorist attacks as well. It has first-aid exercises which the entire population is involved in. It needs to be taken that seriously in the UK. We have one of the lowest rates of qualified first aiders in the EU, although we are not in the EU anymore. We are one of the few countries that do not have first aid training on the secondary school national curriculum. We make these plans and expect people to read them, but there is no way to check them or to have them assessed. That comes back to taking resilience seriously, as something we really want to do and really care about.

Dr Patricia Lewis: I completely agree. When I lived in California everyone had to have a bag at the door with everything they would need in the event of an earthquake. The Government took care of building regulations to make sure the buildings were as secure as they could be and were built within standard, but everyone was responsible for their own personal resilience. There were drills and we knew what to do. I completely agree with drills. I also agree with assessments and assisting local assessments.

The other thing that we need to look at is whether there are parts of our infrastructure that just do preparedness very well. I would say the army is one of those. They just know about logistics. The issue of preparedness is at the very core of what they do, because they are always having to prepare for what they hope will never happen. This is a culture that they have, and we should explore the way in which local resilience groups could perhaps work better with the logistics wing of the army.

Just to add into that, one of the things we have been doing at Chatham House in looking at resilience is looking at what we are calling the vulnerability paradox. There are societies that have never had any expectation of government being able to step in and do anything for them

anyway. Therefore, we found that many of those societies are actually more resilient, because they have taken it on themselves. They are not reliant on someone else doing something for them. They have their ways of working. They have their tracing and tracking systems that are local and that are community-based. They have their drills. They have their practices.

It is done through a community preparedness that they have done for themselves, because they live in situations where they are often in the pathway of cyclones or they have very nasty diseases that attack them quite frequently. They do not rely on government at all. There is an awful lot we can learn from societies that have developed this way of being much more resilient through such self-reliance and not relying on someone to come along and rescue them, as it were, because the place where they live does not have that capacity. It is an interesting phenomenon, but it certainly seems to be true in many cases.

Baroness Henig: There seem to have been a lot of problems with data sharing. Is this something that should have been anticipated? What needs to be done about this for the future? Clearly, in the age we are living in, this is a really important issue that we need to get right?

Dr Patricia Lewis: Do you mean data sharing through mobile phones, for example?

Baroness Henig: I mean that in Covid-records data sharing between national and local government, there seem to have been issues with rates of infection, whether or not there should be lockdown, and all sorts of nitty-gritty issues that seem to have caused all sorts of problems.

Dr Patricia Lewis: I will leave that to Dr Cole to answer, because I am not an expert on the NHS, but having lived in other parts of the world I would say that there are very different attitudes to who owns your data. In the UK there is this sense that the NHS owns it and not the individual. Having lived in America and Switzerland, I would say the individual owns their data there and they decide what to do with it. It is actually a completely different framework for thinking about it, and much more effective.

Dr Jennifer Cole: There has certainly been the derailing of attempts to share NHS data more freely by privacy lobbyists who do not really understand the damage they are causing. Who owns your data and what they do with it is context-specific. In a situation such as this, where lives are on the line if that data is not shared, there should be times when data that is not normally shared can be, without anybody having to give their permission for it. That is my view; I know that there would be a huge kick-back on that from the privacy lobby. NHS Spine, for example, was derailed by a very small but very vocal minority of privacy lobbyists. The countries that did well with Ebola and that have done well with Covid-19 are the ones that tracked and traced very quickly and very effectively, so we have seen the value of that.

Dr Stephen Roberts at King's College works specifically on the security implications of sharing data, so there are academics who are looking specifically at some of the ethical considerations of that, but there definitely are times when the good of community overcomes your data privacy concerns. It is time to not think that the Government are trying to do anything nefarious with your data. They are actually just trying to save lives. If you do not like that, your recourse should be to vote the Government out at the next election, not stop them trying to save lives while they can.

Q15 **Lord Harris of Haringey:** Local resilience forums and local authority resources for all this are very patchy. Some have well-developed systems and some have less well-developed systems. Do you think there is a case for mandating what should be available at local level in terms of preparedness and resilience and to allow them a degree of flexibility in determining the most immediate priorities for that community in terms of resilience? That might be for a pandemic, but it might also be for other things as well.

Dr Jennifer Cole: There is definitely opportunity for better support. Again, this comes back to how seriously the Government take resilience. For instance, on the gold standard and the Emergency Planning College, it seems to be completely patchy and completely up to individuals whether they have ever attended a course at the college or whether they have ever taken a gold standard exercise. There seems to be no mandating as to whether you have to do that or not.

There will be flexibility on regions, because different regions will have different challenges. What was very interesting about the Rockefeller 100 Resilient Cities programme was that there was a huge tension between that programme and the NATO resilience programme about what the biggest resilience threat is. For the Rockefeller Resilient Cities it is nearly always air pollution and flooding. For NATO it is a massive cyberattack from Russia. You get some very interesting conferences where they are all in the same room glaring at each other and not really understanding the language the other one is speaking. Different sectors and different areas have different priorities, but there should be more standardisation in the way they go about planning for that.

Going back to what Patricia said about the military, the military are very good at that. They understand how to use a map. The number of emerging planning exercises I have been in where the local resilience forum members do not even seem to understand why you might want a map, let alone what you would do with one when you had it, is genuinely quite shocking. You come to a briefing and expect them to tell you what is going on. In fact, the briefing is them asking you what you think might be going on. If you ask, "What resources do you have? Where are they at the moment? When are you going to do anything about them?", it is completely dependent on individuals, who may or may not have done that before, who may or may not have had some training and who may or may not think one way of doing it is better than another way of doing it.

As you said, it is completely patchy, and in my experience it was very personality-driven. You would get one local resilience forum that had one person who took it terribly seriously and was very good at it, but the next local resilience forum had seen it written down somewhere but it was not at the top of their priorities, they did not really know where it was and did not bother to turn up to the exercises.

From ward to ward within a city, let alone from city to city, that could be completely different. You get places such as Newcastle, with Helen Hinds, who you know, and Manchester, with Thomas Croall. Where it is good it is because of the person. You can name the person who is responsible for taking that forward. It should not really be like that. It should be a role that is mandated and certain capabilities and skills should always be present.

Dr Patricia Lewis: I have nothing to add. That is perfect. I agree completely.

The Chair: In the end, an awful lot of what we have said today comes back to this issue.

Q16 **Baroness Hodgson of Abinger:** My question is about the balancing that a Government have to do between investing in contingent preparedness capabilities and other spending priorities. It is a very difficult issue. Right now, issues like Covid are very much on our mind, but as time goes on and it drops back, how do you prevent funding for preparedness dropping away with memory? It becomes out of sight and out of mind.

I would like to start with Dr Lewis, because you recommended assigning a Minister with government-wide responsibility for preparedness and a ring-fenced budget. How would you see that role specifically evolve and how might it work?

Dr Patricia Lewis: This is a really important question, because you are quite right: there are so many competing priorities, and if you have to keep putting money into something that people will tell you may never happen or is unlikely to happen, it gets really hard to do that when you have the cares and the stresses of what you need to fund and what you need to do for the current situation.

This is why we need some form of legislation that requires a certain basic level of preparedness that then gets scrutinised in Parliament. I recognise that over time that will probably ebb and flow a bit and we need to make sure that that happens, but at least there would be a mechanism that would mean that the Government and the bodies responsible would be held to account.

There used to be a Minister with a responsibility for preparedness, resilience, et cetera, but it seems to have devolved into different departments now. There is probably a very good reason for that. They probably wanted some joined-up government approach, et cetera, but the trouble is that you then lose the champion for the resilience mechanisms and the preparedness requirements. You need somebody

who has that ultimate accountability to Parliament to make sure that these things are being done as best they can be and to explain why X was not done but Y was, how it is going and to report on the exercises, to talk about the problems and the red-teaming, the blue-teaming, et cetera. Within that, you have to try to have some ring-fenced budget lines to stop the erosion during a crisis.

One of the tricks is to look at where we can build in resilience measures that will apply to a wider range of potential crises, rather than stovepipe them, so that we get some cost-effectiveness at the base level. I know that the Government do that, but they perhaps do not do it enough in the long-term planning

Dr Jennifer Cole: On any economic assessment, prevention is better than cure. The more we invest up front, the less we will have to clear up the mess. It is a health analogy for a health crisis, but again it would look at flood resilience. Build the barriers before the city floods, not afterwards. Strengthen the healthcare systems now.

One thing that Covid has really done, which I will come back to again and again, is highlighted some real vulnerabilities, inequalities and injustices within society. Let us use that opportunity to look at where those vulnerable communities were and what made them vulnerable, and address those vulnerabilities. The stronger society is, the better prepared we will be for whatever comes next.

The Chair: That is particularly interesting, because my own impression, which I say with some regret and I hope I am not being unfair, is that the thing that is most difficult to get the Treasury to do is to invest for problems that are not here today. It seems that has been coming through loud and clear from an awful lot of the observations that you have both made.

I apologise to some of my colleagues who I know had other questions they would have liked to pursue. If neither of you minds, if there is something someone particularly wants to follow up, we might write to you afterwards. I am very conscious that you have been very patient and given us very full answers and I feel it is time for us to release you from these duties and to thank you very much indeed, particularly since you have been doing it two-handedly and you thought you were at least going to be three-handed. Thank you to all the members of the Committee and in particular to our witnesses.