HOUSE OF COMMONS

Health Committee

Oral evidence: Ebola virus, HC 740
Wednesday 22 October 2014

Ordered by the House of Commons to be published 22 October 2014.

Watch the meeting

Members present: Dr Sarah Wollaston (Chair), Rosie Cooper, Andrew George, Robert Jenrick
Barbara Keeley, Charlotte Leslie, Andrew Percy, Mr Virendra Sharma, David Tredinnick

Questions 1- 103

Witnesses: **Professor Dame Sally Davies**, Chief Medical Officer, **Dr Paul Cosford**, Director for Health Protection and Medical Director, Public Health England, and **Professor Chris Whitty**, Chief Scientific Adviser and Director of Research and Evidence, Department for International Development, gave evidence.

Q1 Chair: Thank you very much for coming. I know that Professor Dame Sally Davies will have to leave because she has a meeting with the World Health Organisation on this subject. We are very grateful to her for coming today. Could I ask the panel to introduce themselves and, for those listening to this, to explain what their own role is?

Professor Whitty: I am Chris Whitty. I am the chief scientific adviser at the Department for International Development. It is probably relevant to this inquiry to mention that I am also professor of public and international health at the London School of Hygiene and Tropical Medicine and a consultant physician at the hospital for tropical diseases in UCLH.

Professor Davies: I am Sally Davies. I am the chief medical officer and I am also the chief scientific adviser to the Department of Health.

Dr Cosford: I am Dr Paul Cosford. I am the medical director and director for health protection for Public Health England.

Q2 Chair: We have a lot of questions, and there are many questions from the public. We are going to try to get through them, so I ask you to keep some of your answers fairly brief. If you need to say more, perhaps you might write to us afterwards so that we can publish that.

The first question concerns the diagnosis of Ebola and how similar it can be to other tropical conditions. How do you suggest that NHS or border staff differentiate between the two? In other words, how accurately can we diagnose it?

Dr Cosford: We have a very clear algorithm for assessment and testing for people who arrive in the UK and have had some contact in a country where Ebola is present. That takes staff through how to make an assessment. When somebody is thought of as being at risk of having Ebola, we have a specialist 24-hour service called the imported fever service, which is available to any clinician across the NHS. It will take them through the relevant assessment and testing, and decide whether testing is appropriate.

Q3 Chair: Have you had any concerns that there have been cases of individuals who have turned out to have other tropical infections and have not received timely treatment because of fears about Ebola?

Dr Cosford: One of the risks we are aware of is that people may be concerned about Ebola, and the much more common diagnosis of malaria may get missed. It is a clear part of the testing regime that you must test for malaria in anybody with a fever who has come from an area that may have malaria or Ebola.

Q4 David Tredinnick: This is a question for Dame Sally, who appeared in front of the Science and Technology Committee this morning on mitochondrial donation and has now switched over to this. I want to ask you about previous attacks. The virus is not new—there have been previous attacks. Why has the virus accelerated so aggressively over the past seven months in the countries that have been affected? Why do you think that, in the 1996 Ebola outbreaks in Gabon in Africa, 70% of those who contracted the virus died? The International Centre for Medical Research in Franceville, Gabon, then tried to work out why 30% did not die. Are there any parallels with that outbreak?

Professor Davies: I will start and then hand over to Chris. So far, this is the Zaire version of the virus. There is no real evidence that it is more malignant and nasty than previous ones. What we have encountered—and the world has taken a long time to appreciate—is, first of all, that it was there in west Africa. Once we knew that, the burial practices and all the cultural issues around that have allowed it to spread dramatically so that it has now reached cities and towns, which makes it very difficult to do the contact tracing and to follow up.

Professor Whitty: What is different about this outbreak, apart from its size, is the fact that in previous epidemics the great majority of the transmission occurred either in hospitals—so you just had to get on top of hospital transmission—or through burials, which is still a big issue here. The new thing in this epidemic, particularly in urban areas, is that there is a lot of transmission in the community between the time people first get symptoms, which is the first time they can be infectious, and the time when they are first isolated. In that period, which is several days, there is quite a bit of transmission going on; we need to shorten that. That is really the key to getting on top of this epidemic, along with the better burial practices the CMO talked about.

Q5 David Tredinnick: Are those some of the practices that were employed in Nigeria and Senegal, where they have been successful to the extent that they have been declared officially free of Ebola by the WHO?

Professor Whitty: There are probably two general points to make about the situation in Senegal and Nigeria. The first is that both of those countries have not just come out of a major civil war and have stronger health services to begin with. Early on in the disease, finding the cases, finding all their contacts and isolating those people is possible. With this epidemic, if we get on top of it, at the end of it we will need to do exactly that. You do what is called active case finding in the community. The problem we have at the moment in the three affected countries is that the numbers are so big that finding every contact of every case in the community is simply not practical. We need to find other methods to try to break community transmission.

Q6 David Tredinnick: Do you think we have a proportionate response to this disease? There have been 5,000 deaths since 6 December 2013. The World Health Organisation estimates that 250,000 to 500,000 are killed annually by flu. In 2012 malaria killed an estimated 627,000, according to the Library figures I have.

Professor Whitty: There are probably two things that mean that, if anything, our concern is that there was not a big enough response to this disease, rather than too big a response. First, at the moment there is a doubling time for this disease in the affected country of about 30 days. If at this point we have 500 cases a week, in a month that means 1,000—and so on. It keeps on going up exponentially. Anybody who understands compounding will see that, if you do not do anything, you get into very large numbers relatively quickly—in a relatively small number of months.

The second thing to understand is that this is a disease of panic as much as it is a disease of killing people. A lot of the damage that is being done to these countries is being done by people panicking, in a sense—closing borders and doing a whole variety of things that are going to have enormous economic impacts on very poor countries. Getting on top of it is very important for that wider socio-economic development side, as well as just for the direct health side. Both of those are important.

Q7 Chair: I want to come to the reproductive number—the R number—about which we have received a number of questions. Can you say what the reproductive number is now in each of the three affected nations, why it is changing and what measures are making the greatest difference in reducing it?

Professor Whitty: For those who have not come across the R number, I will briefly explain it to people. In any epidemic, if R or R_0 is 1,it means that, on average, one person gives it to one person and it is stable in the population. If it is 2, it is doubling at every generation. If it is less than 1, it is going to die out. The R or R_0 for Ebola in the three affected countries is somewhere between around 1.4 and 2. So the upper range is 2, but it is above 1 in most of them.

It is slightly different in each of the three countries. More importantly, it is quite different now between urban and rural settings. In the rural settings, where people are quite spaced apart, it has probably gone down quite a long way through a combination of safe burial, society responding to this by trying to reduce contact and a variety of things of that kind, whereas it is still in the range of 1.5 to 1.8 in the urban environments, at least in Sierra Leone. I have less visibility of the numbers from Liberia, where things may have

improved slightly recently. In Guinea, the epidemic has been a little bit slower anyway than in the other two countries.

Chair: Thank you for clarifying that.

Q8 Barbara Keeley: Reports from Public Health England and the World Health Organisation, among others, have stated that the Ebola virus is transmitted through contact with the bodily fluids of an infected animal or person and is not usually spread through everyday social contact. However, there has been some media coverage that raised the question of whether or not the Ebola virus could, in future, change its mode of transmission to become airborne. Our briefing suggests that that type of speculation is irresponsible. First, could you comment on that speculation and tell us what monitoring of the virus, including how it mutates, is being carried out? Clearly, if people are speculating that it could change, monitoring how it mutates is an important part of handling that.

Professor Davies: The scientific advisers tell me that, as it is an RNA virus, there is a steady genetic drift but that it would be totally surprising if it became airborne. In fact, Lord Winston has made clear that that is not his belief, which some newspapers published. I am delighted to myth-bust. This is not airborne; as you said, you can get it only from bodily fluids.

What happens is that post-infection there is an incubation period when people are well and you cannot catch it from ordinary everyday contact. They then begin to be a bit ill and it is quite difficult to catch, because their bodily fluids are not around and about. The third stage, when they are very sick and may have vomiting or diarrhoea or even be bleeding, is when it is rather easier to catch. We do collect the viruses in Porton Down and watch what the genome is doing. CDC does that as well.

Dr Cosford: That is right. Our laboratories at Porton do look at the virus as it is progressing; we have it available at Colindale as well. We are able, with colleagues internationally, to look at how the changes in the virus are taking place.

Q9 Barbara Keeley: So—just because there has been this speculation—it would be clear. If there was mutation, you are monitoring that, it would be known and protocols would change.

Dr Cosford: We are very clear that there is no suggestion that the virus is changing in a way that would lead it to be transmitted by a different route from that by which it is transmitted at the moment.

Professor Davies: But it is under constant review.

Q10 Andrew George: The WHO issued a "response road map" in August. Is that relevant to the United Kingdom? If so, which elements of the "response road map" have now been implemented within the UK?

Professor Davies: Let me start by saying that of course it is relevant. The WHO has called it a public health emergency, and that is the international technical agency that guides our

activity. However, it has been agreed that, while the US will lead in Liberia, we will lead in Sierra Leone—that is led by DFID, so Chris will speak to it—with the French focusing on Guinea. I am proud of what our Government are doing in Sierra Leone—what they are already doing and what they are planning on doing.

Professor Whitty: Essentially, there is broad agreement that the road map is absolutely right. It identifies three things that we need to do: to improve in-hospital transmission, making sure that that is down to as close to zero as we can make it; to make sure that burials of dead bodies of people with Ebola are safe; and to reduce community transmission.

The UK is doing things to try and help Sierra Leone in all three of those—acting under the aegis of the Sierra Leonean Government, so very much in support of the local response. We have already been able to have quite a significant impact on the burial issue. Hospitals are being built at a considerable rate. It has already been announced that 700 beds are being built and are at an advanced stage. We are also trying to do things in the community to help to reduce the time between people first getting symptoms and first being isolated, because that is the key to reducing transmission. If we do all three of those well, we can get the R number the Chair referred to down to 1 and then below 1. At that point, we can start to catch up.

If I talk about the UK, which was part of your question, the most relevant bit of this would be in-hospital transmission. Public Health England and the CMO have made it very clear that they do not think extensive community transmission is at all likely, nor is transmission after burial from dead bodies. That is the bit the UK is concentrating on, if that is not taking words from Professor Davies's mouth.

Professor Davies: Would you like me to pick up on that?

Andrew George: We will come on to that later. I do not want to risk—

Chair: In an international context, perhaps.

Andrew George: Yes. We will come on to the issue of the risk of transmission within the hospital, so we will leave that for now.

Q11 Chair: I want to ask you your opinion on this. Some people have suggested that, if the NHS is poaching staff from the poorest nations in west Africa, that may have contributed to their being unable to meet the response locally.

Professor Davies: No, it has not. Their health services are in disarray, in part because people have been dying of Ebola and in part because people are scared of going to work and catching it. In many places, the money was not there in order to pay their salaries. I have the data for you; we have looked for it. At the moment, we believe that there are 550 Sierra Leoneans, 35 Liberians and 22 Guineans working in the NHS, but they are not just clinicians. What you have to remember is that that is across the whole hospital and community sector and that many of those Sierra Leonean people are part of the diaspora born here. All three countries are on the list of countries the NHS is not allowed actively to recruit from.

Chair: That is an important point.

Q12 Andrew Percy: My question relates to leadership and lines of responsibility in the UK. Before I ask it, presumably somebody somewhere is looking at the current outbreak rate, rate of spread and all the rest of it. Has anybody modelled how many cases we are likely to see in the UK, on current speeds? What is the worst case we are planning for?

Professor Davies: We have access to the modelling in the three west African countries. Our modellers are very actively involved in supporting WHO, particularly from Imperial College and the London School. We have modelled through a number of groups in Britain. As you will have heard me say publicly, at the moment the modelling suggests that we are likely to get a few cases over the next few months and that it is likely to be less than a handful.

Q13 Andrew Percy: Presumably that builds in factors of what we are putting in place in this country—or does it discount those?

Professor Davies: It builds in our understanding of the disease and of people moving, the exit screening that those countries have put in place and our own screening programme here.

Q14 Andrew Percy: So we are talking of a handful of cases as a worst-case scenario.

Professor Davies: Over the next few months. That is what our modelling tells us.

Q15 Andrew Percy: With that in mind, obviously we are aware of the role of Public Health England nationally, but local authorities now have a significant role in public health at a local level. How adequate do you think processes are, and how resilient and prepared do you believe local public health authorities are, given that public health is spread across local authorities that vary vastly in their size, geographic reach, number of staff and all the rest of it? There are very big urban authorities and very small rural authorities, but they all have this responsibility. Is that hampering preparedness or not?

Professor Davies: Britain is known for being a very well prepared country, whether it is pandemic flu planning or this planning. We have to remember that there is not only the hospital sector and public health, as you say. The key bit of public health for this is Public Health England, which does have local branches that support the local authorities. We have run a national exercise, which went extremely well—better than I expected. Following up on that, about half of the local resilience forums have already done some extra work and exercise, and the others are following suit. I can safely say that the planning at national level has been excellent. The work with the exercises shows that people have plans in place and good response mechanisms.

Q16 Andrew Percy: Is that across all public authorities and local councils?

Professor Davies: The local resilience forum brings together absolutely everyone: the police, the ambulance service, the acute sector and public health.

Q17 Andrew Percy: Were there any identified weaknesses? If there were, were any of those geographic? What has been put in place to correct those? The public would be interested to know whether there are any weaknesses.

Dr Cosford: There are two things that we have been doing. One is running an assurance process through all Public Health England local services to make absolutely certain that at any time of the week, day or night, the response system with identified instant leads is available and working properly. That is building on our normal business; it is what we do day to day and week to week anyway, for any range of infectious disease issues. We have run an assurance process to make sure that that is operable in the way that you and I would expect for Ebola. At the same time, the local health resilience partnerships are exercising as we speak across the country to make sure that the multi-agency system is working properly.

There are a number of things that we are making sure are absolutely robust. We have guidance for police and other responders going into place to make sure that the system is clear.

Q18 Andrew Percy: Finally, given that we are still a United Kingdom—just—what is the position in Scotland? Is there a different response? Obviously the processing—where public health sits and all the rest of it—in England is now different from that in Scotland. What is the cross-border co-operation within the United Kingdom?

Professor Davies: There is a terrific amount at the national level. Ministers have talked. The Scottish, Welsh and Northern Irish Offices are invited to Cobra. At the CMO level, we have regular briefings. At official level, they talk at least once a week, and the devolveds are using Public Health England advice as the basis for their planning.

Q19 Chair: Following up on Andrew's question, Dr Cosford, are you saying that no weaknesses were identified in any of your modelling?

Dr Cosford: No. I am not saying that there were no weaknesses—

Chair: But that was the question.

Dr Cosford: We are constantly looking at where we can strengthen our system.

Q20 Chair: It is good to hear that you are confident overall, but what we are interested to hear about is whether you identified any weaknesses. Can you elaborate on whether there were any weaknesses in the system?

Dr Cosford: What we focused on was making absolutely certain that, as soon as there is a high possibility of somebody having Ebola infection, all the right systems—the contact tracing and others—are fully in place right away, before the diagnosis is firmly made, if

necessary. That is just an assurance process that takes what we do on a day-to-day basis, to make sure that it is up and running quickly.

Q21 Chair: But that was not the question. The question was, did you identify any gaps in the system as a result of your exercises?

Professor Davies: Could we send you a note—because I do not know—about what the local resilience forum exercises have shown?

Chair: Yes. It is of interest to the public to know where the weaknesses in the system are and whether you are addressing them. That is the point of this hearing.

Professor Davies: The purpose is, if you find one, you address it.

Chair: Indeed.

Professor Davies: We will send you a note.

Q22 Chair: But at the moment you cannot say whether any weaknesses were identified during the exercises.

Professor Davies: No. As I said, the national events went rather better than I dared hope.

Chair: That is reassuring.

Q23 Andrew George: This question is for Professor Dame Sally Davies. Which do you think is most effective—exit or entry screening?

Professor Davies: If you are trying to prevent people from arriving here, I have no doubt that exit screening is exactly what needs doing. They are picking up people who have high temperatures. I understand that the majority, if not all, have malaria.

The purpose of what we are doing, although it is called screening, is to pick up people who come from those countries—and we will not be able to pick them all up—in order that they have a risk category. If they are in a significant risk category, they will be followed up by Public Health England. It is also to make sure that they understand our system and know the symptoms, so that if they become unwell they have a number to ring and know what to do. That means that we are protecting the public if they later develop symptoms. As you have heard, we do not want those people, were they to develop symptoms, to be in the community one day longer than they need to be. Rather than have them find their way around the NHS, we are giving them that information. That is the big win of the entry screening.

Q24 Andrew George: You are saying that exit screening is clearly most effective and that that is where the priority should lie, yet in most of the public statements and the discussion—certainly as far as the public relations from the Government are concerned—it seems that the focus has been on entry screening and this change of policy on 9 October. I

want to be clear—what emphasis is being placed on exit screening? I can understand rationally why that is most effective—you do not want infective people sitting on aeroplanes for prolonged periods of time and potentially spreading their disease—so why is this happening?

Professor Davies: I wish I had explained that those countries already had exit screening in place and that this was building on that in order to provide the communications and the contact part. We expect to find very few, if any, cases through this.

Professor Whitty: I left Sierra Leone 10 days ago and the exit screening was very thorough. I got screened on three completely independent occasions, with proper temperature monitoring, so it is definitely working there.

Q25 Andrew George: This is being carried out by the Sierra Leoneans and not by international agencies.

Professor Whitty: Yes.

Q26 Andrew George: What funding has been allocated to the entry screening programme, which appears to be an appendage to what is happening as far as the exit screening is concerned?

Professor Davies: This is being run by Public Health England. Dr Cosford, do you know how much it is costing?

Dr Cosford: To be honest, the funding is not the key issue for us. The key issue is to make sure that we have people in place at the airports where the screening is taking place in a timely fashion, which we have done. We have the staff there undertaking the screening. We will be looking at the funding issues. We do have an estimate as to the cost over the next six months or so, but that is neither here nor there, in the sense that what we are doing is adding an extra layer of protection to the exit screening that it is important for us to put in place.

Q27 Andrew George: So resource is not an issue, but clearly you are having to put resources into the entry screening in three locations.

Dr Cosford: Yes. The most important thing for us is to make sure that we have the right staff in the right place and, because we are taking staff who at other times do other duties, to make sure that the work they otherwise do is also being robustly covered.

Q28 Andrew George: Professor Whitty, what contribution is the United Kingdom making to the effort in exit screening?

Professor Whitty: Exit screening is not something that the UK is mandating. It is coming from the Sierra Leonean Government and the relevant other Governments as part of their exit thing that goes with airports. In a sense, it is part of the whole security apparatus around airports. They have just added in this additional layer.

Q29 Andrew George: I want to ask a very specific question about two ships that we understand are due to arrive in Falmouth in the coming weeks, both from Sierra Leone. Do you know about those ships? I would be interested to know whether you are aware that there is concern locally about making sure that they are received appropriately. What efforts are being made to ensure that proper screening and preparations are made to assist those ships, should they arrive as planned?

Professor Davies: I presume the port authorities know. I was not aware.

Dr Cosford: I am not, as we speak, aware of those two ships, but I would make two points. The exit screening from the three countries concerned is intended to cover port of exit as well. We would expect there to be 21 days or more in the time of transit by sea from Sierra Leone to the UK, but we will take that back and check. There is no problem at all with our providing appropriate screening on a one-off basis for such issues. We would be able to do that.

Q30 Andrew George: In theory—or at least in terms of the procedures in place—what would the procedures be? Would there be conversations with that ship en route, knowing what its destination is, to ensure that some arrival screening could be undertaken remotely, rather than when it arrives in port? I do not know what the procedures might be. If you are uncertain about these two particular cases, is it possible for me to receive a letter explaining what procedures will be applied?

Professor Davies: Absolutely. We should not make up policy on the hoof.

Andrew George: Quite.

Q31 Chair: It also applies to other ports and regional airports. Is there a danger that by focusing just on Heathrow, Gatwick and Eurotunnel we are ignoring appropriate advice? In other words, are you using posters? What mechanisms are you using at other ports of entry?

Professor Davies: Clearly we are not going to catch everyone coming in. Exit screening is the important bit, and this is mainly about communication. I want to reassure the public that, as we get that communication out into the diaspora more and more, it will spread and that will be helpful. What we are doing is trying to activate this where we will have the highest capture rate. That is why we have started with Heathrow, Gatwick and Eurostar. There are discussions about extending.

Dr Cosford: We also have a system where ships are tracked by HM Government. If there are any concerns about ships coming from any of the countries of concern, PHE is alerted about those so that we can put in place, as I said, an appropriate system to track them. If there are any concerns about anyone on board, that would normally be a direct conversation with the ship's master—just as an airline pilot has to flag ahead if there are concerns about somebody on board—so that we can have the appropriate preparations in place at the port of entry. We do that on a regular basis for any number of different issues.

Q32 Barbara Keeley: I think we are nearly there with this, but I want to clarify finally why we have adopted a policy of screening. Some people have suggested that that could give a false sense of security. Dame Sally, you said that it is really about communication. Is that the perceived benefit of entry screening?

Professor Davies: Absolutely. I have been clear about that.

Q33 Barbara Keeley: Let us move on to staff issues around screening. Will the staff carrying out the screening assessment be recruited exclusively from health services, or will non-health service officials, such as civil servants, be involved? Could you give us a breakdown of who is doing the screening?

Dr Cosford: At any point of screening, there is an administrative person and then there is what is called a health protection practitioner, who is effectively a nurse. Then there is a consultant, who can do the secondary assessment. The administrator undertakes the questionnaire and takes the temperature. If there is any concern, the nurse will redo that. If there is any need for a further assessment beyond that, there is a consultant available to do that.

As we speak, those staff are coming from Public Health England. We have had some administrative support from the civil service across Government. As we have set up the system, we are moving very rapidly over the next couple of weeks to a long-term sustainable model.

Q34 Barbara Keeley: Where civil servants are involved, are they being trained—presumably they are—to identify individuals at risk, given that they are not health service staff? What protection will they, and all of the staff, have? Will they be given full personal protective equipment?

Dr Cosford: All staff undertaking any part of the screening process are being trained in order to do that, with appropriate training about Ebola, how to apply the questionnaire and the fever. There are very clear algorithms as to when and what kind of personal protective equipment is needed.

Q35 Barbara Keeley: Finally, on whether screening will become mandatory, what are staff advised to do where a person wishing to enter the UK refuses to be screened?

Dr Cosford: Our staff will screen everybody who is brought to them for the purposes of screening. We consider screening itself to be a requirement for people who are coming from the countries of concern, in order to provide that extra information, as Dame Sally has suggested.

Barbara Keeley: So it is mandatory.

Dr Cosford: There are powers that can be provided under existing legislation, if necessary, to place somebody under surveillance at the port of entry.

Barbara Keeley: That is not really clear. It is not mandatory, but you have powers.

Professor Davies: It is not mandatory in the way you and I would see it. It is expected, and there is a very high compliance rate, as I understand it.

Q36 Barbara Keeley: That is still not clear. Just to put my question again, what will staff be advised to do where a person refuses to be screened?

Dr Cosford: Just to be clear, the screening at the port of entry, within rooms that Public Health England is staffing and in which it is undertaking screening, relates to passengers who are brought to staff by the Border Force, so at the point where they come to us they are clearly complying with screening. We are screening 100% of those who come through. We are not seeing within our facilities the issue that you raise.

Q37 Barbara Keeley: So it is for the Border Force to deal with people who do not want to be screened.

Dr Cosford: The existing legislation allows for a medical officer to be called to provide advice at that point and to place somebody under surveillance, if that is required.

Barbara Keeley: It still sounds as if there is a bit of a gap there.

Q38 Chair: In other words, could they refuse to go into the next room? What would happen if somebody came to the border, was asked to go for screening and said, "No, I am not prepared to be screened"? Would they be required to get on the next plane or would they be held in an isolated area until they agreed to be screened?

Dr Cosford: Those are questions better directed to the Border Force. It is clearly not a part of the immigration process. This is beyond the immigration process.

Chair: No, but it is of interest to the public. The point about this hearing is that we are trying to answer questions from the public. That is a question that we hear: "What happens if somebody does not agree to be screened?" Could you write to us to tell us what happens?

Dr Cosford: Of course.

Q39 Barbara Keeley: Are you suggesting that it is the Border Force that needs to answer that question and that we should raise it with them? Are you saying that it is not part of your procedure?

Professor Davies: We will produce a shared answer.

Chair: That would be appreciated.

Q40 Robert Jenrick: You say that there has been a very high compliance rate, but presumably not 100%. Has anybody, to the best of your knowledge, refused to be screened so far?

Professor Davies: I believe that one did. Public Health England has followed up with him.

Q41 Robert Jenrick: Do you know what happened to that individual?
Professor Davies: I believe he is well.

Q42 Robert Jenrick: But is he still in the UK?
Professor Davies: Under data protection I do not know who it is, so I do not have that data.

Q43 Andrew Percy: It is surprising that the people undertaking the screening are not aware of the powers available if somebody refuses to be screened, in so far as there may or may not be any powers with regard to denying somebody entry to the United Kingdom. We presume that one person, because they have not appeared on the front page of any national newspaper, is well. However, it would be very concerning—we need this to be answered very swiftly—if there were a situation where people who could be very unwell were simply refusing, and there appeared to be no powers, or the screeners were not aware of the powers. That is a concern to me.
Dr Cosford: If somebody is unwell at a port of entry, there are very clear public health powers under what are called part 2A orders that provide for somebody to be taken to an appropriate place for isolation and assessment. That is very clear. If anybody has symptoms, they can be treated in that way. That is existing legislation that is in place and applicable, if it needs to be used.

Q44 Andrew Percy: But you have to pick up on those symptoms.
Dr Cosford: Yes. If somebody is clearly symptomatic, that is—

Andrew Percy: But the screening is all about that, isn't it? What is the point of screening if you are already picking people up with symptoms? This is for people who are not displaying symptoms.

Dr Cosford: The core point of the screening that we have in place is to identify people who have come back from the countries of concern and to make sure that—

Andrew Percy: But they may not be displaying symptoms.

Dr Cosford: If they are asymptomatic, they are not infectious. Clearly it is important for them to know when to identify themselves with any symptoms that might be of concern to us. That is the reason why there is the information that we are providing and the ability for them to make contact with services. We have also been clear that screening is never going to be 100%. What we are aiming to do is to reduce the risk and to make sure that the period of time from somebody coming from one of the countries of concern to their being identified as having become symptomatic and then being isolated is as short as possible. That is the key focus here.

Q45 Chair: But you are going to write to us to set out what happens to individuals who refuse to—

Dr Cosford: Absolutely.

Q46 Chair: That would be helpful. Following on from your last point, Dr Cosford, clearly you have made it clear that the point of this is to make sure that individuals know how to contact the health services if they develop symptoms over the ensuing period.

Dr Cosford: Yes.

Chair: In the Secretary of State's statement on 13 October, he talked about a difference between individuals who will be given clear instructions about how to contact the health services and certain individuals who are higher risk, who will be rung every day by Public Health England.

Dr Cosford: Yes.

Chair: Could you set out for us how you are going to differentiate between the two groups and what will be the criteria for deciding whether they get a daily call—in other words, a "Don't ring us, we'll ring you" approach?

Dr Cosford: It is a very clear risk-based approach. If somebody has come from one of the countries of concern, has had no contact with Ebola and has not been part of the response to Ebola, they are given clear information about the symptoms to look out for and how to contact the NHS if they have any concerns. They are in a very low-risk category.

If people have been part of the Ebola response or have had some contact, but it is when full personal protective equipment has been used and there has been no breakdown in any of the types of arrangements that you have in place for people who are working as part of the Ebola response, they are put into what is called category 2. They have instructions about how to self-monitor. If they are health care workers, we restrict them from certain forms of health care, but in general, if they are asymptomatic, are well and are not infectious, they know who to contact. If they have any concerns, they contact PHE through a defined number that they are given.

The group we would be most worried about is people we see who have had an exposure where they are concerned that their personal protective equipment may not have worked. In that case, they take their temperature twice daily and have a conversation every day with a member of staff from Public Health England, for utter assurance that they are remaining asymptomatic.

Q47 Chair: For those individuals, in either category, who do phone the number, are aware that they are becoming symptomatic and need to be assessed, are you going to have arrangements where somebody comes to collect them wearing protective equipment, or are they going to make their own way to a facility? Is there going to be a single national facility or are there going to be regional centres?

Dr Cosford: We have a whole set of arrangements in each hospital across the country. If somebody is in one of those groups and needs to be assessed, and they have symptoms that are suggestive that they may be at the early stage of Ebola, they will be taken to a specific facility to be assessed through our guidance, which is written by the Advisory Committee on Dangerous Pathogens.

Q48 Chair: How many of those centres are there, and how would they get there? Would they be collected or would they take themselves?

Dr Cosford: They would be collected with an ambulance. We would get an ambulance to come and pick them up. Every hospital across the country has the ability to do that, but we have certain hospitals that have specific infectious disease facilities.

Q49 Chair: So they would be going to a specific infectious disease facility. How many of those are there specifically set up around the country?

Dr Cosford: In general, at that point they would be able to go to the local hospital, to an appropriately prepared isolation room with appropriate personal protective equipment in place, and not be in contact with other patients there for the first part of the assessment. It depends on the level of risk, but at that stage it is very unlikely that they would actually have Ebola. They would be much more likely to have fever from another cause or something else.

Q50 Chair: Following on from that point, today I met with the College of Emergency Medicine. Dr Clifford Mann pointed out that he feels that, rather than have people seen in district general hospitals, it would be better to have a regional team that responds specifically. He feels that it is inappropriate to try to train up members of staff in every single hospital to deal with this and that it is better to have a response unit. What would be your response to that?

Dr Cosford: What we have to do is to take a risk-based approach. We need to make absolutely certain, as we have done over the last week or so, that any local hospital can respond and knows what to do if somebody turns up at their door and says, "I have been to Sierra Leone, I have a fever and I am worried."

Q51 Chair: But these are individuals you have already identified as high-risk.

Dr Cosford: If they are already identified, what we would do is take a risk-based approach and try to make sure they got to the most appropriate facility that would be as protective as possible, particularly a hospital with an infectious disease facility.

Professor Davies: Dr Mann is part of the NHS England planning. This is a fast-developing area. We have no patients and have an expectation of very few, so he will be able to influence how the NHS responds.

Q52 Chair: So it is an ongoing process. However, at the moment even individuals identified as at high risk would effectively be going to their local district general hospital for an assessment.

Professor Davies: It is likely, but the conversation with Public Health England will go through the algorithm to determine whether it sounds as if it really is Ebola, in which case they may well be diverted to an infectious diseases hospital, as opposed to, "It doesn't really sound like Ebola, but we had better protect the public and our staff and do this properly."

Q53 Chair: This was the worry that people had about what happened in Spain, where you had a health care worker who was in the community for several days before the diagnosis was made. The public's question is, are we set up to deal with people who could have symptoms and who are at high risk? These are individuals you are already identifying at the border as having been in contact, so it might seem surprising that they would be going to their local hospital.

Professor Davies: Clearly we have to protect the public and our staff. That is why we have these risk-based algorithms. Every casualty department is now working to develop an isolation room and to make sure that their personal protective equipment is handy. There is work ongoing to ensure that people are properly trained in its use.

Q54 Chair: On that point, I have heard anonymously from a casualty doctor, who did not wish to identify the hospital he was at, that he does not know where the personal protective equipment is and has not been trained how to use it. The College of Emergency Medicine's response is that it is very difficult to train up every single member of staff across the whole NHS. It feels that it is better to put people straight into an isolation room and then have them transferred or seen by a regional team who are very highly trained in how to use the equipment—and, more importantly, how to take it off safely, because that seems to be an issue.

Professor Davies: You are absolutely right. I am concerned about whether our staff know enough about how to do this. I have been in contact with NHS England and am going to ask it to send you a note about the preparations. The national preparations are excellent and it is now moving to try to make sure that all front-line staff, not just clinicians, know what to do. People could walk in, so we need them to be prepared as to what to do.

The first response is, "Hello. If you may have Ebola, I would like you to sit in this room. Here is a glass of water. I am shutting the door while I call some experts and we make sure we know what we would do." We have to be very sensible. They are doing a lot of work and we will send you a note on it. If we then think it is Ebola, clearly the ambulance service, which have practised using PPE and are expert, will be asked to move them to another place where they have more expertise.

Chair: I know that David is keen to come in here.

Q55 David Tredinnick: You have given a lot of contingency possibilities, but isn't it a fact that the south of the country is better prepared? The Royal Free in London is the hospital that has been designated as the main holding hospital if there is an epidemic of some kind. What I would like to know is what will happen if somebody flies into Birmingham airport and comes to my Hinckley and Bosworth constituency. I do not think the Leicester royal infirmary is equipped to take anybody. Is it not a fact that, once you go down through the preparedness of briefing people about what could possibly happen, we actually do not have suits in every depot? We have a couple of hospitals—I have named one—that can deal with it. What is the depth of your ability to handle something that gets potentially out of control, with a number of cases?

Professor Davies: Clearly we have to have beds that are specialist for proven cases to give those patients the best outcomes and to protect everyone.

Q56 David Tredinnick: We represent the midlands. I have not heard much about the midlands.

Professor Davies: There are two standing beds at the Royal Free. We have a further 12 beds in Newcastle, Liverpool and Sheffield—and more at the Royal Free available, if needed. There is expertise, there is planning and those people are trained. Given that we suspect that we will see only up to a handful of patients, and they will not all be at once, we believe that is sufficient. There is contingency planning for something bigger, but I do not believe that will happen.

Once there is a diagnosis, they will be moved by ambulance services that know what they are doing to, initially, the Royal Free to have the best care. That is exactly what happened to Will Pooley when he was repatriated. The issue we are talking about is what happens if someone walks in off the street. As I said, the first response needs to be, "Aha, let's just put you in this room with a glass of water while we call some experts and get some advice." However, there is ongoing work from the NHS, on which I will ask it to send you a note, about how it is training the front-line staff and making the PPE available.

Yesterday I was talking to the chief executive of Guy's and St Thomas'. Many of the hospitals are using this as an opportunity really to have a push on infection control generally. That is very good for the whole system, because this is not just about protecting patients—it is about our staff. I am very keen that they should all do that and not say, "Oh, it's a problem for a specialist centre," because we cannot guarantee where people will come.

Dr Cosford: I may not have answered your previous question clearly enough. In respect of people who we know have a defined high-risk exposure, make contact with a PHE person and say, "I have symptoms"—and they are clearly symptoms that are very worrying, like diarrhoea, vomiting or something of that sort—the risk-based approach would take us to a very high infection control ambulance to the Royal Free, in discussion with the Royal Free.

Chair: Indeed, so they are not going to be going to their local hospital.

Dr Cosford: No.

Chair: That is what I was asking.

Dr Cosford: If they were in a lower risk category and said, "Well, I have a mild fever and I am just not quite sure," they would be very unlikely to be infectious. We would still have the conversation with the imported fever service, so we would have the expert conversation to make an appropriate judgement. Then a decision would be made about whether it was appropriate to send them directly to the Royal Free or whether in those specific circumstances, given the expertise available, it was appropriate for them to be seen in an isolation room in a different hospital. That is what I meant by the risk-based approach. I may not have explained that quite clearly.

Chair: That has made it clearer.

Q57 Barbara Keeley: On the question the Chair has asked, there are a number of points about guidance to health service staff. Clearly this is very important, because there are a large number of them. The Chair has raised the point of hospital clinicians having no advice about how to deal with a suspected case. When the Secretary of State made his statement on Ebola here, he talked about alerts being sent out to clinicians. He also talked about reception staff—clearly that is hospitals and GPs—and even cleaning staff.

My concern after he had made that point was that really you can have no idea whether an alert has been carried through. Given that people can walk in off the street, sit in a GP surgery and, possibly, use the facilities—the bathroom and that sort of thing—the risk is there for those staff. The system of alerts does not seem to me to have a sort of receipt—"Yes, we have seen this. Yes, we have dealt with it." I was very concerned, but I could not ask the Secretary of State another question about that.

Dame Sally, you have talked about talking to St Thomas' and about the Royal Free, but this could be anywhere in the country. We have already identified a gap with regard to people who might refuse screening. Given that people could turn up anywhere, do we not need an absolute assurance that all practices, all hospitals and all the staff who could be at risk have not just alerts being sent to their place of work but confirmation that those alerts have been carried through? It seems to me that you need an absolute assurance back to yourselves that the exercises you have talked about in a few places are being carried out everywhere. The answer I got back was, "Well, this is a risk-based thing and the risk is not that high yet." That is not really sufficient assurance.

Professor Davies: I share your concern. It is important not only to do the planning and send things out but to make sure it gets to the right people and they get the training. A lot has been done. Again, I can send you the list of advice. I personally have sent three central alert system alerts about Ebola so that people are aware. A lot of advice and planning has happened.

Barbara Keeley: Forgive me, but it is a question of your getting feedback—

Professor Davies: I am coming to that. I have sought a response from NHS England on "Is the beer getting to the parts at the front line?" It is very clear to me from what it has sent to me that a lot of work is going on. It is improving day by day. As I said, I will ask it to send you a note about that. I think there is more work to be done, but it has started that. Remember how low the risk is. If it has started now and it happens in the next week or two, that should be satisfactory.

One of the great things about this hearing is that it raises awareness, not only for the public of how they will not get this through the air and how unlikely we are to see even a handful of cases, but for the staff, to make sure that they are accessing the information. I can also tell you—the note will expand on this—that NHS England has today sent a letter to every chief executive in the NHS with a checklist for assurance purposes, asking them to sign it off. It will send you a note of all its actions along those lines.

Q58 Barbara Keeley: If we want to monitor this, can we ask for the point at which you get 100% return from all of the GP practices and all of the hospitals and other places where somebody could just turn up?

Professor Davies: We will pass that on.

Barbara Keeley: I felt that that was missing. You do not need a one-way information system at the moment. You also need a receipt.

Professor Davies: I share your concern. What I have heard last night and this morning makes me feel that we are well on the way to the best place we could be.

Q59 Chair: So we would expect every member of staff in every casualty department and GP surgery to know where the personal protection equipment is if they need it, and how to put it on and take it off safely?

Professor Davies: I think they should know where it is, how to put it on and, more importantly, how to take it off, and that they should have agreed who would be the first to do it. Not everyone would need to do it. There are going to be a handful of cases, but they need to raise their awareness. It will be very good for infection control generally.

Q60 Charlotte Leslie: I am sorry for arriving late and if my questions touch on things that were discussed when I was not here. We have had experience in the past of organisations like NHS England and chief executives, with the best of intentions, handing information back to other bodies saying, "Yes, everything is fine. Everyone knows what to do in case of an emergency." Of course, that does not chime with the reality at all, because obviously there are incentives to show that your hospital is doing well on it. What spot checks are you doing? What monitoring is taking place to make sure that the information you are fed back saying that everything is going well is actually the case on the ground? A lot of the time, you find the story on the ground is very different from the story given by pieces of paper handed around the levels we are talking about at the moment.

Professor Davies: What a good question. I will ask NHS England to put a response to that in its note.

Q61 Charlotte Leslie: That would be very kind. I have one more question; forgive me if it has already been covered. I have a horrible premonition, which I hope never comes true, that "We only expect a handful of cases of Ebola coming into England" may be one of those phrases that gets replayed in 10 or 15 years' time, when we are found to have been

wrong on that. Sorry if this is a repeat—just tell me if it is—but could I get a bit more information on what your basis is for that risk assessment? It sounds horribly reminiscent of the WHO reassurances to everyone saying, "It is all fine. This kind of thing never happens. It is a very low risk," which, of course, was proven not to be the case.

Professor Davies: We do have to keep this under review. Paul will address what goes into the modelling, but that is what I have said for the next few months, before Christmas, based on modelling. We will look at it every month—or more frequently, if we have to. We may need to revise it up, which would be sad, or down, which is quite likely. It is important for the public to realise that we may have some cases here. Indeed, we may have health care workers returning who have it, rather than people coming in sick whom we were not expecting.

Dr Cosford: There are three elements of risk we look at in the model. The first is the chance—the risk—of somebody coming to the UK with Ebola, either as a returning worker who has been identified to us and deliberately repatriated, or as an unexpected case that we do not find. We consider the risk of that to be low. However, as Dame Sally said, we are preparing for up to a small handful of those sorts of cases over the next few months.

Then there is the risk of secondary transmission. The risk there is principally to health care workers, which is why the work we have been talking about in relation to NHS preparedness is so important. The reason why the risk is to health care workers is because when somebody first has symptoms, as Dame Sally said earlier, they are not very infectious. The infectiousness increases as you get more and more ill, so it is when you are in hospital with severe symptoms that you are most infectious. That work around hospital personal protective equipment is critical, but our assessment of that risk is that it is very low.

The third element of risk is the risk to the general population of an outbreak of Ebola. That is indeed very low. What we keep under review, as the situation develops in west Africa, and as we see the patterns of people going to and fro to west Africa and monitor those, is whether that makes a difference to our assessment of risk. That is what we are keeping under review. The statement that we give at the moment is in relation to the circumstances as we see them at the moment. As circumstances may change, we will review our risk assessment.

Q62 Chair: Just to be absolutely clear with the public, the best way to fight Ebola is to fight it and help people in west Africa.

Dr Cosford: Absolutely.

Professor Davies: Thank you for saying it. We all agree—and the Government recognises that. If we put money in now to do that, it will save us money later, because as it doubles it costs more to get on top of it.

Q63 Chair: Perhaps this is a good moment to pay tribute to all the NHS staff volunteers, troops and diplomatic staff who have gone out from the UK.

Professor Davies: Yes.

Dr Cosford: And Public Health England staff, if I may add that.

Chair: Of course; I beg your pardon.

Q64 David Tredinnick: What lessons have been learned from the 2009 swine flu pandemic?

Professor Davies: I asked that specifically, because clearly we do a lot of planning on that. It is about cross-Government working. You can see an example here, but I can assure you that the cross-Government working is excellent. Cross-sector multi-disciplinary working is also important, and we have exactly that. I cannot remember what it is called, but in our emergency preparedness cell we have the Department of Health, Public Health England, NHS England and the ambulance service all working together in one area. I do not know which staff are actually civil servants and who belongs where. That shows the level of multidisciplinary working.

Preparedness is important. We have been talking about a lot of that. That is good, although it is in evolution to improve to protect our staff, which is important. There is then the importance of exercising. We had the national exercise, and the local resilience forums are playing their role. We have had false alarms and have learned the lessons from those.

Q65 David Tredinnick: Do you have a system in place to forecast levels of infection? Do you have a model for that?

Professor Davies: That is exactly the work Paul was talking about and why I am able to say to the public that I expect up to a handful over the next few months.

David Tredinnick: Turning to prevention, we do not have an effective vaccine for Ebola, but the World Health Organisation decided in August that if certain conditions were met—

Chair: David, we are not quite on to vaccines yet. Can we come on to that next? I know it is a slightly confusing picture, but Andrew George had a couple of questions at this point.

Q66 Andrew George: On a matter of fact, presumably Ebola has been added to the national risk register.

Professor Davies: The national risk register is being updated at the moment and we are adding to it. It already has pandemic flu. We are adding other infectious diseases to it. The fact that Ebola is not on it at the moment does not impact on our preparations and work. It is as if it were, but we are now doing the work to have other infectious diseases and antimicrobial resistance added.

Q67 Andrew George: To an extent, some of the issues that we are about to raise about the protection of health workers in the UK have been covered in relation to personal protective equipment. Just to be clear, in the acute setting, should someone with suspected Ebola march into a hospital in a panic and say, "I think I've got Ebola," what arrangements

are there? What guidance and training are available? Is level 4 protective equipment available for NHS staff at the drop of a hat in any location anywhere in the country? What would they do to obtain that? What guidance has been given to them?

Professor Davies: We have had significant orders that have been delivered. It is in all the hospitals and there is training ongoing. As I said, accident and emergency units are being asked to decide which room they would use if someone came in and they suspected Ebola. Those will be the issues that the note I will request for you from NHS England will address.

Q68 Andrew George: A lot of the staff I have spoken to who work in A and E departments, including in London, have said that they have heard nothing. To what extent have you been reassured by people under you that the message is there on the ground? How reassured are you that staff on the front line are aware of the training they are supposed to have received and the protective equipment they are supposed to be able to put their hands on?

Professor Davies: I do not think we are where we need to be, but remember that the risk is low at the moment. There is a programme of work that has started. It is difficult to reach every member of staff because not all people want to read it. What I would like front-line staff to understand is that this is not infection control as they are used to it, where generally they are trying to protect the patient; they see that quite a lot with bone marrow and renal transplants. This is much more like the pilot who, if he makes a mistake, goes down with the aircraft. It is very important that they recognise the risk to themselves, take up the opportunities for training and look into it. It is being made steadily available. A lot of information is out there on the Public Health England website and has gone to hospitals; I have sent letters as well. A lot is there, but the note will expand on how more training will be put in place.

Q69 Andrew George: This was partly covered earlier, but one guesses—you can advise, as you know far better—that they will either march into A and E in a panic or present themselves in primary care to a GP, so the same question applies in relation to primary care and GPs and their preparedness. Have they equally been informed? Are you assured that they now know that everyone throughout the country is aware of how they should handle the situation?

Professor Davies: I know that that work has started and that posters have now been sent out for all GP practices, as well as all A and Es. Good progress has been made, but all of us also need to get over to the front-line staff—not just the clinicians but everyone—that they have a personal responsibility to make sure that they find out where their PPE is and that they have learned how to do this. We are not a paternalistic society and I am not a nanny. I want to know that that is out there for them and made available and that they are given the time for it, but they must choose to access it and to listen to the training.

Q70 Andrew George: But surely you also understand that, if you look at how the disease has developed in other countries, the most valuable people available to you are health staff, yet they are also the people who are very much at risk. A large proportion of those who

have died are people who have put their lives on the line to try to deal with the situation. Therefore, making sure that they are given all the support that they clearly deserve is something that needs to be seized at the very top.

Professor Davies: Absolutely—and the planning is super. Once we have a confirmed case, they will be in a unit that knows what it is doing and our health staff will be protected. The evidence is that, if you do it properly, your risk is higher than the rest of us but it is rare to get it. What I think we are talking about is the everyday front-line staff, where patients may come in and where there is a programme of training and reassurance back up to NHS England. Only very few of those people will be exposed to patients who may have Ebola and are likely not to be at massive risk.

Q71 Chair: But you have heard from us today that there are NHS staff contacting us who feel that they do not know where it is and they would like to know where it is. They are not necessarily people who have not asked.

Professor Davies: That is why I have said that I think NHS England should answer you—first by a note, but you may wish to discuss that with it.

Q72 Barbara Keeley: I am slightly disturbed by the language that you are using. You seem to be going on the basis that you are not a nanny and it is not mandatory in the sense that you can't say "must". I think there would be more assurance around all of these concerns about staff if it really was a "must". If there are not the powers for this within the structures of the Health and Social Care Act, we should understand that. This Committee needs to understand whether we are short of some powers. If the Health Secretary needs to move that, I am sure he could.

Are you saying that you do not have the power to require NHS staff to go through training, to read through practice protocols and to understand how to protect themselves? You have just said that you would not make it mandatory, which is of real concern. We are talking about tens of thousands of GP practices where they need that training. They need to know where the equipment is and they need to know the protocol. If you—or NHS England—do not have the power and the Secretary of State does not have the power, they should have.

Professor Davies: Of course they need the training and need to know where it is. I would encourage them to access that. Under the Health and Social Care Act, the Secretary of State does have the power to issue directions to NHS England when it is failing to discharge its functions and that failure is significant. For emergencies, the Secretary of State has a direct line of sight. What I am telling you is that I have raised this with NHS England and it has reassured me not only that it has good planning, by working with Public Health England, which provides the guidance, but that a lot is happening out there and there is a rolling programme of work—which I am going to ask it to let you know about—to make sure that people do know, as well as a programme of reassurance back to it that that is in place.

Dr Cosford: From the point of view of the contacts we have had with NHS England around this specific issue, it is in command and control mode for emergency preparedness in relation to making sure that the NHS is prepared. It is obviously every NHS trust's duty of care to their staff to ensure that the right systems and training are in place. We have

done two things. One is to work with the NHS on what the most protective model is for when somebody presents and they may have Ebola. We have worked with it on what the right isolation facility in every A and E should be and what the right personal protective equipment is.

Q73 Barbara Keeley: I was talking about the tens of thousands of primary care trusts. It is those staff and ambulance staff I am concerned about as well.

Dr Cosford: We have also developed the guidance for primary care. We have put posters together, which we have provided to NHS England, to sit behind every GP and A and E reception desk and at the front door of every hospital, both for patients to know what they should do if they are concerned about Ebola and so that at that first contact the receptionist knows what to do with people. There is then the process—which is the critical one you are talking about—of assurance that that is actually all in place. That goes back to what Dame Sally was saying earlier. NHS England has written to the chief executive of every trust and every ambulance trust to ask for assurance that the right staff are aware of the guidance and that the equipment is in place.

Q74 Barbara Keeley: And in primary care?

Dr Cosford: We will have to ask them to come back to you. We have done the guidance for primary care, but we will have to ask them to come back to you on what their assurance process is around that.

Q75 Robert Jenrick: I have two quick follow-up questions. The first is on risk. You have been very clear that the risk is low. You define low risk as a handful of cases in the next three months. Do you have a forecast going forward from that, bearing in mind that a lot of the things we have discussed will clearly take a few months to embed? Where do you see this issue being in six months' time?

Professor Davies: We do not know. No one in the world knows.

Q76 Robert Jenrick: Do you have a forecast for where we might be?

Professor Davies: We have a number of scenarios, but we do not know which will play out—from getting the R_0 below 1 and getting on top of it in west Africa, to its being patchy and urban versus rural, right through to its still having an R_0 above 1 and, therefore, being out of control in west Africa.

Q77 Robert Jenrick: What is the range of the forecasts that you have?

Professor Whitty: As with all forecasts where something is compounding, the top number, which is ridiculously high, looks very scary and the bottom number is zero. Our view is that it will lie somewhere between those two. If I was putting the central projection—what I think a sensible person would say—we would say that in six months there probably will still be some Ebola in west Africa. It will not have gone completely and will be in certain

hotspots that are difficult to get on top of; hopefully they will gradually get smaller. Large areas will be controlled. The evidence we have seen from, for example, the cases that were seeded to Senegal and Nigeria is that the near abroad can actually get on top of the individual cases as they come, as we would do in the UK.

Although you can paint an extraordinary scenario—as you can with almost any infectious disease, to be honest—in terms of making a realistic prediction, it may well be pretty similar to where we are now. It may have moved around a bit and be concentrated in certain areas, but hopefully by that stage we will be beginning to get a feel for how we can get on top of it completely.

Q78 Robert Jenrick: The second question I had was, how many cases do you think we could deal with safely today, bearing in mind the number of beds we have and so on?

Professor Davies: At one time?

Robert Jenrick: Yes.

Professor Davies: As I said, we have arrangements for 12 beds. We then have contingency planning that we are looking at at this time. I am sure that if we had to we could open Ebola wards. The NHS is very resilient, but we are unlikely to need that.

Q79 Robert Jenrick: Going back to exit procedures in affected countries, you said very clearly that we should act on this issue in the affected countries rather than try to cure it once cases come here. One issue that has been raised internationally, particularly in the United States, is the suggestion of having temporary travel bans from affected countries. I know it is very hard to have an exact number, but the CDC has said that 77 individuals have been stopped attempting to board flights from affected countries. There were 17 in the month of September. What is your view on the point at which that should be considered as an option for this country?

Professor Davies: You should remember that not one of those denied access had Ebola; in general, we were picking up malaria. All the evidence for infectious diseases of playing fortress Britain is that it does not work. You may delay things by a week or two, but you do not impact on it in the long term. There has been quite a lot of modelling based on flu, SARS and other infectious diseases. It would not allow us to interact and help west Africa to get on top of it where the problem is biggest. I would be very surprised if we moved to that.

Q80 Andrew George: This is a follow-up to my questions about preparedness in the UK. If I may present very briefly a thesis regarding the result of conscious public policy, it has produced two things. In my view, one is hospitals that are based much more on crisis management, red alert and hot-bedding, making it difficult to discharge as well as to admit patients across the acute sector. At the same time, cleaning services have been outsourced, which might result in risks to infection control. Pardon the pun, but is that a healthy environment in which to advance the case for the best management of a crisis such as Ebola, should it strike—which, of course, we hope it does not?

Professor Davies: We heard from the Care Quality Commission last week that there is variability in hospital cleanliness and things like that. Hygiene is at the centre of any infection control. Those hospitals that do not have a good enough level need to up their game for the NHS, for all of us when we use those services. However, I remain convinced that when we do see patients with Ebola we have some of the best infectious disease facilities—starting with the Royal Free, but there are superb people at the other places—that they know what to do and that we will have the best outcomes that are possible for everyone.

Chair: We now have some questions that have been sent to us by members of the public.

Q81 Barbara Keeley: One is about the personal protective equipment you have talked about, which I understand has been ordered in. If there were any significant level of outbreak in any part of the country, be that London or elsewhere, would any of that equipment be made available to the public? Is there any discussion or planning for that?

Dr Cosford: The most important thing to remember is that when people are asymptomatic they are not infectious to other people. This is not like flu, where you get into debates about when it is appropriate to wear face masks and so on. The most important thing is to isolate individuals who have the disease, to diagnose them as early as possible—which is why we have our imported fever service, testing and so on—to identify their contacts and to have them appropriately followed up to make sure that they will be identified to us as soon as they have symptoms. In that scenario, it would not be of any benefit to the public in general to have personal protective equipment.

Barbara Keeley: You are not answering questions that I have put; these are questions we have had in from the public.

Dr Cosford: I understand.

Q82 Barbara Keeley: There is a question about the communication strategy to deal with the concern. These may not seem like reasonable questions for you, but people are concerned about them.

The second question is, is there a telephone number that people who are concerned or worried that they may be at risk in any way from infection by the Ebola virus can call to prevent them from going to a GP surgery or to A and E to ask that question? Apart from anything else, if there are a lot of people who are just concerned, dealing with them is extra work for GP surgeries. Is there some sort of central phone number? How is all of this being communicated to the public? It is important that if people have these concerns they are dealt with.

Professor Davies: The algorithms of NHS 111 have been amended to allow for Ebola, to ensure pick-up and to give reassurance to other people. All of the evidence in emergencies is that you should use the systems you have, rather than develop systems round the sides.

Barbara Keeley: So it is NHS 111.

Professor Davies: Yes.

Q83 Robert Jenrick: I have a final question from a member of the public. In the United States, members of the public have seen individuals who have been traced because they have had contact with somebody who is suffering. The word "quarantine" has been used. What does "quarantine" mean in this context? How would you envisage someone being treated if they were traced as having had contact with an Ebola suspect?

Professor Davies: We have standard tracing mechanisms for TB and other infectious diseases run by Public Health England, which is expert at that. Having found the contacts, it goes through a risk assessment as to, first, whether are they well, and, secondly, how likely it is. Only by talking to them will you know that.

I want to go back again to the fact that someone who is incubating the illness is not infectious and can go about normal life. If they are symptomatic, all of the processes will come into play to check whether that is Ebola or something else. If it is something else, they will be monitored for the full 21 days.

Chair: Thank you for clarifying that. We now move to vaccines and treatments.

Q84 David Tredinnick: Earlier I mentioned the fact that the World Health Organisation had said that it was all right to use experimental drugs. ZMapp has been very successful so far. Are you confident that we would have enough ZMapp if we needed it, given that it has been said that it is subject to international availability?

Professor Davies: We have no ZMapp at the moment—no one has. It is grown. It is a GM product—a cocktail of three antibodies grown in tobacco plants. There were 10 doses made and all have been used. Most patients survived, but not all of them. It needs trialling. They are growing some more at the moment. We are in discussion to see to who they are going to supply it to.

Q85 David Tredinnick: You have said it needs trialling, yet the WHO has said it can be used as it is. Surely the thing to do would be to have it produced as it is, because that is what has been agreed.

Professor Davies: Yes; maybe it is my way of expressing it. It needs producing as it is, but then we need to collect the data. If it is in short supply, we have to look at whether it works.

Q86 David Tredinnick: Our record on getting the right amount of vaccine has not been that brilliant in recent years. I am thinking of Tamiflu, where we had large amounts, to say the least, and now we have none. I would suggest that we need to apply our minds to the production of this drug.

I have a second question related to this. What are we doing about the development of a vaccine? Are we, as the United Kingdom, making a contribution?

Professor Davies: I can reassure you about that. That is why I am hoping to go to Geneva this evening for a meeting this evening and tomorrow about vaccines. Two major companies have vaccines in development. One is in trial at the moment. A small Canadian company will start phase 1 of a trial at the end of this month. A third will be in trial at the end of the year.

Professor Whitty: You asked specifically what the UK Government are doing. In addition to the regulatory work Dame Sally has talked about, the UK Department for International Development and the Medical Research Council have contributed heavily to the development of one of the vaccines. The Wellcome Trust is also very heavily involved on the non-Government side.

Professor Davies: Our Government is leading the way on trying to make sure that they can be produced quickly, they can be proven to be safe and efficacious and we can get them to patients in need.

Q87 David Tredinnick: I have a couple more questions. Are you aware of any research that shows that a healthy, strong immune system can allow a person not only to avoid contracting the disease but to become resistant to it? If not, is this something you feel we should be conducting research into in order to minimise or to eliminate future outbreaks? I did write to you about some research that had been done; I think you said you had had a look at it.

Professor Davies: You wrote to me and we have done a bit of exploration. I would like to respond by letter, if I may. We all know that people who are malnourished are more prone to catching infections and having worse outcomes. What we need to do is to use classic infection control to get on top of this outbreak. We need to give every patient the best possible care to ensure that they get the best outcome for them.

Q88 David Tredinnick: In your book "The Drugs Don't Work" you highlight the horrors of antimicrobial resistance. Does it concern you that recent reports have said that doctors are prescribing 25% more antibiotics than they used to?

Professor Davies: It absolutely does.

Q89 David Tredinnick: What are you going to do about it as chief medical officer? You wrote about it. It is your biggest concern.

Professor Davies: Just at the moment, Ebola is up there, too—protecting the patients, the staff and the public. Let me assure you, I am not sleeping because we are working so hard. The British Government are doing a wonderful job in Sierra Leone and globally with their leadership programme and the money they are committing.

We are doing a study to see whether my writing to some of those doctors who are prescribing vastly more than others makes a difference. You can have a prior on whether it will.

Q90 Chair: I want to come to the issue of testing and rapid access to a reliable test for Ebola. How close are we to having a test that can be safely delivered in a setting in west Africa and that gives rapid access at least to being able to exclude Ebola so that you can move on to something else, for example? Within this country, I gather that currently all the samples are going to Porton Down. That means that, if you have somebody sitting in a facility waiting for a test result to come back, they may be there for rather a long time. Are we closer to having better rapid access to test results?

Professor Davies: The problem is that we are doing the diagnosis by using RNA diagnostics on the virus, because that is most sensitive and we want to be able to pick up those who have just got symptoms and have very low virus load. We know that the RNA test is the most sensitive. Porton Down is set up to do that. If it gets too many requests, I have been assured by Paul that Colindale will take it over. Remember that this is category 4. If that blood is positive for Ebola, it is infective to the people handling it, so we have to be very careful.

There are a number of approaches that people are trying. We have set up a subgroup of the Scientific Advisory Group for Emergencies to look at diagnostic tests, but it has to be as good as RNA in terms of sensitivity and specificity and has to be safe for the user.

Q91 Chair: Yes—it is about false positives and false negatives. Could you set out how many tests are being carried out each week at Porton Down and elsewhere and explain for the public how sensitive and specific the test is?

Dr Cosford: From a UK perspective, we have done 68 tests since the beginning of July at Porton Down. If you go back to before this particular outbreak took place, we will have done somewhere between one and three a month, so we are doing an awful lot more tests than usual. The capacity at Porton is 50 a day, if we needed it. We can add another 100 a day to that by opening up our laboratory at Colindale for Ebola testing, should that be needed. We do not think we will have a problem of testing capacity in the UK in terms of what our likely scenarios could possibly be.

Q92 Chair: Is there likely to be a concern about delay because you have to transport it physically to Porton Down?

Dr Cosford: That is where the delay is. It is four hours from the point of the sample getting to the laboratory to getting the result out, provided that all the testing goes well, which it almost always does. The other issue is how we get the samples there. There are discussions going on about whether we can speed that up—whether there would be circumstances in which you would stick it on a helicopter or whatever. The delay is in getting the sample to Porton.

Professor Davies: If we think a patient has Ebola, they will be looked after by people in PPE and will be being treated as if it is Ebola. If we are really convinced, they will already be in an ambulance on the way to the Royal Free.

Q93 Chair: Given that the main problem is in west Africa, what access is there to diagnostics in west Africa?

Professor Whitty: One of the major limitations at the moment is the ability to diagnose rapidly, because you want to be able both to identify the positives but also to identify the negatives, so that they can leave the system and not be infected. You need to be able to identify those people who have died who have Ebola, because they are the ones you want to have a safe burial, which is less satisfactory for the family and for the community; you do not want to do that for people who do not. Diagnostic capacity is a real issue.

Public Health England, with many others, is trying to help to build up the amount of capacity there is with current diagnostics. The second thing we are trying to do in the UK is to help the transport system, so that the turnaround times to get to and from the labs are a lot quicker. Alongside that, Public Health England and others will test a number of new rapid diagnostic tests. Obviously it is too early to tell whether they will work, but our guess would be that within two or three months we may well have a new diagnostic test we can use at least near the patient, if not at the bedside.

Chair: That is very helpful to know.

Q94 Charlotte Leslie: I would like to zoom out a bit on what we have just been talking about in terms of developing vaccinations and treatment. Do you think there is a need to look again at the way that research, drug companies and the market work in all of this? There is every incentive for drug companies to do significant research into drugs that are going to be part of their market, which is usually western countries, and not such an incentive for drug companies to invest in research on things like Ebola, which are not perhaps so much of their market. If that market skew had not existed, perhaps we would have been better prepared quite a long time ago and Ebola would not have been as prevalent as it has become. In terms of what else might occur—just to zoom out a bit—would the panel give me a view on that?

Professor Whitty: The point you make is absolutely right. For a very long time, people were not producing drugs that were for the developing world at all, leaving Ebola aside; I will come back to Ebola. However, the issue with this is now a lot better than it was. Foundations such as the Gates Foundation and the Wellcome Trust, but also the UK Government, have invested a lot in private-public partnerships to try to develop drugs for malaria, sleeping sickness, leishmaniasis and all the things where this was a serious issue. I would not say it is perfect yet, but it has got a great deal better. It has genuinely been a combination of the private sector doing what it can do in terms of the development of the drugs and the public sector taking the risk and helping to support it. The UK Government have done a lot of this through the Department for International Development and others.

On Ebola specifically, people say, "It is because of this that there is not an Ebola vaccine or drug." Actually, almost all of the previous epidemics have been so short-lived—and they

have been controlled by classical public health measures—that it is unlikely that you would have been able to get a trial up and running and to do the things in the time available. Sadly, this is the first really major outbreak where we have had both the need and the capacity properly to test these things.

Q95 Chair: I know that Professor Dame Sally Davies has to leave us. You have a flight to catch, haven't you?

Professor Davies: I do, but clearly my duty is to you. Don't worry—I will rebook if I have to.

Chair: We do not want you to miss your flight. If you need to leave, we will quite understand.

Professor Davies: Thank you, but I would much prefer to be subject to your questions.

Chair: That is very kind of you. That is not what everyone who comes before us says.

Professor Davies: I think it is important that you are reassured and that the public are.

Q96 David Tredinnick: Following on from Charlotte's question, the Science and Technology Committee looked at the issue of drug companies' incentives to produce antibiotics and found that there were very few incentives. That is one of the reasons; I think you cover it in your book. For clarification, are we confident that without some kind of Government stimulus the companies will deal with this epidemic, which may eventually burn itself out at great cost in terms of life? Are there any incentives to produce a vaccination?

Professor Davies: There are two parts of the answer. The first is that on antibiotics, just to reassure you, the Prime Minister has launched a review of the market failure and what market mechanisms could be used, to be led by Jim O'Neill. He is now embarking on that. On this one, it does need private-public partnerships. Chris has given you a good story on that. What we can all tell you is that the Government here is prepared to support the vaccine manufacturers on Ebola to make sure that it is bought and used for patients as soon as it is produced and proven to be safe and efficacious.

Q97 Robert Jenrick: I have two questions. First, getting good evidence is obviously key to every country's response to Ebola. What is your view on whether there should be—perhaps there is already—a global register of treatment and what works in tackling Ebola? Is there a way that evidence and good practice are being collated? If there is not, are we doing anything to create one?

Professor Davies: There are two issues. What are the novel interventions? The WHO maintains a list of potential medical interventions that it shares with experts so that we are all informed. Then there is the issue of how you look after patients who do become infected. We are all sharing information about ZMapp and other things. I gather that one of the debates at the moment is about whether it is best to hydrate well or to over-hydrate. Yes, there is work going on—and a lot of sharing.

Q98 Robert Jenrick: The second question is related. To a layman not as involved as yourselves, it would appear that we have had to play catch-up internationally on this issue. What is your view on the role of the WHO and its leadership on this issue, bearing in mind the many different aspects? For example, you have just discussed that there are no more treatments of ZMapp left internationally. Do you feel that its leadership has been good and that you have confidence in its abilities?

Professor Davies: It is the premier technical agency and the one that called the public health emergency. It is very difficult for it to do that early. I wished it had called it earlier, because that would have mobilised everyone, but by then we, the Americans and the French were already working in country to a certain extent, so we preceded it.

It has had a number of meetings on vaccines and novel therapies. Tomorrow's is on vaccines again, because we are getting to the point where they are not only in trial but are going to start to be produced. The question is, how can we speed all of that up, working as a global community?

There is also an Ebola co-ordinator, whose office is in Accra, appointed for the whole new end system, in order to work with everyone. Of course, in west Africa this is a crisis for humanity as well. There are communities that are really suffering and are being wiped out. We have to be aware of that. I think we are getting to where we need to be.

Professor Whitty: When this is over, hopefully, there will be a lot to learn about why we, the whole global community, were slow off the mark on it, which we clearly were. This is probably not the moment to pick that over. At the moment, we need to get together and solve this problem, but there is no doubt that there will be lessons to learn about that for many organisations.

Q99 Chair: Just to reiterate, the reason we have over 8,000 cases now but we had far fewer cases in previous outbreaks is just because the global community has been slower to react and it has happened in communities where they are perhaps suffering from—

Professor Whitty: No. I want to be clear that the reason this has happened differently here is to do with the social make-up and the fact that it has got into urban areas and there is a broken health service. There are a variety of other factors, but once it had started to accelerate we could, probably, collectively have dealt with it at a faster rate than we did. We would all accept that. What we need to do is to work out how we pick this up more quickly on the next occasion.

Q100 Chair: How accurate are the current estimates of the extent of this in west Africa? Do you think there is a significant underestimate?

Professor Whitty: The short answer is that we are all confident that there is an underestimate; what we do not know is how much of an underestimate. The CDC's view is that it is probably about two to two and a half times underestimated. My view is that it varies. Excuse me for making a technical comment, but, as you are medical, I am going to give a technical comment. There is a negative ascertainment bias. The places that have

good public health people, good control and good leadership tend to have good data. What we do not know about is the areas where none of those exist. There may be some areas we are not aware of where there really are serious problems. We will find them, but we cannot guarantee at this moment in time that every case is being recorded.

Q101 Chair: Can you comment on some data that one person has sent to me saying that there are quite high levels of Ebola antibodies in some communities where there may have been previous outbreaks we are not aware of? Is that something you know about?

Professor Whitty: First, unlike with the great majority of other infections, there is no evidence of a large tail of asymptomatic or very minor cases of Ebola. At this point, at least, it looks as if virtually all of them become symptomatic, and seriously symptomatic, although some survive in the natural order of things. Antibody tests for this kind of thing can give you a very false positive rate. We have serious concerns about whether this is giving an incorrect impression that there are a lot of asymptomatic cases out there when, in fact, the evidence is that there are not.

Q102 Chair: Finally on that point, do you think the use of blood products from Ebola survivors has potential?

Professor Whitty: Dame Sally is an expert haematologist.

Professor Davies: As you know, antibody that you develop as a response to an infection that you then survive can play a role. There is some data from the '70s that suggests it may work. We are having a look at a proposal to see whether we could do something in west Africa along those lines. Will Pooley did give his plasma and B cells, so we have one unit for one patient. It is something we are looking into.

Q103 Chair: Is there one final message you would like to add for the international community or for anyone following this, in terms of funding and supporting this?

Professor Davies: For the international community, it is that we need to act now, because if we leave it longer there will not only be more deaths and heartache but it will cost vastly more. It is a good idea to move now, and we need to in order to help western Africa. For our own public, it is that the risks are very low, the planning is good and we should see very few cases.

Chair: So it should be a reassuring message to the public.

Professor Davies: I hope so—and it is not airborne. You have to touch the bodily fluids of someone who is infected.

Chair: That is a very important final message. Thank you very much.