Science and Technology Committee

HOUSE OF COMMONS

Oral evidence: Science in emergencies: UK lessons from Ebola, HC 469

Tuesday 24 November 2015

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Written evidence from witnesses:

- HMG Department of Health
- Science Media Centre
- Public Health England

Watch the meeting

Members present: Nicola Blackwood (Chair); Victoria Borwick; Chris Green; Dr Tania Mathias; Graham Stringer; Derek Thomas; Matt Warman

Questions 107-201

Witnesses: **Dr Edward Sykes,** Senior Press Manager, Science Media Centre, **Professor Paul Cosford**, Director for Health Protection and Medical Director, Public Health England, **Lily Makurah**, Ebola Screening and Returning Workers Scheme Programme Manager, Public Health England, and **Dr Oliver Johnson OBE**, Programme Director, King's Sierra Leone Partnership, gave evidence.

Q107 Chair: I welcome the panel to our second and final session on science advice in emergencies: learning lessons from Ebola. I would like to open up by asking a question about the current situation in Sierra Leone. In the news today, we are hearing about the suspected re-emergence of cases in Liberia. I understand that Liberia has been given the all-clear twice before, and my research says that Sierra Leone has been given the all-clear for the moment, but what do you have to say on the matter? Perhaps Professor Cosford might like to start.

Professor Cosford: We are saddened by the emergence of more cases in Liberia. As of last week, they are clearly under active investigation within the country. The source of those cases needs to be investigated in more detail. They are a single family cluster at this stage. We are much more confident than we would have been this time last year about the ability of the health system in Liberia to address any consequences. As always, complacency is the enemy of preparedness and action, so we are keeping a very close eye on that. We are very conscious that we need to look at any developing evidence around the longer-term, small-scale outbreaks we appear to be seeing at this stage every so often, having largely got rid of Ebola from the three countries concerned.

Q108 Chair: You spoke about Liberia. How does that compare with the situation in Sierra Leone?

Professor Cosford: In Sierra Leone, it is currently more than 42 days since the last case, so that gives it the position of being Ebola virus disease free. I do not have any information with me about new cases emerging in Sierra Leone as yet, although we would not be surprised to see occasional new sporadic cases as these outbreaks get completely under control. We are aware that that is a possibility. We should not be completely fazed by that, but we should absolutely avoid any complacency around it.

Q109 Chair: Lily Makurah, are you confident that the public health response now in Sierra Leone and other places is robust enough to identify these isolated cases and respond to them quickly enough with the relevant public health responses?

Lily Makurah: That is a question I would pass back to Paul in terms of the on-the-ground response in-country.

Professor Cosford: We have teams in-country as we speak, alongside the rest of the UK Government's teams, led by the Department for International Development and the military presence there. Much of what we are now focusing on is the strengthening of systems for the legacy beyond Ebola—to re-strengthen the generic healthcare system, which is absolutely critical in Sierra Leone, as it is in other countries. We have our PHE laboratories still working there. We are working with the Government in Sierra Leone on how they provide the legacy for the future. Alongside the Department for International Development, we are working on our plans for what our longer-term presence should be, to support the country with its national and district emergency response systems. We are confident in those systems; we think they will detect cases as they arise, but the real priority is to make sure that is robust and to grow again the generic healthcare system. We know, for instance, that vaccination rates will be low and that there are problems with malaria, as you would expect in a country such as Sierra Leone. It is now critical for us—in support of the Sierra Leoneans themselves, who have to manage their own healthcare system—and the international community to provide all the support we can to make sure they are robust in developing their healthcare system again in recovering from the impact of Ebola.

Q110 Chair: Dr Johnson, you have recently given evidence to the International Development Committee. I think you told them that your "single biggest criticism" of the British Government's response to Ebola was their failure to deploy an effective, rapid diagnostic test for the disease in Sierra Leone. Can you explain a little what you meant by that, and tell us what happened?

Dr Johnson: As background, I was in Sierra Leone for two and a half years. A year before the outbreak started, I was working with King's in the main medical school. We set up units that managed about 1,200 Ebola patients in Freetown, as well as advising, a bit, the British Government and others out there.

One of the clinical challenges in a hospital setting was being able rapidly to diagnose patients. Just today there is an article by Professor Piot from the London School recognising that the lack of a rapid point-of-care test being widely available is one of the main reasons why we are seeing Ebola return. It has been identified that we have to diagnose rapidly. At the moment, you have to send off a blood sample, which has to travel to a specialist lab. At some stages it was taking up to a week to get results. It is now much faster, but being able very quickly to diagnose Ebola when patients come in is significant in protecting health workers and allowing those patients either to get Ebola treatment or move on and get other care. These rapid diagnostic tests may not replace the blood tests that you do—you probably still need to do a blood test because blood tests are of a better standard; they are more sensitive and specific—but we still think they would be very useful overall in bringing outbreaks under control.

The good news from the British science point of view is that the Ministry of Defence has developed a rapid diagnostic test for Ebola. This is something Britain can be proud of. Public Health England was helpful in collaborating with King's to trial this test in the field. In about December, we worked with Public Health England to use this rapid diagnostic test in a research study and found very positive results; it was very effective. We think it is more effective than a lot of the other types of test that are emerging in the market. In particular, it does not need to be kept refrigerated. A lot of the other tests require refrigeration, which is very difficult if you are trying to get them to a rural village.

The good news is that there was real success in getting it that far. Unfortunately, after publishing that study we were unable to follow it up by getting the test out into the field. My understanding is that about 10,000 of these rapid diagnostic tests have been produced, but we have not been able to operationalise them. It is something we have raised with most of the relevant Departments in the British Government, including the Department of Health, the Ministry of Defence, DFID and the Foreign Office. We have raised it in the House of Lords, the media and elsewhere, trying to ask why it is that, having studied and successfully produced this test, we have not been able to use it. We are quite keen to know why that is.

Our reflection is that it might be an example of the strengths and weaknesses of the British scientific response to Ebola, in that there were some very good pieces, but sometimes the whole was not as much as the sum of the parts and it did not always come together. I think this is an example of where it might not have come together in a way that is important. It is important not just because the test could have been, and could be, very useful. There are also ethical concerns about our testing a British military technology on Sierra Leonean patients successfully and then denying them access to the tests afterwards. There may well be very good scientific reasons why the test has not been deployed, but if there are, we are very keen to find out what they are.

Q111 Chair: Could you give me the timeline? In December you did the research study. When did you publish?

Dr Johnson: I think publication was in early March, but the British Government had access before that because they co-authored the paper with us.

Q112 Chair: March 2015.

Dr Johnson: March 2015 was the publication.

Q113 Chair: When were these 10,000 tests produced or available in Sierra Leone?

Dr Johnson: My understanding, which is only anecdotal from sources within the British Government, is that they were ready at the time of that study. There had always been a larger batch available from the end of 2014.

Q114 Chair: In your understanding, are those 10,000 in Sierra Leone, or are they sitting in a laboratory in the UK?

Dr Johnson: I do not know.

Q115 Chair: You do not know where they are.

Dr Johnson: I do not. These are all questions that I think the British Government will know much more about than I do.

Q116 Chair: Professor Cosford, can you help us?

Professor Cosford: I cannot on this specific issue. I can find out for you, but I do not have the information at my fingertips.

Q117 Chair: Have you heard of this diagnostic test?

Professor Cosford: I know that some work was going on around diagnostic tests. It is certainly the case that, as we established our laboratories, getting blood samples to them some distance away from where they were taken was often a significant issue that we needed to overcome early in their development, but I cannot give you specific detailed information on that particular test.

Q118 Dr Mathias: I understand that the LGC laboratory in Teddington has a DNA kit which would diagnose Ebola within an hour in the field. Is that one of these rapid diagnostic kits?

Dr Johnson: I am not familiar with that specific one. There are some types that are like pregnancy tests. The rapid diagnostic test is like a pregnancy test. You put a drop on it. There are others that go into a slightly more sophisticated piece of machinery.

Q119 Dr Mathias: This is a few sequences of DNA.

Dr Johnson: They probably use a GeneXpert or similar style of machine, which can be useful in a hospital setting but is probably not as feasible to put out—

Q120 Dr Mathias: This is in the field. I have seen this in the field—you take it to a hut or whatever.

Dr Johnson: There are a number of options out there. That sounds like another option that could be useful. I do not know whether you are more familiar with it than I am.

Professor Cosford: There is a range of different developments in the diagnostic field. We are keen to use the best as soon as we are able to. As I say, on that specific issue, I would need to come back to you with more information.

Dr Mathias: If you could tell us whether LGC fits into that, it would be very helpful.

Q121 Chair: Professor Cosford, what diagnostic programme has Public Health England been putting in place?

Professor Cosford: We have contributed to the UK Government's whole arrangements around the diagnosis and treatment of Ebola, in Sierra Leone in particular. If you go right back to March 2014 when the outbreak in Guinea first started, we had staff contributing to the European mobile laboratory placed in Guinea at that time, and also in Liberia in September 2014, but our specific contribution has been to provide diagnostic laboratories alongside three of the Ebola treatment centres in Kerry Town, Port Loko and Makeni. They were developed last October and November to support those facilities. What we found tremendously important in doing that was that it was not just about providing a laboratory, or a building with a test in it. You had to get the test taken appropriately from the person wherever they happened to be, and then labelled and delivered appropriately to the right place in the right condition. Then you had to have a mechanism for getting the test result back to the person looking after the patient in the first place. We did a lot of work around the whole chain of diagnosis. It is critically important to get that down to a very short time period. Diagnostic tests at the point of patient contact are a hugely important help in that, and it is a developing and evolving field on which we are keeping a close eye.

Q122 Graham Stringer: Professor Cosford, Public Health England has told us that it identified the Ebola outbreak at its onset. Can you be precise about when that was?

Professor Cosford: We knew about the outbreak when it was first declared in Guinea in March 2014.

Q123 Graham Stringer: That was after the first cases in December 2013.

Professor Cosford: The first declaration of an outbreak in Guinea through the international systems was in March 2014, so our timeline of monitoring goes from then onwards. We were aware that there were suspicions before that, but that was when we first became aware, and from March 2014 onwards we started to publish our briefings and health protection reports.

Q124 Graham Stringer: To whom did you give advice, and what was that advice in simple terms?

Professor Cosford: We published a whole range of different reports through that period of time. We have a number of routine publications. We have a health protection report that we publish at the end of each week, which contains a number of different up-to-date issues around infectious disease and environmental hazards across the UK and globally. On 11 April, we published one describing the Guinea outbreak. At that point there were 158 cases and 101 deaths. There was an initial transfer to Liberia and some suspected cases in Mali at the time, which were being investigated, but turned out not to be so, but we published it at that time. That is a public document and we share that widely.

We published appropriate advice at the time to travellers to west Africa and undertook a risk assessment for the UK that April, as we would in any of these circumstances. Having observed that there was an Ebola outbreak that was looking slightly unusual at that time, we put out a briefing note to all NHS emergency departments across England to make sure that, should any persons be returning from west Africa with symptoms that might appear to be Ebola, they understood what to do, and reminded them of the source of specialist advice, which is our imported fever service at Porton. That is all in line with what we would normally do in these circumstances. We were running our systems as business as usual, and we did that through May as well. If you remember, in May it looked as if the outbreaks were coming under control, so we were slightly less concerned at that point. Then they returned with a vengeance in June, and that led to a whole range of different actions during July, August and onward, which I am sure you will want to get into.

Q125 Graham Stringer: Did you not think of getting on the phone to the Government scientific adviser or advisers to the Secretary of State at the Department of Health?

Professor Cosford: We provided advice in our usual way. Colleagues in the Department of Health monitor our report as well, so there would have been some awareness of it at that time. The key issue was what was the level of risk? There are outbreaks going on across the world at any one time, and at that point this looked like a larger than previously experienced Ebola outbreak, but it was one that was in Guinea and Liberia. In our principal role of looking at risk to the UK, we were providing advice to the UK NHS accordingly.

Q126 Graham Stringer: Whichever way you look at it, it took either eight months from the first reported cases or five months from when you did your report before there was any action taken, in August 2014. Do you think your advice was being taken seriously?

Professor Cosford: I think our advice was taken seriously, but I am not going to sit here and say that in retrospect everything that was necessary to be done during that early stage, from December to July, was done as well as it should have been. People like Oliver were in Sierra Leone watching things develop. Clearly, there was a mismatch between what he was observing, as I am sure he will tell you, and what the international community was doing in response, but I am not sure that is solely a UK issue. There is a whole range of lessons that we need to learn from that.

Q127 Graham Stringer: I am going to come on to the international response. Over this period of either eight or five months, a casual observer might have said that the Government were not taking the advice seriously. At any stage, rather than just emailing or circulating or publishing papers, did you get on the phone and communicate directly with the Government scientific adviser, or the advisers to the Secretary of State?

Professor Cosford: From where I was sitting, our role was to protect the health of the population of England, which is what Public Health England is here for. We were monitoring and making sure that what was going on in the Ebola outbreaks was understood. We see Ebola outbreaks from time to time in a variety of different countries, and we were providing advice to travellers to west Africa and to Government on the level of risk, which we set for the UK. The level of risk was very low for imported cases to the UK, and the risk of any kind of spread of Ebola disease in the UK was negligible, which we stated as our risk assessment throughout the period. That was known and understood.

I think the question is at what point, from our point of view, should the need to protect health in the UK lead us to act on the international stage vigorously and robustly? In retrospect, of course we should have acted more quickly and robustly. You should always act quickly and robustly to start off with and then step down responses if you need to. This was not treated differently from a number of other things we observe globally. We are aware at any one time of a number of different outbreaks taking place in different parts of the world. We observe those that we think are most risky and make sure we have the right discussions. The specific answer to your question about whether we talked to advisers to the Secretary of State is that I am sure we must have done, but it was not flagged as being a major problem for the UK that at that point we needed absolutely to get involved in.

Q128 Graham Stringer: There has just been a joint report by the London School of Hygiene and Tropical Medicine and the Harvard Global Health Institute which says that the World Health Organisation had egregious failings in this area. Would you agree with that general conclusion, and what would be your recommendations about the performance of the World Health Organisation?

Professor Cosford: I am a little bit with Professor Chris Whitty on this. Clearly, there were failings in the way the World Health Organisation responded, but the WHO is an organisation of member states, of which we are one, so we bear some joint responsibility for that. My view is that for it to have taken until August for the World Health Organisation to declare a public health emergency of international concern was far too long.

If you want my view on some of the recommendations that have been made for the World Health Organisation, which I would support, an extra one I would put in place is that the WHO needs to have something in between no declaration of an emergency at one extreme and declaration of a disastrous public health emergency of international concern at the other. The term "disastrous" is mine, but a public health emergency of international concern is a very rare event for them to declare. When we look at our emergency response systems domestically, we grade what is going on. If under the international health regulations, they created a grading system which said, "An outbreak in Guinea is going on and it is now becoming unusual. We think there should be a specific focused approach through the WHO's country office in Guinea, supported by the global centre for WHO, which raises the alert that something needs our specific action and we need to get involved as a global community, but it is not yet a public health emergency of international concern," that would be more effective. The WHO, with its PHEIC system—public health emergency of international concern—seems to have only one way of responding: either you do not have a major international emergency or you have an extreme international emergency. One of the things this demonstrates is the need for a tailored approach to issues as they develop in different parts of the world. If you were to make a recommendation that I do not think has been made anywhere else at this stage, that would be a key thing to think about.

We can give you some thoughts about our own graded emergency response, which goes from level 0 to level 5—we have just taken it to level 4. It depends on the circumstances. For us, level 1 is a local issue—a local outbreak that is being controlled locally. We just need to be aware of it. Level 2 suggests that it is a bit wider and we need more control. At level 3, we take national command and control, and for level 4 we have a much wider response across our organisation. I think a similar grading of emergency responsiveness in the WHO system would be really helpful.

Q129 Chair: We have had a lot of evidence about the failure of leadership among WHO and other organisations to come to a swift decision about how quickly action needed to be taken. I have the report in *The Lancet* which makes quite a few strong statements. One thing it says is that there is a need for "industry-wide co-operation frameworks to ensure private firms such as airlines and shipping companies continue to provide crucial services during emergencies," and WHO also needs to "confront governments that implement trade and travel restrictions without scientific justification." Behind that there appears to be the implication that during the Ebola outbreak decisions were being made based on considerations other than scientific evidence. Would you like to comment on that? Dr Johnson, you are smiling enigmatically.

Professor Cosford: Are you referring to any specific actions that we took?

Q130 Chair: I am not speaking about actions you took. I am wondering whether you think that actions were taken by countries or companies which may have exerted pressure.

Professor Cosford: Of course, in a scenario like that a number of private companies will have withdrawn. We know that mining companies withdrew from Sierra Leone, don't we? The economies of countries experiencing major outbreaks such as this suffer enormously, as do the education system, vaccination programmes and the anti-malarial work that has been going on for years and so on. They are all critically important. Having an outbreak of this sort makes it such a problem to maintain all those other issues. Part of that is based on public concern and perception and organisational concern; part is based on the scientific evidence of what the problems actually are; and part of it is about a wider perception of the problems. Of course, a number of different things come into play when making decisions about whether a company is

going to trade in a particular country—whether they can get staff to go there and so on. One of the things we did, as you will be aware, was to make sure we knew all the different companies working in Sierra Leone and try to get their workers to register with us, so that we could give confidence about them being able to work there safely, get advice to them about how to avoid risk and monitor people when they returned, not only our healthcare workers but private companies, which we did. Eighty-six organisations registered with our returning workers scheme, which was partly about maintaining that confidence, but Governments and companies have to take a whole range of things into consideration when deciding how best to protect their employees or their citizens.

Dr Johnson: Specifically, the cancellation of direct flights from Sierra Leone to the UK was profoundly unhelpful. It made my life on the ground much more difficult. That was how at the time I was getting medical supplies and how my volunteer doctors were getting out to Sierra Leone, so the cancellation of direct flights undermined the Ebola response. My impression is that potentially it also increased rather than decreased the risk to the UK. Travel still had to happen, but, rather than happening directly, you had to go through a lot of complex routes to get there, and it was very expensive. DFID had to pick up the bill for massively increased flight costs. I have spoken to lots of people out there from the British Government. Certainly, from the professionals' point of view, I do not think they thought it was driven by public health advice. It was considered to be driven by political considerations. That is an example of a Government decision possibly not being driven by the best science, and that was unhelpful.

Q131 Matt Warman: Professor Cosford, in the written evidence from Public Health England you say that the relationship between SAGE and the other advisory committees required "further consideration". Could you elaborate on what further consideration might look like?

Professor Cosford: Underpinning that, I would simply say that there are a number of different sources of advice and an opportunity to strengthen bringing them together. In fact, I joined most of the SAGE discussions. The chief medical officer had her own health advisory committee, which also contributed to the SAGE discussions. In the event, we had very clear scientific advice coming through those mechanisms. In their initial setting-up, there were perhaps ways they could have been better co-ordinated, but the end result was very successful in getting the right scientific advice into play.

Q132 Matt Warman: Does that mean that in terms of learning for whatever the next outbreak is we probably will not have to go through the process of trying to work out what the best structure looks like, or does it have to be case by case?

Professor Cosford: There is an element of having the plans in place for generic responses. They are in place, and I am sure that later you will be hearing about that and asking questions about exactly how that is put in place, but there is inevitably a need to work on a slightly ad hoc basis. One of the pieces of learning for me, with a principally UK-focused role while supporting work in other countries, is the absolute importance of social anthropology in underpinning the response to something like Ebola in Sierra Leone. When you are dealing with Ebola, you need people who are very experienced in social anthropology and its impact on disease control, which you might not in other circumstances, so you have to tailor your responses according to what is needed.

Q133 Matt Warman: We heard in a previous evidence session that social scientists were much more involved in this response than they had been previously, so that in a sense is progress, whichever way you look at it.

Professor Cosford: Absolutely. I would hesitate to make any criticism of the way the scientific advice came through the health advisory group that the CMO set up or through SAGE. I thought it was done very well through the process.

Q134 Matt Warman: Dr Johnson, in terms of feedback from what life was like on the ground, we received some evidence that SAGE did not get enough input into that. Was that your experience?

Dr Johnson: My impression is that there was some very thoughtful good science and scientific discussion taking place within the British Government. The challenge was that a lot more of it was happening here in London than out in the field, and sometimes the partners in the field were not aware of the discussions that were going on. An example of that is the anthropology platform. That platform is the right idea. Unfortunately, speaking to a few colleagues on the ground, some who were involved in the decision making did not know it existed. There was a challenge in translating some of the science going on internally to things in the field. Part of that is speaking to people in the field: "What are the scientific questions you need answered?" A good example is that there was a lot of focus on ZMapp and novel therapeutic drugs. What you really wanted to know was which was more effective: oral fluids versus intravenous fluids? These were the sorts of things that day to day we needed a simple study on to reach a conclusion. One of the things to look at is how we improve that communication. A lot of it is about putting much more of it in the field. Professor Cosford mentioned earlier the laboratory work PHE did. I think that laboratory work out in the field is excellent. We collaborated very well with the lab team out there. From my perspective, there was not the same epidemiological footprint from Public Health England on the ground, but that links to Professor Cosford's point about whether the role of PHE is to be very England-focused and look at just domestic issues, or do we recognise that all domestic issues are international issues, in which case do we need to look at the structures and funding of PHE or other organisations to put a footprint on the ground? To compare it with the US Centre for Disease Control, they had perhaps 70 people on the ground; at every meeting I went to, a senior public health specialist from the US would be present informing US decision making. I am not sure there was a comparable footprint from the epidemiological standpoint. This is about having people in the field who can really translate it.

Q135 Matt Warman: Was there practically even a feedback mechanism? Did you know what to do when you wanted to try to get advice or send feedback to London?

Dr Johnson: I was very lucky. I had a lot of support from a lot of different people within the British Government and was drawn quite a lot into that. I had access to people like Donal Brown and very senior health advisers, as well as people in the UK. It was relatively easy for me. I had access to senior people, but I am not sure that I can tell you now who the co-ordinator of the scientific element of the response was. I know several people who had important roles. Sometimes the challenge was in knowing what role they had. I suspect that people who did not have as much access as I did would have found it more difficult potentially to feed into that process.

Q136 Chair: Professor Cosford, that chimes a little with some of the evidence we heard before, which is that there is a huge amount of good will for public servants on the ground and in-country here. Whenever anybody working clinically on the ground or in research here asked for help, heaven and earth was moved to help them, but there was an ad hoc sense to it. It was based on relationships, contacts and so on. Obviously, essentially, it worked for Ebola in many ways, but second time round perhaps it would be good to have stronger systems in place. Would that be an inaccurate assessment?

Professor Cosford: It worked, but it could have worked better. One personal reflection from my experience over the last year or 18 months is that mobilising our microbiology teams was more straightforward than mobilising our epidemiologists. That is partly a matter of capacity and partly a matter of understanding the role of the epidemiologist in the field. Epidemiology means different things to different people. Of course, there is a technical definition, but what we were keen to do was get people plugged into the national emergency response centre within Sierra Leone. We had somebody who spent some weeks working alongside the Minister for Health there early in the outbreak in Sierra Leone. Then the leadership changed and the particular individual returned to the UK, and we did not manage to get somebody else out to play the same role.

As a response to that, we had people there for quite a period of time over the year. We have one person out there leading our epidemiology and other work at the moment; we have had people plugged into some of the district emergency response centres, but it has been ad hoc. That is why we have been working with colleagues in the Department of Health to develop the proposal for a rapid response team, which would be a standing team based in Public Health England with a strong academic partnership. That was announced in the ODA review yesterday, and we are particularly welcoming of that announcement. The core role for co-ordinating and leading that will lie with Public Health England in the future.

Q137 Chris Green: Professor Cosford, is it now Public Health England's policy to provide assistance to other countries experiencing a disease outbreak, or was the Ebola outbreak in Sierra Leone a bit of a one-off?

Professor Cosford: We have always been aware when there are significant outbreaks internationally, and we offer our support through a number of different groups. One is the global outbreak and response network, which is part of the WHO. We work alongside the WHO, often when there is a call for support. We work alongside the European centres for disease control as they undertake risk assessments in the European mobile laboratories as well, and we work at the invitation of Governments who ask for our support. For instance, when South Korea had the recent problem with the MERS coronavirus outbreak, with 100 to 200 cases, they asked for our support in understanding what they needed to do with their health system to be able to respond to and avoid that sort of problem in the future, bearing in mind that we had cases of MERS coronavirus back in 2012 and 2013. We diagnosed the first case globally and controlled it at that point. We have had specialists working with the Korean Government to look at how they need to strengthen their health systems. Again, it is rather ad hoc. It is certainly a policy of Public Health England that we would have a rapid response team and place it internationally. We are planning a longer-term presence in Sierra Leone as of now, and we have some people based there now. We are planning a longer-term presence in Pakistan. We have an agreement with the Pakistan health system that we will have an office there. We are working on how we develop our global and international presence, because it is good for the UK reputationally and helps to protect our own health as well.

Q138 Chris Green: It seems that it is very much playing catch-up. Is that right?

Professor Cosford: PHE has only been in existence since 2013. The Ebola outbreak began within a year of our starting, so I think it is unfair to call it catch-up. There is a huge amount of stuff we need to do to be as good as possible in this area, and we are certainly reflecting on Oliver's comments about the CDC. We see myriad CDC personnel present all across the world, and we know that that capacity is not the sort of numbers we have, but we are also very cognisant that we are asked for our support and we want to be able to provide it whenever we are asked for it.

Q139 Chris Green: Maybe there is an expectation that, with increasing population, urbanisation and increasing international travel, you will be called upon more frequently in the future.

Professor Cosford: Yes.

Q140 Chris Green: How do you respond to the claim by the Wellcome Trust that when emerging risks arise in other countries Public Health England is "ill-equipped to respond quickly and effectively overseas"?

Professor Cosford: If you go back to the Ebola scenario, we did deploy. We deployed some microbiologists in the European mobile laboratory in March 2014 as part of an international system. We deployed some epidemiologists at various times to support the system in Sierra Leone, and we have deployed our microbiology services very effectively in the laboratories. I think it is unfair to say that we are ill-equipped to deploy and work in the international field. Yes, of course there are things that we can and should strengthen, but the rapid response force proposal will be a key part of that, alongside our developing global and international public health functions. We are internally reviewing our global and international public health functions at the moment. We have a report coming to us internally in December as to how we can strengthen our system, so we will be working over the coming months to respond to that absolutely.

Q141 Chris Green: You are taking advantage of the experience you have just had and learning from it.

Professor Cosford: Yes. Absolutely.

Q142 Chris Green: Dr Johnson, you said that, while Public Health England deployed resources in laboratories in Sierra Leone, the "epidemiology side was a weakness that needs to be structurally addressed."

Can you clarify what you meant by that?

Dr Johnson: The British response was obviously huge when it got going from about September, and there were a lot of assets available as part of that British response in Sierra Leone, but the need for that response to be tailored to what was going on was based on an understanding of what was happening at the outbreak. I think that at times there were not senior public health officials as part of the leadership team in Freetown who could help to understand what was happening. A colleague out there described the British response as a bit deaf and blind as a result of its lack of public health specialists at senior level who could help interpret what was going on. That meant that the resources available were not used as well as they could have been; maybe things were not as tailored or responsive as they could have been. Because of a large military presence there, potentially it over-militarised some of the response, because the assets available were almost entirely military ones that were not necessarily specialists in public health or epidemiology.

As Professor Cosford said, the assets available to the CDC in the US were completely different. The scale of the US public health response in Sierra Leone was completely different from the scale of the British response, even though Britain was supposed to be taking the lead in Sierra Leone. In future outbreaks, for DFID and other agencies to be able to access, from whatever mechanism, what is a very effective British public health system, and deploy that internationally is very important. Part of that is about mandate, part of it is about funding and part of it is about leadership. It was interesting that I met the director of the CDC four times in Sierra Leone, or he came up four times and I met him three times. I am not aware of any comparable visit from the British public health side, yet Tom Frieden, the head of a much larger agency, was in Sierra Leone four times. Therefore, there is also an element about the extent to which it was considered a priority and people on the ground were getting stuck in.

Q143 Chris Green: The World Health Organisation and the Department for International Development need to start working far more effectively across borders in that sense, and structures need to be developed and put in place more effectively.

Dr Johnson: Yes.

Q144 Chris Green: What do you think they would look like?

Dr Johnson: One of the challenges is that DIFD were probably expecting to get this kind of advice from the WHO and they did not necessarily provide it effectively. I would agree from the ground in the early days that the WHO advice was very unhelpful; they were actively downplaying the scale of the response. Even as MSF and others were saying it was out of control, WHO were playing a role and saying it was fine and everything was under control. The challenge for DFID is that it might have been expecting to look to the WHO for that kind of support. When it was not there it was difficult to find out where that was going to come from. I would compliment the British response on how well co-ordinated it was internally. To have a single JIATF—joint inter-agency taskforce—with all those different pieces internally, was effective. Sometimes, however, that meant it was a bit insular, and engaging with, say, the CDC or WHO when they had begun to improve became trickier. A decision needs to be made from the British Government's standpoint. Do we look to organisations like the WHO or CDC to provide us with this kind of advice in the field if we are deploying, or do we need a domestic capacity to deploy, in which case we need a clear leadership mandate and resources to make that happen next time? That was a gap in this response.

Q145 Chair: Professor Cosford, the report in *The Lancet* identifies that "reliable systems for sharing epidemiological, genomic, and clinical data were not established during the Ebola outbreak," and that this is a clear need. You mentioned the rapid response network that has been announced. Do you think it will fill that gap from a national standpoint, or does more need to come forward?

Professor Cosford: It is part of the story. I had extensive discussions with Donal Brown in Freetown in February this year about the need for Public Health England and DFID to work alongside each other. I was hugely impressed by the DFID response and the British military response, but I appreciate some of the comments Oliver is making. We need to have an utter partnership among PHE, DFID and across the UK Government so that we are able to give that epidemiological leadership in responses of this sort. For us,

there is a need to be able to deploy our epidemiological skills in a context where there are very strong development needs. We will need to develop that experience, and I think the rapid response team will help us do so. For instance, bread and butter work for us is controlling outbreaks in the UK. It is a very different scenario when you are trying to control an outbreak of a diarrhoeal disease in a country without a safe water supply where the cultural norms are so different. Our advice and expertise has to take account of that and deploy alongside DFID and other colleagues in the realities of outbreak control in those circumstances. We have huge ability and expertise to do that, and we deployed some of it. I wish that we had been able to deploy more, but I see the rapid response force, the ongoing developing work with DFID and the review of our global health and international functions as the way forward to do that.

Q146 Dr Mathias: Maybe I've got this confused so I wonder if the panel can help. I am getting confused about WHO, which everybody seems to agree let everyone down in terms of what they should have done, the European initiative on this outbreak and PHE's initiative and DFID's, the military, the civilians and MSF. If it was not Ebola but a physical enemy, I expect that generals would have been meeting and co-ordinating. My concern is duplication, not co-ordination. Could I ask Dr Sykes for his impression? Please tell me I am wrong.

Dr Sykes: My expertise is the media, so that is definitely not a question for me.

Professor Cosford: I thought that co-ordination across the UK Government was very strong through the COBRA mechanisms that were involved, bringing together different Departments both at official and ministerial level. That co-ordinated the response very well. The issue is probably the period from March, or even December as you point out, to August and what we need to learn about it.

Q147 Dr Mathias: The WHO should have been the general in charge.

Professor Cosford: There was good co-ordination across the UK Government even before that. I was also impressed when I visited Freetown with the co-ordination between the civilian and DFID-led response and the military response. That was very strong and effective. I know there are issues about the military being seen to lead civilian responses, but my observation is that some of the military commanders leading the district emergency response centres were phenomenally important.

Q148 Dr Mathias: And CDC and other organisations like MSF.

Professor Cosford: CDC played an important role there as well. MSF are the heroes of the piece in some way, aren't they? But there are other heroes too.

Q149 Dr Mathias: Were they co-ordinating rather than duplicating?

Professor Cosford: I think Oliver would be better placed to say how it felt in terms of co-ordination in-country. From where I sat, it felt unco-ordinated for a while and then became much better co-ordinated, and that was partly a reflection of the strength of the links between UK and Sierra Leone responses. I am sure Oliver will have a view.

Dr Johnson: WHO were supposed to be doing it quite early on and they did a bad job, so people looked elsewhere. UNMEER was set up but did not have effective leadership on the ground. It was based in Ghana. It came very late and never really took on a role. I think the British did really well and quite badly on this one. We did really well because we pushed hard for NERC—the National Ebola Response Centre—to be set up. We funded it, supported it and put military, Foreign Office and all sorts of assets into it to strengthen it and make it a site where the CDC, the British, the WHO and the Government would be. The problem was that, having set up the structure and invested quite a lot in it, the British maintained their own separate parallel structure in JIATF. What you had, therefore, was an international and national community coming together in the NERC but continuing to have a separate structure where a lot of the information at the districts was often going straight to the British command centre and not necessarily directly to the national ones. I think we had the right instincts in setting that up, but we should have gone all in and moved the British response into that international hub entirely.

Q150 Dr Mathias: Should WHO have set up the NERC? If we need it this month and WHO are not going to do it, who would be doing it?

Dr Johnson: The WHO set up something called the ERC before the NERC, but it was not considered to be very effective. In part, that is because the WHO is mainly a technical agency; it is used to giving technical advice, not doing logistics and co-ordination. Normally, the Office for the Co-ordination of Humanitarian Affairs would come in, but because this was considered a health emergency, not a humanitarian emergency, OCHA were never deployed. They are normally the ones to de-conflict and share information, but they were never deployed, and a lot of us do not really understand why.

Q151 Dr Mathias: They could have. Tomorrow they could do the logistics.

Dr Johnson: I think they are an agency that is more used to that kind of logistical role. There are probably several different ways of doing it. The key is to pick one and for everyone to rally around it. It is still not entirely clear who would step forward for that tomorrow. You could give WHO that capacity or you could say that WHO is a technical agency and let's look elsewhere, but there needs to be more clarity about who it should be.

Q152 Dr Mathias: Lily, do you have any thoughts on that?

Lily Makurah: I have nothing to add.

Q153 Dr Mathias: Could you give us a brief overview of the Heathrow screening, and how many cases were identified?

Lily Makurah: It will be helpful for people to know that we put in place a twin-track approach to do the Heathrow screening. For those who had been deployed in any of the Ebola-affected countries, we had the returning workers scheme, which meant we registered over 86 organisations, plus the eight devolved administrations, to set up an advance arrangement so they knew they had a responsibility to make sure their staff were briefed about what they needed to let us know in advance. In advance of the arrival of any returning worker we had an overview of what they had been doing and were able to do a prototype risk assessment. Importantly, we also knew on what day and at what time and location they would be coming back into the country, which enabled us to flex our resources so we had appropriate screening staff of the right skill level there.

We met those who were not returning workers at Border Force. People would land at Heathrow or at other ports; they would be stopped or volunteer at Border Force and be escorted through to our screening facilities where they were met by staff. Regardless of any information we already held, they would review the locations those people had visited and what activity they had undertaken, both professional activities but also whether they had been to funerals. That was often an issue with the press. That risk assessment process, accompanied by temperature check, also meant we were able to categorise. That categorisation, from one to three, meant that we could tailor the advice given to people about whether they could go to work, travel or socialise. It also gave a lot of reassurance about what advice they could give to their families about risk. That arrangement meant that in the case of every person where there were any concerns at the point they arrived at a port they were immediately advised by a clinician or other person. All those who, having left Heathrow, became symptomatic were very quickly able to use the information we had given them to get back into the appropriate facility, whether that be a local facility or something like the Royal Free.

Q154 Dr Mathias: How much did that programme cost in total?

Lily Makurah: I do not know the overall cost; that is under analysis at the moment, and we will have the full report in due course.

Q155 Dr Tania Mathias: Dr Johnson and Professor Cosford, did you go through that system? Did you go through Heathrow?

Professor Cosford: At about 5 o'clock in the morning our staff were sitting in Heathrow airport. When I came through at 5 o'clock on a Saturday morning they provided an exemplary service, as you would expect.

Q156 Dr Mathias: Was it the same for you, Dr Johnson?

Dr Johnson: I and my team came through lots of times, and I think it was a good service. My colleagues whinged about the restrictions but, recognising the politics of the situation, it was proportionate. The organisation on the ground was polite, rapid and effective.

Professor Cosford: We learned a lot as we went along. We put in place a customer feedback system to understand people's experience. Of the 2,000 or so people who answered our customer feedback form, half of 1% said they were dissatisfied with their experience of our screening service.

Victoria Borwick: Dissatisfied.

Professor Cosford: A half of 1% said they were dissatisfied. There is a double negative in there. I apologise.

Q157 Dr Mathias: Was any reason given?

Professor Cosford: We looked at the reasons. They could be things like the comfort, the queuing and so on.

Lily Makurah: It is important to add that I was involved in helping to set up the feedback system for passengers, which started in January. The richness of that qualitative information was used to continue to refine it. You often found comments not just about efficiency and the warm welcome but the reassurance. Whether people were returning workers or coming through on business, it reinforced that it was seen to be the right thing to do, and it continues to be at this point.

Q158 Victoria Borwick: Continuing the communication theme, we have been told by the Science Media Centre that several highly qualified independent experts were affiliated with Government. Therefore, people one would expect to be able to speak out were nervous of talking about Ebola, because they felt they might go off-message or against Government messages. How do you feel the communication side was handled with the public, and what could be better?

Dr Sykes: The coverage of Ebola and the whole situation generally in the UK was pretty good. One thing that needs to be recognised and accepted straight off the bat is that there is a lot of evidence that shows that it is important to have a single message when there is a public health crisis. The evidence shows that that is the best possible way to try to get a message out there. The problem is that in the real world there is a major flaw, which is the news media themselves, who operate under completely different rules. For starters, you have the fact that there is a 24-hour news media service, which means a continuous requirement for interviews on TV, radio, online and so on. Having just one person, or even a couple of people, means that physically there is no way they could logistically handle all those interviews. The second thing is that they are the press and inevitably, no matter what Government say and no matter how authoritative the worth of the information they give, the press will always seek third-party independent experts to give their voices. Those voices will end up being members of the public, campaigners or people who just like being in the spotlight, or we can make sure they are independent experts or scientists who have been studying this for 30-odd years, have done lots of research and know what they are talking about.

The issues start to become quite complicated, because the press inevitably come to us looking for experts. We have been doing this on swine flu, Fukushima, volcanic ash clouds and so on. We end up working with many of the top experts in the UK, who are exactly the same people Government want to work with, understandably, because those are the people with the best advice. Government seek out those people and say, "Can you come and give us information for SAGE and so on and give us your advice?" Then they

want to discuss it behind closed doors, completely understandably, but the problem is that sometimes those experts are lost to the media. Instead of having people you are able to call on, that the media are hearing from day in day out, those voices end up getting lost, not necessarily because there is an explicit command not to speak out, though that has happened on occasion, but because those experts are not necessarily being encouraged to speak out. They are nervous of saying something they should not and going off-message, despite the fact that, almost inevitably, because all these experts come from a very similar background and have been doing the same research, no matter which ones you pluck out of the scientific community they end up with very similar recommendations as to what would happen.

When there is disagreement in the scientific community, it does not necessarily result in a problem. There was a particular example during swine flu when John Beddington was organising SAGE. There was a big discussion among the 35 scientists involved about whether Tamiflu should be handed out to everyone, or whether people should come in to seek it. Before the press briefing about that, he was advised that he should, if asked, give the impression that there had been a unanimous decision among the scientists. He chose to ignore that advice, rightly, because no science or health journalist would believe that 35 scientists sitting in a room would all agree on something. That was the answer he gave. The science and health journalists laughed and moved on and there was no more fuss about it. The way in which communication is done is vital. There have been occasions when some of the experts we work with felt they have not had the support or encouragement to speak freely to the media. We have lost them when they have gone on to the expert panels. There needs to be a bit of a sea change to stop that happening. We know that with the volcanic ash situation with SAGE they tried to encourage experts to do so. That is not always or necessarily completely believed because it is a high-stress environment.

The other thing that can be done and needs to be done is to give information to those experts that we and other institutions are putting up all the time. The LSHTM, the Medical Research Council, the Wellcome Trust and the Science Media Centre all get many media inquiries throughout the entire period. Paul mentioned the health protection report that is published weekly. Anything like that, which can be sent out to the experts the journalists will be going to anyway, will make a massive difference, because then they are giving their expertise based on the latest figures and information. During the swine flu pandemic we managed to get agreement with DH to do just that and it worked incredibly well. Despite the weekly briefings the CMO was doing at the time, journalists were still coming to us and to independent third-party experts to find out information. DH was sending us the latest information. As a result, those experts were going on air, talking about the latest information and giving the most up-to-date information they could. That does not always happen with all Departments. We wish that it would be encouraged and somehow set in stone as best practice.

Q159 Victoria Borwick: Does anyone want to add to what best practice should be? Taking lessons learned is really what we are looking for here.

Professor Cosford: I would give one lesson learned. What Edward says is exactly right. One of the reflections I noticed from the US experience was that perhaps they were overly reassuring the public that Ebola was never going to be a problem for the US. We were trying to be clear that we did not see Ebola as a significant problem for the UK and gave that as a clear public message. When in the US they had an imported case from Liberia and failed to diagnose that case for three or four days and then had two secondary transmissions to people who were contacts of that case, it very rapidly lost public confidence in the control of the response at national level. We were very anxious to avoid that scenario. We did a number of different things, but one of them on the communications front was to make sure that we had a realistic message going out to the public. It was at that point that Dame Sally Davies, the chief medical officer, on the basis of our risk assessment, used very technical terms and said, "We expect a handful of cases in the UK. We expect them and we are prepared to handle them and know how to handle them." Rather than the bland message that Ebola is an issue only for West Africa and will never be a problem here, we tried to be as realistic as possible. It is a very low risk. There was negligible risk of any spread here, but we expected to see a handful of cases that we would then manage and treat. It was tremendously important to keep a sense of honesty that enabled us to maintain a situation where we had UK healthcare workers absolutely embedded as part of the response in West Africa, and a sense of public confidence that we could do that sensibly.

Dr Sykes: I want to back up what Paul is saying about the value of doing proactive media work. It is useful to explain to the science and health journalists in advance of situations happening just what might occur. For example, we ran a background briefing in which Dame Sally, PHE, the Wellcome Trust and so on were involved. All the journalists came and listened to those top experts explaining what was going on on the ground at the time. One of the key questions that came up was, "What is the likelihood of Ebola mutating and becoming airborne?" They discussed how it was incredibly unlikely and almost certainly it would not happen. If it did, it would be horrendous but it almost certainly would not happen. A couple of weeks later a US journalist misconstrued something an expert had said and put out that it was likely to turn airborne and cause all kinds of havoc. Poor media across the globe, except in the UK: we got calls from journalists saying, "We were at your briefing and we know that the experts said the opposite and it was very unlikely to happen." They did not run with that story in the same way. Arming and forewarning those specialist journalists is vital for the coverage that ensues. We also tried to do one with PHE and others on UK preparedness, trying to get journalists to understand what the considerations would be—screening, what would happen and who would be looking after the different situations as events unfolded. Unfortunately, we were not able to go ahead with that one, but only a couple of weeks later Pauline Cafferkey came back into the UK, was sent to Glasgow and started to develop symptoms. Instantly, there was frenzy and furore about what the preparedness was like, what was going on and what we should be doing. If we had been able to do that briefing in advance, before the battle started, as it were, all the journalists would have been informed and it would have ended up with better coverage as a result. That is just a plea for trying to do proactive media work wherever possible.

Victoria Borwick: That is very good advice.

Q160 Chair: Professor Cosford, it sounds like you had a very clear media strategy, which was to communicate this message about a handful of cases potentially but very low overall risk in the UK. We are also hearing the message from Dr Sykes that there appears to have been a different working pattern in Ebola versus swine flu, where there were very regular updates by independent experts, who obviously would be sought out by journalists. Was that a deliberate strategy, or was it just that Ebola was happening quickly and nobody thought about it?

Professor Cosford: The communication strategy was led across Government and it is probably better to ask others about the core, overarching strategy. From a Public Health England perspective, we were very clear about our messages about the level of risk to the population of the UK. One of the lessons learned was the importance of not being so overly reassuring that you give the impression that people's legitimate concerns are completely unfounded. Of course, we thought that the concerns expressed in the media about outbreaks of Ebola coming to Western Europe were completely unfounded, but we needed to express that in a way that gave legitimacy to the fact that people naturally had those concerns, and we needed to be able to answer them in order to maintain public confidence. That was the bit of the media strategy I was referring to.

Chair: We have come to the end of our questions. Thank you so much. It has been an absolutely fascinating panel and very helpful to our inquiry. We may have some follow-up questions for you, because this is our last session and we will be preparing our report very soon. If we do, I hope that you will be able to respond in writing. In the meantime, can I thank you all for the role that you played in responding to Ebola? The UK can be very proud of the role we played in responding to the Ebola crisis, but I hope we can learn lessons from it and make sure that, should anything on the scale of such a serious infectious disease outbreak occur in the future, we can do even better next time. Thank you very much.

Examination of Witnesses

Witnesses: **Professor Sir Mark Walport,** Government Chief Scientific Adviser, Government Office for Science, **Professor Dame Sally Davies,** Chief Medical Officer, Department of Health, and **Brigadier Timothy Hodgetts,** Medical Director, Defence Medical Services, gave evidence.

Q161 Chair: Welcome, and thank you for coming to give evidence today. This is our second and final session on science in emergencies: lessons learned from Ebola. I know that all of you were closely involved in the UK Government response to the Ebola crisis. We have just been hearing evidence on various in-country response issues but also Public Health England's response. Brigadier Hodgetts, could I start by asking you a question arising from our previous panel? We heard from Dr Johnson about an effective diagnostic test for Ebola which was developed by the MOD's Defence Science and Technology Laboratory and tested in-country. Dr Johnson was involved in the testing. He understands that 10,000 of these tests had been produced and were effective, particularly because they do not have to be refrigerated, which is very useful in-country, but they have not been released for use yet in West Africa. He has expressed concern about this. He gave evidence also to the International Development Committee and said this was his single biggest criticism of the UK response. Could you help us try to understand what is going on?

Brigadier Hodgetts: I can certainly help you understand some of the diagnostics we were involved with. I am not sure whether it relates exactly to the test you are talking about. We deployed a machine called the BioFire FilmArray, which had been developed by the Defence Science and Technology Laboratory but had not been fielded before. This works on the polymerase chain reaction, which identifies a tiny piece of virus and gives you the diagnosis. It is a bench-size piece of machinery. It is simple to use and very effective. It was tested against the gold standard PCR machine. A recent publication and statistical analysis shows that they are both equally effective. What we did was evaluate a piece of machinery that had not been fielded before and showed it to be very effective. This adds to our armamentarium for the future to put smaller machinery into the field. It is also a safe test because it relies on a heat-treated blood sample, so we can assure improved safety for laboratory staff as well as effectiveness in diagnosis equal to some of the more sophisticated, perhaps harder-to-move-around machinery.

Q162 Chair: That is very encouraging. I think Dr Johnson was referring to in-clinic tests. He described it as a little like a pregnancy test. You put a drop of blood on the test and it gives you a very quick diagnosis, and it is very accurate, apparently. You are not aware of this test.

Brigadier Hodgetts: I am not able to give you anything right at the moment. I am sure I could look into that for you.

Q163 Chair: That is very kind of you. Would you like to give us a brief description of your understanding of the role that the military played in-country? We have heard glowing reports of how the military came in and provided much needed leadership at a time when it had been lacking from the UN previously and WHO. Could you give a brief description of your understanding of that situation?

Brigadier Hodgetts: Of course. The time between receiving the activation order and getting boots on the ground and treating patients was a total of six weeks. During that period we were building facilities; training staff on new procedures and assuring that training so that they were protected as much as they could be; and procuring new equipment and familiarising people with that. Our principal task was to build and operate an Ebola virus treatment unit in Kerry Town. Initially, that task was for six beds and we thought it was going to be for 60 days, but over the course of time we needed to stay longer and surge the capacity up to a maximum of 20 beds. We also conducted strategic evacuation to the UK of patients, or exposed individuals who might potentially develop the disease, using the air transportable isolator.

With our engineers, we provided support and supervision to help the Department for International Development build an additional six Ebola virus treatment centres. We also deployed at short notice 5 Medical Regiment and, within a month of their task, they were on the ground training local healthcare workers in infection prevention control measures. Overall, they trained about 4,000 of the local nationals before handing on that responsibility to another organisation. We worked with the Department for International Development and the Government of Sierra Leone to help establish both national and regional response centres to give them a command and control infrastructure to support the management of the crisis. It is also important that back in the UK not only did we train our own personnel but we were able to train the first tranche of national health service personnel before they deployed, and then do a train-the-trainer course for the charity UK-Med who could then continue to train NHS staff. We also provided training for international partners—for the Canadian defence forces who deployed with us, for Norwegians, Danes and the Irish charity GOAL.

Q164 Chair: One report we received from Dr Johnson was a clear message that the internal organisation of the British response in Sierra Leone—DFID, the High Commissioner and yourselves—was outstanding, but he was a little concerned that because of the strength of the internal command there was not always the same strength of relationship between that and the national response. How do you respond to that? Do you think that the engagement between the British response and what was going on in-country was as strong as it could have been?

Brigadier Hodgetts: I do not feel that I am in a position to comment on that accurately. I was not in-country experiencing that. I could seek advice from those directly involved.

Q165 Graham Stringer: Dame Sally and Sir Mark, we have just heard from Public Health England that the first outbreaks of Ebola were in December 2013 and PHE started publishing papers in March 2014, but action did not really start until August 2014. As the main advisers to the Government, were you satisfied with the detailed advice you got from Public Health England, and the timing of it, and do you have any other comments?

Dame Sally Davies: The first case, on detective work, turned out to be in December, but I do not think we were aware until February/March about that case and the tracking back. Public Health England is the public health arm and agency of the Department of Health, so its work is part of our shared Government response. Because it was outside our borders and it was a poor country, DFID played a role and on 14 March they sought advice from SHED. I will have to look up what that is.

Sir Mark Walport: Science in Humanitarian Emergencies and Disasters.

Dame Sally Davies: Thank you. Meanwhile, in February the Advisory Committee on Dangerous Pathogens convened as a standing committee to look at the haemorrhagic fever advice. That is the expert committee that advises so that Public Health England can translate it into guidelines which we can then agree and sign off. As we went through the summer, we were aware of it building up and were concerned. Indeed, in July I wrote to all doctors in the country highlighting the issues so they were well aware, and in mid-July we were into our third ACDP committee. By the time WHO called a PHEIC—a public health emergency of international concern—on 8 August we already had a lot of work in play. You could ask whether they should have called it earlier. In retrospect, yes, but it just gave more emphasis to what we were doing; it did not change the direction of travel.

Sir Mark Walport: I agree with everything Dame Sally has said. The work of Public Health England was, if you like, always peer-reviewed internally as part of the committee structures we had. Dame Sally assembled health advisory committees. Those morphed into an Ebola scientific assessment research group, which in turn morphed into SAGE, and there was continuity between all of them. While it sounds like a rather complicated series of structures, there were similar people and overlap was involved all along. Public Health England were in that. Their modelling was tested by external experts on modelling. All aspects of their advice were being tested, so we were very supportive of what they were saying on the basis of peer review evidence.

Q166 Graham Stringer: Dame Sally has just said that it probably could have been a quicker process. Do you have any recommendations as to how the internal communications between the bodies will be different in future, so that if a similar crisis occurred it would be a speedier response?

Dame Sally Davies: I would agree with Sir Mark that communication was good. Whenever I got experts together, Sir Mark was invited and sent someone so he was there, and we morphed the groups from one to the next to the next in order to have the right experts in the room giving the right advice. When Sir Mark finally stood up the SAGE, it was only a variation on a previous group, the Ebola advisory group, a couple of meetings of which I had co-chaired with Jeremy Farrar from the Wellcome Trust. It was important at that point to have a SAGE so that Sir Mark could commission the modelling. There were various groups working on modelling and it needed a formal system not only to commission it but to say, "We want one answer that is a consensus." Sir Mark set up a sub-group, which brought together DH modellers, Public Health England modellers, London School modellers and Imperial College modellers, and we had an

Oxford modeller on the SAGE committee looking at the final product, because that modelling drove the in-country response in Sierra Leone.

Sir Mark Walport: From the very beginning when Science in Humanitarian Emergencies and Disasters were requested by DFID to get involved, because at that stage it was a west African emergency and DFID were taking the lead, the advice from that group went to the CSAs, me, DFID, FCO, MOD and Department of Health. It has been joined up from the very beginning.

Q167 Graham Stringer: The London School of Hygiene and Tropical Medicine and the Harvard Global Health Institute have just published a very critical report on the World Health Organisation. Do you agree with their conclusions and severe criticisms? Do you have any other recommendations you would make because, after all, we are part of the World Health Organisation?

Dame Sally Davies: You should know that I sit on the executive board representing the UK. They are right in their analysis of the delay and that it probably meant that lives were lost, and that they found it very difficult to negotiate round the world the resources needed, but I do not think we need separate systems. Our belief as a Government and all of us together is that we need significant WHO reform, which we are working towards. They had a major external review chaired by Barbara Stocking. They are following all her advice. She used to be a health service manager and then ran Oxfam, and she is head of a college in Cambridge. She led an external expert group looking at it.

If we have a totally separate system, it will not work. We need to have the WHO as the lead for the health cluster in humanitarian responses, working with the rest of the UN humanitarian response. They are trying to set up an emergency contingency fund. We have committed $10 million to it for if there is another one. They need $100 million that they can just call down overnight. They were stuck because people were not giving them money to mount the response they needed to. They also need a command and control structure and they are developing it. In our health reform under the previous Government, despite the changes, there is still in this country a strong command and control system for emergencies. They are working on it and we are pushing them very hard.

Sir Mark Walport: My comment is that it is a very good report. I think they have analysed it very carefully. I do not want to read it to you, but in panel 1 they divide it into four phases. The initial phase was "inadequate national investment and donor support for building national health systems capable of detecting and responding to disease outbreaks," so a lot of that is about inadequate health systems in some developing countries. That is a profound problem. It is easier to make a diagnosis than provide a straightforward treatment. The second phase, April to July 2014, is interesting: "Little incentive for countries to report outbreaks early," so some of it was about inadequate reporting and data sharing, an issue about which Dame Sally and I have recently written to *The Lancet*. WHO were "slow to mobilise global attention or assistance." One has to recognise that there is a regional as well as the Geneva component to WHO. I think the incentives there did not work properly. Then it picked up in phases 3 and 4. I will not go through all the details, but that was the point at which the UK kicked in on a very large scale and committed £427 million, and you have heard something about the response.

Q168 Graham Stringer: Public Health England suggested to us in the previous session that part of the problem was that there is either no crisis or a major crisis. If this is not a contradiction in terms, they were suggesting an intermediate level of crisis so they could alert earlier. I know you have not heard that before, but do you have any response to that suggestion?

Dame Sally Davies: I have discussed with Barbara Stocking and the director general of the WHO whether they should have a more modulated scoring, and they are considering it. At the moment I think they have review overload and it is proving quite difficult to deliver their work and respond to all the different reviews. There are of course two more major reviews due, one by the National Academy of Medicine in the States and the other commissioned by the secretary general, so they have their own, the follow-up to their own, this and more coming.

Sir Mark Walport: It is always difficult at the very early stages of an infectious disease outbreak to know exactly what is going to happen, so modelling at that stage is very uncertain with very wide confidence limits. It is only as the epidemic progresses that you can narrow those. That is one of the challenges with

infectious diseases. For example, we have MERS floating around—middle east respiratory syndrome. We got on to MERS a bit faster, but I think the learning from Ebola is that in terms of modelling what is going to happen it is very, very difficult.

Dame Sally Davies: Yes. For instance, at the end of May we had a meeting of experts looking at MERS because of the Korea outbreak, so while we were doing all this we were not taking our eye off other issues.

Brigadier Hodgetts: May I say something positive in response to the critique in *The Lancet*? Their third recommendation was about the production and sharing of data, knowledge and technology. This is something we have been very keen to do. We have been very keen to exploit as much as possible the experience from Ebola and to share it. To date, we have had 19 articles published, excluding editorials and letters, and we have another series of articles in preparation. That covers issues such as innovation in training, using an ultraviolet tracer to map whether or not you have effectively decontaminated yourself, which led to a huge surge in the confidence of our staff before they deployed. We also developed rubber sleeves to go over the arms and chests of simulation casualties so that we could practise cannulation on real people, interacting with them as if they were genuinely seriously ill.

We are improving our understanding of the disease. We have a study running with St Thomas's Hospital—we received authority to bring samples back to the UK—to characterise the coagulopathy, the abnormal blood-clotting associated with this haemorrhagic fever. We looked at the value of a whole host of specific interventions and published on the value of giving blood transfusion to people with abnormal blood-clotting; the value of putting in central lines early—lines into a big vein in the neck—to improve patient comfort and reduce the number of times you have to assault the patient with a needle, and also to improve carer safety. The fewer times you use a needle, the less you will be exposed potentially to needlestick. We are also looking at how we target resuscitation using an ultrasound probe that is passed down the oesophagus, down the gullet, and at targeted replacement of electrolytes. We mentioned some of the better diagnostics in terms of the BioFire FilmArray, but we also fielded from the University of Birmingham the MinION, which is effectively the size of a large USB stick and is a portable genome device. It can generate real-time genomic data.

There was a real learning point from this, in that we had quite a lot of difficulty getting local ethics approval. We were absolutely adamant that any research we did was going to be ethically sound. It was approved in the UK through our MOD research ethics committee, but finding the processes in-country to make sure that it was approved by the local Sierra Leonean ethics committee was very difficult and took a number of months. It took so long that by the time we got approval, we were over the shoulder of the outbreak and lost some of the potential in being able to exploit that device. We did not give up. Instead, we have made multiple attempts at sequencing bacteria isolates, shigella isolates, rather than the Ebola virus, at least to prove the principle. We continue to work on that as another potential portable analyser for the future, and to give understanding of the genomics of the outbreak in real time. Do you want me to stop? I could lecture.

Chair: I wish you would. It is fascinating, but I must be fair to colleagues.

Q169 Matt Warman: Sir Mark, you described the evolution from one committee to another and another that ended up in SAGE. Am I right in thinking that SAGE was ultimately established at the request of COBRA? Could that have happened earlier? Should it have happened earlier?

Sir Mark Walport: That is a good question. The protocol at the moment is that it is established through the Civil Contingency Secretariat as part of the COBRA process. I think that one of our learnings from this is that we probably would have established it a bit earlier. Having said that, I was perfectly satisfied that Dame Sally had an advisory process in the Department of Health that was keeping all of us informed, so I do not think that the quality of science advice suffered in the least bit from the fact that SAGE did not occur until then, but if we were doing it again we would probably do it a bit sooner.

Q170 Matt Warman: Dame Sally, does that chime with your view?

Dame Sally Davies: Yes. I do not think we needed to do it earlier, because the science advice was coming in and being acted on, and we were all taking that advice and sharing it. That is what matters.

Q171 Matt Warman: Exactly. You mentioned the Wellcome Trust earlier. Is it reasonable that we had to rely on a charitable institution to help? Is that what you would expect?

Dame Sally Davies: I invited Jeremy Farrar to our expert groups because he is an infectious disease expert. He served for 18 years in North Vietnam and is one of our country experts, so it would have been wrong to leave him out. Because of their opportunities and his experience, he led a discussion on vaccines on 12 August over there and helped fund a number of the vaccine studies, so his expertise played a significant role.

Q172 Matt Warman: Would our response have been as good as it was had we not had help from a charity?

Dame Sally Davies: We have plenty of other people advising, but he happens to be an acknowledged expert. DFID also funded vaccine studies. We had a Government route through DFID and MRC to fund them, but the Wellcome Trust is able to do things rather faster.

Sir Mark Walport: First, I should declare an interest. I was the director of the Wellcome Trust from 2003 to 2013. I just comment that when we were involved, for example, in H1N1 influenza, the Gates Foundation was similarly involved in the United States. In a sense, the UK and the US are fortunate to have large foundations that support research in these areas and, therefore, contribute to the critical mass. I do not view it as a charity substituting but as a synergy, because we have the good fortune to have a major foundation that supports infectious disease research in the UK.

Q173 Chair: We have taken evidence from a number of researchers who have been involved in this process. Some have been on the clinical side, some have been involved in vaccine research and some sat on the various advisory bodies. They all feel that this has been a huge achievement, but the two words that keep coming up in this context are "ad hoc". There is a sense that there was reliance on relationships rather than a very strong command and control structure in terms of scientific evidence. Dr Johnson, who was here just before you, was in-country and said that he had very strong relationships with senior people in the British Government, but he could not have said who the one person responsible for the scientific advice he was giving back was. We are trying to chime the different evidence we are receiving. Obviously, a lot of scientific evidence was coming in and it was very well used, but we keep getting evidence about ad hoc structures and we are trying to understand whether or not that matters and whether it needs to be changed for next time.

Dame Sally Davies: Let me take responsibility for the beginning. It was ad hoc, because at the beginning we did not know how bad it was going to be, but we were making sure we got advice, not ad hoc, from ACDP and SHED, bringing that together and looking at what more we needed and getting in experts. When the PHEIC was called we had the SAGE, so we moved to formal. I was very clear publicly in many places that we wanted to hear all views and they could come directly to me, my office or through Mark. If Dr Johnson did not know that he could go in either through DFID and Professor Whitty as their chief scientific adviser or through us, I am surprised.

Q174 Chair: To be clear, we also heard from the Wellcome Trust and a number of others. It has not come from one source. I do not think it is supposed to be a criticism. I think it is more the way—

Dame Sally Davies: But they were on the committees and groups, and we had a fair number of them. We had the first ACDP meeting in February and the third meeting on 14 July, and they went on; we had health advisory committees on 5 and 11 August; we had an ethics committee on the 9th; and we had another committee on the 12th and 19th. We were very flexible. If people said they wanted to give us advice, we invited them in. We were rolling very fast in order to make sure we addressed everything speedily, and that everyone got their say and we heard it.

Sir Mark Walport: I think there are two elements of ad hoc-ness. The first is that every single disease outbreak is going to be different. Our knowledge was contingent at the start and remains incomplete, in the sense that the persistence of the virus came as something of a surprise—the extent to which it would persist—so the science does emerge.

Was there a single source of wisdom? Certainly, from a Government perspective it was highly co-ordinated, but there were an awful lot of people talking, so science was coming from all directions to some extent. Within the Government set-up we were very well co-ordinated throughout, so we never had committees duplicating each another. For example, during the SAGE we had sub-committees looking at modelling and the social science. Of course, the social science was extremely important in controlling this outbreak. Were there other voices speaking? There were American and French voices; there was international noise. It is inevitable that in an emerging epidemic there will never be a pure, single source of wisdom. Did the UK Government communicate coherently? I believe they did.

Q175 Chris Green: It sounds as though SAGE is working fine. Is that reasonable, Dame Sally?

Dame Sally Davies: Yes.

Q176 Chris Green: Dr Jeremy Farrar from the Wellcome Trust advocated establishing a standing advisory body on emerging infections that could meet regularly to ensure the UK is ready to respond to the next outbreak. If you are happy with it as it is, are there any particular weaknesses in that suggestion?

Dame Sally Davies: You need to be aware of what we already have. We have nationally an advisory committee on dangerous pathogens—the ACDP; we have nationally an advisory committee on UK zoonoses, or animal diseases and infections. Feeding into both of those we have another advisory committee: the human-animal infections and risk surveillance group. We have one about new and emerging respiratory diseases called NERVTAG which feeds into that. We have a structure of standing advisory committees which meet regularly to make sure that the advice is updated and they scan what is out there. There is SHED as well. What we have been talking about is how they have fed in, but in the heat of theatre, almost, as the epidemic built up, we needed to bring in more people, because we had to look at how it would impact on the NHS. We had as a third sub-group of SAGE a clinical trials group chaired by Professor Deborah Ashby, bringing in the MRC clinical trials group and industry partners, and CDC dialled in from the States, to look at trial methodologies to try to inform the different companies so that when they planned to use their vaccines in a phase 2 or 3 there was from this country some methodological support. I remain to be convinced that we need more than that.

Sir Mark Walport: I want to comment on the structure of SAGE itself. The important thing about SAGE is that it has a structure that can deal with a variety of different emergencies. There is a SAGE secretariat which lives in the Government Office for Science. It works extremely closely with the Civil Contingencies Secretariat and with the national risk assessment as well so that, as far as possible, we can make sure that it has the key risk. But the whole point about SAGE is that it is bespoke to individual emergencies. Therefore, the experts we would have for Ebola would be similar to but to some extent different from the membership for MERS, for example, and would be dramatically different from the membership for a SAGE dealing with flooding or an earthquake.

What SAGE does is bring together the CSAs from the different Government Departments involved: Dame Sally, Chris Whitty from DFID and Robin Grimes from the Foreign Office. Then it brings together organisations, such as Public Health England—Sir Paul Cosford came along to SAGE—and experts from outside, depending on the nature of the emergency. As Dame Sally said, we had modellers, infectious diseases experts, Mike Jacobs, a clinician who looked after patients, and vaccine experts. It is always bespoke for the particular emergency, so it is a structure that has the flexibility that we need. We constantly work so that we can anticipate where expertise is needed, although inevitably when an outbreak occurs we do further research and build up expertise. It is a bespoke mechanism for each thing, but it has a standing structure so that SAGE can be called very quickly indeed.

Q177 Chris Green: It can respond to each crisis.

Sir Mark Walport: Each crisis is slightly different; even each infectious disease crisis is slightly different.

Q178 Chris Green: The Government told us that the Department of Health is working with the Government Office for Science to rationalise the processes for obtaining advice during a health emergency. What parts of

the process are you aiming to rationalise?

Dame Sally Davies: We have been looking at this. We have been quite clear: we think it worked well. What we like is the way everyone communicated. The debate is about whether we would stand up SAGE a little earlier and, if so, how? But that is the debate and actually we will not know until we get the next infectious outbreak.

Q179 Dr Mathias: We understand that the national risk assessment process is being reviewed. I want to ask all of you, if relevant, whether you have any concerns that the risk assessment process is not identifying the best available scientific data.

Sir Mark Walport: I do not have a concern about that. The Government Office for Science is an integral part of the updating of the national risk assessment. As part of the work around the national risk assessment we also do rehearsals so that we can plan and learn from table-top exercises and even bigger exercises, but science is an absolutely integral part of that. We are involved, and I am not concerned that science has been diluted in any way at all.

Q180 Dr Mathias: How do you contribute to that?

Sir Mark Walport: The secretariat works with the Civil Contingencies Secretariat. We are involved in the meetings that have reviewed the national risk assessment, and we work with them on national contingency exercises, so we are fully integrated.

Q181 Chair: In light of the fact that the national risk register had infectious diseases on it in 2008 but identified Ebola only this year, essentially, what is your view about having protocols for the top 10 risks that might be in place? Do you think this is a logical response? It is one that has been proposed to the Committee.

Dame Sally Davies: The way it is structured is that we are concerned about respiratory illnesses—blood-borne, vector-borne and food-borne—and we try to have, and we do have, protocols in place for those groupings that we can fine-tune if something comes: "There we are, Ebola blood-borne." We have had cases of Lassa fever and Crimean-Congo haemorrhagic fever before, but the basic protocols are there for different things. I agree about the importance of practising. For instance, in the respiratory field we had to postpone a pandemic flu exercise; we are going to do that next year. I have asked for one that devolves on everyone, and we will be supported by the Government Office for Science, on MERS-CoV early next year and a food-borne E.coli. During the Ebola outbreak we had three practices: a national one, a desktop Four Nations one and a local resilience fora one across the country. We all learned a lot from that—they are very useful—as we will from the three coming in the first quarter of next year.

Q182 Derek Thomas: Dame Sally, you have just referred to the next infectious outbreak. What we are trying to find out is how well we do it, how we can avoid it and what we can do to be prepared for the future. We heard recently that the UK does not have any capacity to manufacture vaccines; Professor Hill described it as a "national security issue". If you agree with that—or not; you are welcome to disagree—what advice have you provided for the Government about how we prepare for the next infectious outbreak in terms of vaccination?

Dame Sally Davies: It is important to start by saying that worldwide the UK is recognised as having one of the strongest preparedness and resilience systems in the world. For that reason we have, for instance, a stockpile of Tamiflu. The PAC berates me about the cost of this insurance package, but the science is clear. I think it is needed, and I have advised that. We do not stockpile vaccines. You have to have the right vaccine. For instance, there are three common strains of Ebola. This was the Zaire strain, and possibly a fourth is emerging. Either you have to have a vaccine that covers all of them or you might have the wrong Ebola vaccine, so it is quite difficult. Clearly, we need to do more work in this field.

In the Budget in the summer, we were given £10 million of ODA and £10 million from the research councils to set up the UK vaccines network, which Professor Whitty is chairing. That brings together not only Professor Hill but other vaccines experts, modellers, industry and everyone to discuss what is needed.

The money can be used for the activities of the network, but particularly the pull-through animal to human. You may have noticed this weekend the announcement by the Chancellor of the Ross Fund, which is about trying to eliminate malaria and nasty emergent diseases. In that, there is another £100 million of overseas development aid to develop vaccines that are needed for neglected diseases that have emerging potential. Clearly, now we know that what was trailed in the manifesto is a reality, the network and others are going to have to get together and give advice on how it is best spent.

Q183 Derek Thomas: That sounds good. To pursue it, in the scenario of a pandemic where we are competing with other countries for the drugs we need for our own people, are you worried about that, or do you feel we have the capacity to manufacture the vaccines we need?

Dame Sally Davies: We cannot manufacture the vaccines. We have some manufacturing capability in the north-west near Liverpool, but it is degraded and we are looking at how we can try to attract companies back to do some manufacturing here. Apart from that, on pandemic flu, I should highlight that we have a special contract—I am trying to remember the proper term—that we can activate, which gives us first call on a certain number of vaccines of the strain. As you know, it takes a number of months to make, because it is still made in eggs. It takes at least four to six months. We have the capability to do some of the early trials; a lot of them are done in Oxford by colleagues of Adrian. Then we get first call for coverage of, I think, 40% of the population. If you want to know the amount I will have it looked up and send you a note.

Q184 Derek Thomas: You would welcome a company coming to manufacture these vaccines.

Dame Sally Davies: Of course we would. It is very good to have vaccine development and manufacturing in a country for many reasons, such as high-grade employment and the linkage with our academic sector. We would very much like to see that. *[Interruption.]*

Chair: Order. I am afraid we have to go and vote. We will resume the session when we are quorate and take the next evidence from the Minister, who has been waiting very patiently. I am grateful to her for that. Can I thank this panel for the evidence you have given? It is very kind of you to take the time today.

Sitting suspended for a Division in the House.

On resuming—

Examination of Witnesses

Witnesses: **Jane Ellison MP,** Parliamentary Under-Secretary of State for Public Health, Department of Health, **Campbell McCafferty,** Director of Civil Contingencies Secretariat, Cabinet Office, and **Dame Sally Davies**, Chief Medical Officer, Department of Health, gave evidence.

Q185 Chair: Minister, thank you for waiting patiently and returning after the vote. I am very grateful to you. You heard the evidence from Dame Sally and Sir Mark in the previous session, so you will be well prepared for some of the questions we are going to ask you. I know that you are on a very tight schedule, so we will truncate our questions and try to make sure we stick to the point. My first question is about the national risk register, which we touched on right at the end of the previous session. As we mentioned, the broad category of emerging infectious diseases has been on the register since 2008, but Ebola did not make it on there until this year. We had a bit of a discussion about how we could strengthen that category going forward, and we heard some commentary from Dame Sally. What do you think about the proposal maybe to flesh out that category with the top 10 risks that are out there, and have protocols for each of those?

Jane Ellison: We have good systems for horizon scanning both here and internationally. We learned a lot about that process through Ebola, and it has all been fed back to the Cabinet Office's thinking about it. We

have some very solid systems in place. We would still say that the main risk remains pandemic influenza, but we recognise a range of other infectious diseases, such as those talked about in the previous session. As far as the register goes, my slight concern would be that ultimately there is a dynamic situation, as was described by the previous panel, and I would be a little worried if it tempted us into complacency and we thought, "Well, here's our top 10 and here's our plan," and ticked the box. What really matters is to have a core capability to respond to whatever is emerging, with a sense of what is out there. What are the particular threats? What is most likely? I would be a bit nervous about something as pinned down as a top 10, because if we had a plan for those we would be tempted to take our eye off surveillance and horizon scanning.

Q186 Chair: Progressing that argument, we have had infectious diseases on there since 2008, yet you could say that what happened with Ebola took everybody by surprise. Obviously, there needs to be an improvement in the protocols in place to make sure that next time we are not taken by surprise. It is not likely to be Ebola but something a bit different that we have not seen before. What needs to be done with the national risk register to strengthen the protocols in place to make sure that we have horizon-scanning capacity but also the quick responsiveness that is necessary in an unexpected scenario?

Dame Sally Davies: It goes back to the kind of transmission. Is it respiratory, blood-borne, vector-borne or food-borne? We need to have, and it is pretty well in place, protocols for all those, because we do not know which blood-borne virus will emerge, but you protect in the same way regardless of which one it is. The level of PPE relates to the infectiousness and the outcomes. I would argue that that is the right approach. I was told by a virologist earlier this year that he had looked at all the viruses in bats in southern China—SARS came from bats, and this Ebola may have come from a bat—and there were at least 21 more viruses that could jump. If we put one down, we will get the wrong one. It is about the groupings and how you respond to them, and having good surveillance systems. Public Health England, on our behalf, is linked into all the international surveillance systems and reports on our behalf as a category 1 responder.

Campbell McCafferty: On the national risk assessment and our process of dynamic risk assessment and identifying things, I would argue that it did work from a UK perspective. We heard from Paul Cosford earlier about the advice that was going out—travel advice for people travelling to West Africa. What we learned from Ebola was about the international aspects; the world is much more interconnected and the link to the UK and its role in dealing with them has changed. Within the Civil Contingencies Secretariat, working with Sir Mark Walport's GO-Science team, we are looking at how we can improve overseas horizon scanning. Our domestic horizon scanning has worked successfully for some time, so we are looking to put in place processes to improve our international horizon scanning. Some of the wording in the national security strategy published yesterday supports that, in terms of looking at how we can help develop the resilience of countries overseas. Some of the tools we have talked about, for example, the rapid response team, are about identifying that we did not have capability that could deploy quickly and looking to fill that gap as we move forward.

Jane Ellison: That is a really important point. One of the big lessons we learned within the Government and as a nation is that our best protection at home is helping to fight disease abroad. Thinking of it like that was quite a turning point for the nation. I genuinely think that was how the UK responded. I was incredibly proud of the way the whole nation responded; it was a generous response to the overseas approach. We will look back on that as the moment we really understood that our world is so interconnected that our best defence at home is by making sure we invest in and support work abroad effectively.

Dame Sally Davies: Have we told you about the rapid response team that we are developing?

Chair: We heard that from Public Health England. I would want to hear it from you, except that I am conscious of the amount of time we have, so I won't ask you to deal with that.

Q187 Graham Stringer: You heard the questions I asked Dame Sally and Sir Mark about the quality of the advice from Public Health England and the speed of it. Were you as the Minister responsible satisfied that information was coming to you in the right format so that you could take decisions as quickly as you would wish?

Jane Ellison: Yes, I was satisfied. I was involved from early in the summer last year. We met over the summer recess a number of times, which gave me a lot of opportunity to talk to my officials. Dame Sally always started every meeting by saying, "These are the people I have spoken to; these are the groups I have convened; these are the people I have pulled into it." The same goes for Paul Cosford who is my lead person in PHE. I was very happy with the advice I was getting.

As a non-scientist and non-clinician by background, I would go through an assurance process myself as to how I could test the advice. I often saw it as my role to push, prod and test the advice and say, "Well, I've read this from CDC or another publication. What's your response?" The thing I got reassurance from was that the advice was dynamic and responded to situations as they emerged. There was great willingness to pull in experts. One of the things you realise is that there is a very small pool of experts in certain areas of very specialised science, and sometimes you know the two or three people in the world you need to go to for advice, so it was good to hear that we were bringing in people like that.

There was an international element. On behalf of the Government, I attended a number of meetings, principally European, but we also had a number of phone conversations with other health Ministers, mostly to encourage a response in terms of sending people, supplies and so on to West Africa. That was also a useful opportunity. Often they would be accompanied by their chief medical officer who would contribute to the discussions. All in all, I felt I was getting good advice. I was also happy with the way I tested it, because I was able to draw information from other sources and put it to Dame Sally, Paul Cosford and others. I was very satisfied with the responses I received.

Q188 Graham Stringer: Can you remember formally when you were first involved in the process and started getting advice on the issue?

Jane Ellison: I have a timeline somewhere.

Dame Sally Davies: It must have been in June.

Jane Ellison: That sounds about right.

Q189 Graham Stringer: Are you concerned that there is a gap? Public Health England started publishing papers in March, and you were informed in June. Do you think that three-month gap was necessary?

Jane Ellison: I think I was informed earlier than that in terms of written submissions. We started meeting more regularly from the summer onwards.

Q190 Graham Stringer: Inspiration is coming.

Dame Sally Davies: No. All I am doing is showing the graph of the number of patients, and why we expected our public health agency to do preparations in case it took off, but it had not taken off. Indeed, in May it looked as if it might be receding a bit. We did not have a full-blown response at that point, whereas at the beginning of June we saw it begin to change.

Jane Ellison: Clearly, DFID is the lead Department overseas. I am conscious of my role in terms of public protection and public health in England, but the situation evolved in terms of where the emphasis was, whether it was an overseas emergency and then, essentially, it became a global one which we all had to respond to and protect ourselves against. As you might expect, our reaction to that evolved as well.

Q191 Graham Stringer: You heard references to the report that was critical of the World Health Organisation. Do you as a politician and a Minister have any response to that report? Do you agree with the recommendations?

Jane Ellison: I have not read the report in detail because I really look at the domestic side, which I alluded to just a moment ago. However, I was very involved in the whole process and had a good sense of what was happening in terms of the international response. I had a number of conversations with Dr Margaret Chan about it, and with Barbara Stocking; I had the opportunity to talk to her at the World Health

Assembly in May. In terms of the overall criticism about speed of response, the need for WHO reform and so on, those are criticisms that the WHO have accepted and they are certainly ones I have spoken to the director general about. I know they are looking to respond.

Q192 Dr Mathias: A question we put to the previous panel, and which follows on from your role, is about the co-ordination or duplication of WHO and European people, military and civilian. The concern is about how the command will be if it happens next month. We got good news about what the British did, but I am still confused as to co-ordination in the field. What do you feel?

Jane Ellison: I might ask Dame Sally to respond in a moment. You would probably want to ask colleagues from DFID to respond to that specific point, because it is a little outside my remit. As to the general criticism of WHO, they have accepted it and broadly it is right. It is something I have discussed with them. In terms of how they might reform themselves, they have a reform programme that the director general has talked about publicly. I do not think it is necessarily an easy process, but it is something on which DFID will be working with them even more closely.

Dame Sally Davies: There is no doubt who co-ordinates: for the health cluster issues within the UN system, it is the WHO. Their immediate or recent reform is to have a new deputy director general post in charge of emergencies. In this arena they have appointed Bruce Aylward who led very effectively.

Q193 Dr Mathias: I agree. What I am trying to work out is whether it has an impact on the Minister's role if there is a problem next month. Does lack of leadership in the field affect your work as a Minister?

Jane Ellison: My role is a domestic one principally.

Q194 Dr Mathias: That is what I am asking.

Jane Ellison: In the strictest sense, no, but in the slightly broader sense I was part of a Government team response. I am sorry to be a bit vague about this.

Q195 Dr Mathias: No. That is reassuring.

Jane Ellison: I also have some international aspects, for example, things like the global health security agenda. There are aspects of that which I talk to my opposite numbers about and on which I lead, but principally on something like this DFID led the international aspect. In taking forward the lessons learned and what other countries of the world are putting in place, in terms of assurance processes, higher standards and preparedness, those are conversations that I take forward with opposite numbers in international fora, but more broadly than a crisis response in-country.

Dame Sally Davies: Our lives became much easier on 8 August when we were formally asked as the UK to lead the response in Sierra Leone and, therefore, co-ordinate with WHO. We immediately put in military and a senior DFID person into their Government. It was much easier when we had control of our bit and the French were given Guinea and the Americans Liberia. That did not mean other countries were not helping; everyone co-ordinated.

Jane Ellison: What we tried to do was encourage countries that wanted to contribute people and experts but not in great numbers. We would often try to act almost as a clearing house to be able to direct them to where they were most needed. Those were a lot of the conversations I had. We worked very closely with DFID, because as soon as we had NHS volunteers and PHE people out there it became immediately apparent that the domestic and the international merged to a large extent. I had lots of conversations with Chris Whitty, and often we were all at the same meetings.

Campbell McCafferty: If I may make two very quick points, the first is that COBRA would be co-ordinating the domestic and the international. That is where it is brought together. Based on our experience of Sierra Leone, we would be supporting DFID in trying to clarify that leadership role much earlier because of the problems it caused. The second piece, which comes out of the national security strategy in the SDSR yesterday, is that clearly there is difficulty for fragile states to accept the level of

support they are given when they suddenly find themselves in crisis, so the Civil Contingencies Secretariat will be working closely with DFID to try to build capacity for crisis management in a number of fragile countries.

Q196 Matt Warman: We heard earlier about COBRA asking SAGE to be formed. From a ministerial point of view, does that evolution of committees tally with your sense that you were getting the advice you needed throughout the whole process?

Jane Ellison: Yes. I was aware that committees were being convened and that particular experts were being brought in as different challenges emerged. As I said, Dame Sally always started every meeting by saying, "These are the people I have brought together; this is the committee I have convened; this is the advice." Often if I asked, "When will we know about X? When will we have some clarity about that?" she would say, "We've got a group meeting next week. That is exactly the question we're going to ask them. We expect to get some read-out." I appreciated having that clarity about where the advice was coming from and how it was being reached. That was helpful for my personal assurance process. It was not that Dame Sally would turn up and say, "This is the advice. There you go." I had a sense of its being dynamic and of people being brought in to contribute to it. It gave me a chance to say, "What about such and such? We've just heard from CDC. What's our response to that? Are we doing the same thing?" If I spoke to other health Ministers they would raise things. There was a very regular opportunity to do that through Dame Sally and in very regular meetings with Paul Cosford. At one point I had time in my diary for that pretty much every day. I did not always need it, but it was always there in case it was needed. We gradually stood that down as we needed it less.

Q197 Matt Warman: Does it help your job to have a committee set up rather than conventional advice coming from the chief medical officer?

Jane Ellison: The advice did come from the chief medical officer and from Public Health England. All I am saying is that I think it is helpful for me to know the process by which the chief medical officer reaches the point of being able to advise. I found it very reassuring that at times something was so new that someone would say, "We don't yet know that. We are getting the best advice together to look at that, but there are things we do not necessarily know." I would much rather someone said, "Here is the process by which we are going to try to find out the answer to that question," than that they were absolutely certain about everything, because in a dynamic situation you need the ability to respond as it changes. To be clear, my advice came through two key routes, the chief medical officer and Public Health England, but it was useful for me to be sighted on how they had reached it and the people they were bringing in.

Q198 Chris Green: We have heard the case being put for the establishment of a standing body on emerging infections, but we have heard very strongly that it is not actually necessary. Minister, have the Government considered implementing that approach?

Jane Ellison: We already have the Advisory Committee on Dangerous Pathogens, so I think the infrastructure we have is solid. There are things we will look at and learn from Ebola, but we have the ACDP; we have the ability to stand up the committees Dame Sally described earlier; and we have the interrelationship with COBRA and SAGE, so we have a structure to be able to give Ministers advice.

Q199 Chris Green: So it has been considered and rejected.

Jane Ellison: I am not quite sure whether you are saying this is advice the Committee might suggest we look at. I would never be so bold as to say that we would not look at anything the Committee suggested. All I am saying is that I do not think there is a major problem to which that is the answer.

Q200 Chris Green: Mr McCafferty, Christina Scott, former head of the Civil Contingencies Secretariat, told our predecessor Committee that work was under way to set up a national risk assessment scientific review group for the 2012 NRA. What happened to that group?

Campbell McCafferty: We now regularly review the methodology on a bi-annual basis. We used to produce the national risk assessment annually; we now do it every two years, so that we can work with scientific experts to make sure that the methodology remains best in class. We believe that the NRA is, and it is recognised as such in many parts of the world, but we know that we cannot rest on our laurels, so we have maintained the review process. This time around we have been asked to look at, for example, what we might describe as sensitivity analysis—a risk is there but what happens if that risk is a little bit worse? What should Departments think about that? We will look at how we include that. We have also been asked to look at better formalising the economic impacts, which is how we evaluate many risks. If a risk is realised, knowing how much it will cost will support arguments to do more on prevention, rather than waiting to respond. Those are just some of the examples we have been given this year to try to keep the methodology at the top of its game.

Q201 Chair: Thank you, Minister. We have more questions we would like to ask regarding vaccine manufacturing and other issues, but we will write to you, if that is all right, because we are aware of your time.

Jane Ellison: That is very kind. It may be that in some cases those questions should be directed to other colleagues in the Government, but of course we will respond in full.

Chair: That concludes our evidence on the Ebola inquiry. Can I thank all of you for the role you played in responding to the outbreak? As a country we can be very proud of the role we played. Thank you for the time you have taken and the patience you have shown in waiting for us.