HOUSE OF COMMONS

Health and Social Care Committee

Oral evidence: Preparations for the Coronavirus, HC 36

Thursday 5 March 2020

Ordered by the House of Commons to be published on 5 March 2020.

Watch the meeting

Members present: Jeremy Hunt (Chair); Paul Bristow; Amy Callaghan; Dr Luke Evans; James Murray; Taiwo Owatemi; Dean Russell; Laura Trott.

Questions 1-66

Witnesses

I: Professor Chris Whitty, Chief Medical Officer for England, and Dr Jenny Harries, Deputy Chief Medical Officer for England.

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Examination of witnesses

Witnesses: Professor Whitty and Dr Harries.

Q1 **Chair:** Good morning everyone, and welcome to the first hearing of the new Health and Social Care Committee of this Parliament. Welcome to the new members of the Committee. In particular, welcome to Professor Chris Whitty and Dr Jenny Harries. We know how busy you are at the moment, and we appreciate you sparing the time for this hearing, which is to ask you about the epidemiological aspects of the COVID-19 virus and to help us and the public to understand some of the details better. I will ask questions for about 25 minutes, and then will hand over to individual members of the Committee to ask questions.

First, will you pass on our thanks to your teams at the DHSC, PHE and of course the NHS, because we appreciate that it is a very high-pressure period. We are speaking not just for the Committee but for the public when we express that gratitude, because so much is going on.

A lot has happened in the past 24 hours, so I wonder whether you might like to start, Professor Whitty, by giving us an update on the most recent developments and the recent increase in the number of cases.

Professor Whitty: Should we introduce ourselves first?

Chair: Please do.

Professor Whitty: I am Chris Whitty. I am Chief Medical Officer for England and Chief Scientific Adviser at the Department of Health and Social Care.

Dr Harries: I am Dr Jenny Harries. I am Deputy Chief Medical Officer and previously Deputy Medical Director at Public Health England.

Professor Whitty: We very much appreciate, Chair, your thanks to the staff. I have to say, NHS frontline staff, lab staff—tracing staff—in PHE and many other people are working incredibly hard. They will very much appreciate the comments of the Committee.

Will it be useful to start off with the global situation and gradually narrow into the UK? I think that is probably where it starts.

Chair *indicated assent.*

Professor Whitty: Had we been having this discussion three weeks ago, at that point I would have said that the key to this epidemic was in China. That has moved on, so we now have a situation in which there is still a significant outbreak of coronavirus in China, but they have got it coming down quite rapidly. The total number of cases in the world is still heavily dominated by the number in China—the great majority are still from China originally—but Chinese rates of transmission, both in Hubei province and Wuhan city and more widely, have decreased.

There is a "but" to that: many of the restrictions in China are still in place and, until those are fully lifted, we cannot be sure what will happen. Will there be a rebound, or will that mark the end of the Chinese outbreak? That is an important starting point.

Since then, there are now at least three major outbreaks in other areas: one in South Korea; a second large outbreak—I think larger than is currently seen in the official figures—in Iran; and a large outbreak in Italy. None of those is news to this Committee, but just to acknowledge that. In several other countries, there is clearly ongoing transmission that has been reported, and then there are several countries where it does not make sense that there is no transmission, but they are not reporting cases. We have to assume that some of the countries that are not reporting cases currently do have outbreaks but are not aware of them or are not reporting them.

Now, therefore, we have several countries, and possibly many countries, in the world with significant ongoing transmission. That is an important framing for this, because if the original plan—we will come back to this—was very much predicated on the idea of, "If it can be controlled in China and contained everywhere else, this virus might go away," I think the chances of that happening are now very slim, and I think slim to zero. That is my first general point about the epidemiology.

The UK of course has very close links with Europe and with all the other areas. All viral infections that have a very strong force of transmission and that are airborne have the capacity to travel worldwide once they have got started. The UK will not be immune to that, and I do not think that anyone sensible expects that it will be.

In terms of what is officially reported, at the moment we have about 85 cases, but I am expecting more today and over the next few weeks. I am expecting the number only to go up. There are now several—not large numbers, but several—cases where we cannot see where this has come from, in terms of a clear transmission either because someone has come directly from overseas or because they have had close contact with someone who has recently returned from overseas.

That therefore makes it highly likely that there is some level of community transmission of this virus in the UK now. We should work on the assumption that it is here, at very low levels at this point in time, but that I think should be the working assumption on which we go forward from this point onwards.

Those are the broad numbers. Shall I stop there, Chair, or keep on going?

Chair: If you have any other introductory comments, that is absolutely fine, but I am sure we will cover quite a lot of the ground that you might want to cover. Was there anything—

Professor Whitty: Why don't we wait until the end of the questions, and if there is anything that you or I feel has not been said, we can cover it off at that end?

Q2 **Chair:** Let's do that. On the basis of what you have just said and the likelihood of community transmission happening now, are you anticipating moving from the contain to the delay phase of the plan in the next few days?

Professor Whitty: As you know, the Prime Minister laid out the overall strategy. I realise that members of the Committee know this, but many people are watching, and I think it is sensible for me—if I may—to lay out the elements of this so that people understand the logic.

From the beginning, we have had four tactical aims, all of which we were running from the beginning, although the ratios of them change over time. The first was to contain, which is really to see if it could have been kept within China, with a few seeded out little outbreaks—get on top of them, China gets on top of it, virus goes away. That is becoming an extraordinarily unlikely long-term outcome.

We are not completely there, and it is important to acknowledge that for contain we need to have an international view of what we do about this. This is something on which we should in a sense take the views of other nations as well as our own, but we need to be realistic about the fact that, with so many different outbreaks, containing looks pretty optimistic.

The second stage, which is very important and where many of the features carry across, is to delay. This bit is less understood by the general public. The idea of delay is that if we can push the point at which we have the peak of this epidemic further away from this point in time, by delaying the start of a significant amount of community transmission and by a variety of other measures we can come on to, we will get at least two benefits and possibly three. The first is that we push the peak of the cases that will happen if we get a significant epidemic peak further away from the winter pressures on the NHS in all four nations of the UK, and into a time when there is more capacity to respond.

The second benefit is that it buys us time to improve our understanding of the virus, because there are many things we do know, but there are also some things we do not know that would help us to either target our response more effectively or develop countermeasures. People think about drugs, vaccines and diagnostics—it might be worth coming back to this in more detail—and of those, drugs and diagnostics are the most urgent priorities at this point in time.

The third advantage of delay is that there may be a seasonal element to this infection, meaning that if you move into spring and summer, the natural rate of transmission may go down—not necessarily to the point of going away, but this is a respiratory virus. It is therefore like flu, colds and coughs, all of which tend to be easier to transmit in the winter months. We do not know that, but it is a possibility.

Q3 **Chair:** Could I just go back to the question? Are you anticipating moving from the contain to the delay phase in the next few days?

Professor Whitty: What we will not be doing is a step move from contain to delay. What we are doing is putting greater and greater priority on the elements of this that are delay. For the early stages of delay, contain and delay are very similar—not quite the same—and they are largely about finding early cases, isolating them, following their chains of transmission and, where necessary, isolating those people. Jenny is the real expert on this and can talk about it in more detail if needed. As time goes by, we may then start to move into the more socially determined actions. That is probably worth quite a long discussion—I do not know whether you want to have it now or later—about the kinds of measure we can take to delay things that involve changes to society.

Q4 **Chair:** We will definitely come on to that, but that is helpful to know. There is not going to be a moment when you say, "We have now moved from stage 1 to stage 2." This is going to be more of a gradual process.

Professor Whitty: Yes, but I would say that we have moved from a situation in which we were mainly in contain with some delay built in to a situation that is basically mainly delay, but maintaining some of the elements—

Chair: We are mainly in the second stage?

Professor Whitty: We are mainly in the second stage at this point in time, and several things flow from that which might be worth discussing, operationally.

Q5 **Chair:** Can I just ask you about what has happened in the past 24 hours? One of the changes is that the Government have decided to not publish the locations where there have been confirmed cases of the virus. I think that has surprised quite a lot of people, because in Singapore, for example, they publish the streets where there has been an outbreak of the virus. In South Korea, you can get an app that tells you if you are within 100 metres of someone who has the virus. Other countries have moved in the direction of giving the public more information. I just wonder what the rationale is for restricting the information.

Professor Whitty: If I am frank, Chair, I think we had a bit of a communications fumble on this one. We are intending to provide geographical information; in fact, in the medium term, we will provide a lot more information—maps and other things, and a proper dashboard—as we gradually move into a phase where there are many more cases. What we are intending to do, though, is have some delay of about 24 hours to be absolutely sure we have got the details right, because when you only have two or three cases a day, getting the details right in a couple of hours is relatively straightforward. When you have got a lot of cases, we do not want to give people incorrect information, so we are just going to provide a little bit of a delay to check it, but we intend to continue with these geographical things. In fact, in due course, we will use maps and other things to enhance that.

I will add a "but" to that, though. People on the Committee will be aware that some of the people who have had the infection, or who people think might have the infection, have had a lot of social problems and vilification on social media, and even occasionally in more mainstream media. As a doctor, I am very against giving any patient-identifiable information, and for that reason we should also be careful, so I am not in favour of going down to street level or, "You are within 100 metres of coronavirus." That is the wrong approach for this country.

Q6 **Chair:** Thank you. I will move on, if I may, because there is a lot of ground to cover. Can I ask you to give us some information about the way the virus is transmitted? There is a lot of debate and some urban myths about this. Will you give us some sense of how similar or different it is to flu, which is the virus we are most familiar with?

Professor Whitty: There are many similarities and one potentially important difference. This is a respiratory infection. Of course, we are still learning—as with many of my answers today, I will be able to give you a better answer in six months—but at this point in time it looks like this is primarily a respiratory droplet infection. That means transmission is via someone who coughs or sneezes, usually within a couple of metres of someone and usually for reasonably prolonged contact, which is the usual way with these things, and there is probably a secondary route via hands. The way that hands do this is by touching the mouth, nose and eyes. For the great majority of people, the only people they allow to touch their nose, eyes or mouth are themselves, their partners and their children. That is the reason it is so critical people wash their hands—because that is the way in which germs that are on surfaces go from the surface to the individual. That is the route of transmission. Those are the two routes of transmission.

Q7 **Chair:** So just to make this absolutely clear, if someone sneezes into their hands—not a tissue—and they then shake hands with someone else, they could potentially pass the virus on?

Professor Whitty: Most of these viruses do not survive on hands terribly long. If you happen to see someone cough straight into their hand and put their hand out to you, I would encourage you—whether or not there was coronavirus—to avoid taking that particular hand. If, however, for social reasons you felt you had to, it does not get in through the skin. The key thing is that if someone washes their hands between that time and when they touch their face, it is unlikely that transmission will occur. Washing hands is really the key. This is a very big difference with the Ebola virus. I think people often remember the advice we gave for that. That was a touch-transmitted virus, so the primary routes of transmission were very different. This is primarily a respiratory one, with a secondary touch thing but from respiratory droplets.

Q8 **Chair:** Just to be even more specific, because a lot of people are concerned about surfaces, if someone who has the virus holds a handrail on a bus or tube and you touch that same handrail two or three hours later, is there a risk of transmission?

Professor Whitty: There will be some risk of transmission. The risk peaks immediately after they have done it and then goes down over time. It is probably largely gone by 48 hours and almost completely gone by 72 hours, on a hard surface. On soft surfaces, viruses last for a shorter period, so there is a difference between those.

Q9 **Chair:** But you could catch it if you touched the same surface the same day, for example?

Professor Whitty: You could, but—this is the key intermediate step—just touching it will not give you the virus. It is if you touch it and then touch your face, having not washed your hands in between. If you go into the tube and you touch the rail, that is fine, but just be aware of what you do with your hands. Do not touch your face; wash your hands, then you can do what you like.

Q10 **Chair:** May I ask you to translate that advice to someone living in the same house as someone who has the virus? In that situation, provided you wash your hands regularly, you are not going to catch it through breathing the same air as someone else?

Professor Whitty: Washing your hands will prevent the route by which you touch a surface they have coughed over and then it goes into your mouth. It would deal with that. What it will not deal with, obviously, is if there are respiratory droplets in the environment. I think it is widely known, for example, that one of the first routes of transmission in the UK was in a ski chalet, with lots of people living very close together, windows probably closed and so on. That will be prolonged exposure to a relatively sealed environment. That is the other route by which you get it. That, incidentally, is one of the reasons why summer months are often better: people open the windows and nature does its job.

Q11 **Chair:** I will move on to some questions about prevalence and mortality rates. You said at the press conference in Downing Street that your estimate was a 1% mortality rate. I presume you were thinking about the UK. The director general of the World Health Organisation said that, to date, the mortality rate globally is about 3.4%. I wonder whether you could talk us through the modelling that gets you to that 1% figure.

Professor Whitty: I have a reasonably high degree of confidence that 1% is at the upper limit of what the mortality rate is, to be clear. What the director general was reporting was essentially dividing the number of reported deaths by the reported number of cases and getting to a number. That is not a mortality rate; it is just a percentage of people reported who have died. There are several problems if you do it that way. To be clear, I am not criticising what he said; I am saying that the way it was reported made it sound rather different from what he actually meant by it.

If you are missing all the mild cases and all the asymptomatic cases, you inevitably end up with an exaggerated view of what the mortality rate is. In many countries, people are picking up the severe cases and the people who sadly die. If you just divide the one by the other, that does not give you a percentage of mortality rate; it just gives you a percentage of

people who have died who have been identified, which is a different thing completely.

How you calculate this is quite a complicated issue, and it is different on the way up, in terms of the curve, and down the length of the curve, on which I can go into in detail if you want. The modellers in the UK—who are the best in the world in my view; certainly, some of the best in the world—have looked at the data really carefully. I think we are all convinced that the upper end of the mortality rate overall, in terms of people infected, is 1%. My own view is that it may well be lower than that, because there may well be a lot of people who are infected and have no symptoms whom we cannot currently identify. Therefore, if anything, I think it will go down from that, rather than up.

Q12 **Chair:** In your modelling, what is the mortality rate for the over-80s?

Professor Whitty: Let's put both sides of the equation, in a sense. For people who are the lower end of the age spectrum, it is well below 1%. It does start to increase above 60, and a bit more above 70. By the time you get up to 80, in Chinese data, mainly from Wuhan, which was a very heavily stretched health service—those are big caveats, but let's just report the numbers as they are—the mortality rate looked as if it was somewhere between 8% and 9%. Put the other way around, that means that more than 90% of over-80-year-olds survived it, even in a stretched health service in China, in this epidemic. It is clear that the risk is very heavily weighted towards older people, but I think people translate that into: "If I'm old and then I get it, I'm likely to pass away." Actually, the great majority of people will survive this, even if they are in their 80s.

Q13 **Chair:** May I move on to prevalence rates? You mentioned that in China the rate is starting to go down. What is the overall prevalence rate for the disease in Hubei province in China? What proportion of the population got it, or have got it so far?

Professor Whitty: You made this point very well on the radio, if I may say so, a couple of weeks ago: the reported proportion is probably somewhere around 20%[1]. That contrasts with our reasonable worst-case scenario that 80% of people could get infected, which we might want to come back to. I think this raises three possibilities, which are not mutually exclusive.

The first is that there is a large iceberg of people who have asymptomatic infection—so a very large number of people have been infected in Hubei without being detected. The reason we do not detect them is that we do not currently have a serological test that can say, "This person has been infected, even though they never had symptoms." The one thing that would help me, along with all my other colleagues in Public Health England and the NHS, more than anything else in terms of planning for this is to know what proportion of people get the infection and have no symptoms at all, because that would potentially completely change the way we think this is going to go.

[1] Professor Chris Whitty has clarified that he meant to say 'under 20%'

That is one possibility. The second possibility is that the extraordinary efforts of the Chinese state have pushed it down to about 20%[2], but when they take their foot off the brake the epidemic will surge back again. That is the second possibility. The third possibility is that it tops out at less than 50% for one of a number of epidemiological reasons.

Any of those are possible. My own view is that it is a combination of the first two—some of the people who are counted currently as not having had it actually have had it with no symptoms, and some of it is to do with the remarkable efforts of the Chinese state and people, but we will not know until we have a serological test. Once we know what that number is in Wuhan and Hubei, that will change the way everywhere else in the world views this, in one direction or the other.

Q14 **Chair:** Is there any reason why you would expect a higher proportion of the population to get the virus in the UK than in Hubei province, or is 20% the most likely upper end projection?

Professor Whitty: The caution I would have is to remember that the Chinese state and people are still doing some pretty extraordinary things, so we may not have reached the end of this particular outbreak in Hubei. It may be that when they stop doing them, the percentage will go up again. So I think we need to be careful.

The straight answer to your question is that I see no reason in theory why the UK would go higher than China, but—the third caveat—if you are doing reasonable worst-case scenario planning, which you will know, having been Secretary of State for Health and Foreign Secretary and having had many other senior roles in Government, you always start off with the highest number that is possibly plausible for planning, because you do not want to be surprised. Then, as you get more information, the numbers gradually come down. The highest number for any new virus which has essentially come out of nowhere to infect humans is about 80%, because after that it runs out of people: every time there is an infection, they are surrounded by people who are immune. So we would always put 80% as our starting point, and then if it turns out that in fact it is not so much that 80% may not get infected, but it may be that of those, 70% of the 80% actually get it without any symptoms at all. At this point, we do not know. Therefore, for that reason, we are doing in a sense a more conservative planning assumption.

Q15 **Chair:** Thank you. What is the impact on ordinary people likely to be? Let's dial back from the 80% reasonable worst-case scenario to, say, 20% of the population, which is about the level we have in Hubei province in China today. If you are, for example, a cancer patient who needs to go once a week for chemotherapy or radiotherapy, how will your experience be different?

Professor Whitty: In a sense, there are three sets of impacts. There is the impact on the very small number of people as a proportion—if it affects a large part of the population, it could still be a large absolute

[2] Professor Chris Whitty has clarified that he meant to say 'under 20%'

number—who sadly die as a result. That is the highest end impact. Then there are the impacts on the health service. The point here is those people who get a disease severe enough to need hospital but, fortunately, not severe enough to kill them, will still need NHS and health care. If you model out the epidemic, one thing that is clear is that we will get 50% of all cases over a three-week period and 95% of cases over a nine-week period, if it follows the trajectory that we think likely. If all of those were spaced out on the NHS over two or three years, that would be easily manageable, but it is the fact that they are so heavily concentrated.

That has pros and cons from the point of view of the service. There will be a beginning, middle and end to this. Before it, people will see no major impact on the NHS, with some reconfiguration. After it, the NHS will be back to its normal state. But in the middle there will be a period where, if this goes to the top end of the range—it may well not—the NHS will have huge pressure on it for a relatively short period of time.

Q16 **Chair:** So if you need to go for a weekly chemotherapy appointment in that three-week period, what will be different?

Professor Whitty: We will be able to model this out, as it starts to accelerate, with a fair degree of confidence. We will try to push things to either before the peak hits or after the peak hits, where that is possible. Clearly, there will be some life-saving treatment where that will not be possible and we will just have to carry on in the middle. But in reality very large numbers of things can be flexed either way with relatively little impact on people's health. That does not mean that they will not be worried about it—I fully understand the distress and things—but for many people the actual impact on physical health in the long run will be relatively small. That is not to say that there will be no impact. Depending on how high the peak is, this could be anywhere from a rather bad winter for the NHS taking place in spring or summer through to huge numbers, way overtopping the ability of the NHS realistically to put everyone in beds. That would obviously have big pressures on the service.

Q17 **Chair:** Let me ask about another person. If you are an older person who gets pneumonia—not COVID-19—and you have to go for urgent treatment to an A&E, and you are in that three-week period, would there be anything different with your experience in that situation?

Professor Whitty: Obviously, we already try to manage as much as we can in the community, with outpatients using walk-in services. As far as possible, we will try to shift things out of the main hospital system. The bit of the system that will come under pressure first will be people with those conditions that require them to have oxygen and, particularly, critical care beds. That bit will come under pressure at quite an early stage if we have a high-end-of-the-range epidemic.

Wider general services will be much less affected. For example, because children seem to be relatively spared from this disease children's services will, I think, be much less affected. It will depend entirely on the situation people find themselves in.

Q18 **Chair:** I know that this is not your specialist area, but obviously you are modelling the economic impact of any measures that we take. Given the news about Flybe this morning, if you were someone whose job depended on the travel industry today, how would you be feeling about the risks to your job, given the environment we are in?

Professor Whitty: We are trying to say really clearly that in this country there is a range of things we could do, ranging from those with almost no economic impact and high efficacy—top of the range being washing your hands and second being covering your mouth with a tissue when you cough —all the way down to those that have major societal impact, such as closing schools, which obviously affects children but also parents, potentially employment and particular sectors of the economy.

It is very easy to choose a package of measures that is quite dramatic but has relatively little impact on the epidemic. We are very keen to avoid that, so we are modelling out all the combinations that we can because people's livelihoods depend on it.

There is also timing. There will be quite a long period between knowing that we have an epidemic running at a reasonable rate and the actual peak. We are keen not to intervene until the point when we absolutely have to, so as to minimise the economic and social disruption on people, and then to stop it again as soon as we can afterwards. It is both the combination of what we need to do—in later questions we might want to go into some details about the things we can do—and the timing. The timing is critical. It is important that we minimise the social disruption while doing what we can to make sure we maximise the public health impact.

Q19 **Chair:** Thank you. A couple of final questions from me and I will then move on to my colleagues on the Committee. Thinking about the 20% prevalence rate that there is at the moment in Hubei province in China, if it got to that kind of level in the UK, does the NHS have enough nurses, given the NAO report this morning?

Professor Whitty: In a sense there are two separate questions. There is the overall "Does the NHS have enough nurses?" debate, which I am perfectly happy to have but which I think is a long-term debate, and there is the "What will we do in the event of an epidemic of this sort?" question. I will answer the second question. I am very happy to answer the first if you want, but about this particular issue.

The NHS is an emergency service. It is incredibly good at flexing to meet whatever demands are made of it. Things may be under pressure, some things may be postponed, and certain things may be considerably less well done than we would hope for a short, but definable, period of time. Nurses are central to that. They are a critical part of the workforce.

When there is a peak, even if it were a peak like that in Hubei—you saw what happened there and for a short period their system was, for practical purposes, overwhelmed—I would not expect our system to be overwhelmed, but I would expect it to be quite radically changed. That is

one reason we are hoping to see if people who have recently retired or are not currently working full time might, for a very short period, come in to help fill gaps that will be left partly by increased demand and partly because some members of the medical, nursing and other healthcare professions will be off sick at that same time.

The virus will hit everybody in a quite concentrated time period. For sure, nobody would claim that we will have the optimal number of nurses to manage this over this period of time, but the system will flex around that. That is what emergency systems do.

Q20 **Chair:** Thank you. A final question from me: people have talked about the possibility of Parliament's being shut down. Is there a situation where you could envisage MPs' being considered super-spreaders?

Professor Whitty: I am sure only super-spreaders of wisdom and great acumen. I have had the privilege of talking through the epidemiology with both the Speaker of the House of Commons and with the Lords Speaker, who is also a very distinguished former Health Secretary. They understand the epidemiology. I would not presume to tell them what they should do in their own house, but I do not see personally any reason why the House of Commons or House of Lords are more dangerous environments for people to move in than other environments where people come into contact with other people. But there are some peculiarities to this House, as with every other environment.

There is an issue, and this is a slightly different issue that we might want to come on to, in that one of the bits of advice we will give when this starts to run is for people who are older or have pre-existing health conditions to have some degree of isolation from more public environments. It is more likely that from the outside—Parliament will make its own decisions about what it does overall—we may make some advice for people who are older citizens or have pre-existing health conditions to avoid crowded areas and so on, which might include this area. That might affect individual MPs and individual Members of the House of Lords, but that is different from talking about the institution as a whole, which, as I say, is entirely sovereign and I am sure will be well advised by the leadership of this place.

Chair: Thank you. I will move over to James, who wants to ask a few things, particularly with respect to NHS staff.

Q21 **James Murray:** Thank you very much, Chair, and thank you, Professor Whitty, for your time today and for all the updates you have been giving us as MPs over the past few days of this outbreak. As the Chair said, I want to ask a bit more about NHS staffing levels. In the action plan that the Government published, they said that in a stretching scenario, it is possible that up to one fifth of employees may be absent from work during peak weeks. Do you expect the level of absence to be similar among NHS staff, or different?

Professor Whitty: I would expect the level of absenteeism among NHS staff in this particular situation to be broadly similar to other bits of

society. But, to be clear, the 20% is based on a reasonable worst-case scenario that takes 80% of people being infected and a variety of other things. My own view is that the probability is that the true number will be lower than that. The reason I think the NHS will be similar to other areas is that, in ordinary circumstances, NHS staff are remarkably determined to come and serve their professions and may come in with sometimes quite significant feelings of unwellness where other people might not. We would definitely not wish them to do that in this situation. One of the things we want is for people who feel ill and might have this virus to stay home.

Therefore, the difference between presenteeism in the NHS, which is remarkable, and some other areas of work would go away, and we would want it to go away—we would not wish people to come in if they were feeling ill, because that would obviously increase the rate of spread at the highest point of transmission.

Q22 **James Murray:** Very sensible. I want to probe into your earlier comment about getting people who are recently retired to potentially come back to help to fill some of the gaps during the peak time period, and to understand your thinking on that a bit more. We talked about the impact on older people. Presumably retired people are therefore the most likely to be affected by the virus and should have the greatest cause to self-isolate. Do you see any tension in accessing that pool of potential workers?

Professor Whitty: I am obviously more involved in the end with doctors, but there are many other important medical professions who also have particular plans. Certainly for doctors, the plan is not to take everybody who is retired, but only those who have recently retired—in the past two or three years—and are still fairly current, and to re-establish their licence to practise. That does not mean that they need to come back, only that they have the ability to. However, we certainly wish them to make an assessment—a medical professional can make it for themselves—of whether they have health conditions that might worry them.

We might well be in a situation in which we decide, for example, to deploy doctors who are old or have health conditions into non-patient-facing roles, but which may still be clinical. For example, they may help with NHS 111. I am not saying that that is what they would do, but there are things that could be done that would not put them at risk but would help them to serve the public for a period of time in which the NHS is under considerable strain. The NHS is a pragmatic organisation. It understands safety, and it will do its best to make sure that both staff and patients are safe, within the confines of what could be a quite serious problem for a limited period of time.

Q23 **James Murray:** Presumably, any tests or processes to make sure that people who retired in the last two or three years are ready to come back to work would be less than for people who retired a long time ago? Have you evaluated how many are willing to come back, and whether the numbers add up? Would the pool of potential people fill the gaps that we could face?

Professor Whitty: You are right on the risks. There would be much more concern for safety if we were talking about bringing back people who had been retired for 15 years. That is not the plan.

The willingness of my own profession to come back is very high. I do not mean specifically for this issue, but doctors go into medicine for a reason, and if they saw that there was a crisis and thought they could help, I am very confident that we could get a lot of volunteers. I am also confident that they would be sensible, and if they felt that they were either too far removed from practice to practise safely or that their own health would be under substantial risk, they would make that assessment. However, I have confidence. We have not tested it, but I do not think I need to.

Q24 **James Murray:** Has there been any analysis of the overall numbers? You mentioned people who retired in the last two or three years. What number of people is that? Even assuming very high rates of willingness to come back to work, will that be enough people to fill the gaps that we might face? Has that metric been done?

Professor Whitty: The problem here is that we start to get into speculations as to how bad this could get, to which the answer is that we honestly do not know at the moment. If it was right at the top end of the reasonable worst-case scenario, with 80% infected, and 50% of those infected within a three-week period, the ratio of doctors to patients and of nurses to patients would inevitably go down very sharply for a short period. That is a mathematical reality.

On the other hand, there are things we can do—we might want to talk about mitigation—to try to reduce the chance of that happening. Mitigation is the fourth strand of the Government's policy. Would you like me to run through our general approach to mitigation, because this is critical to the mitigation strand of what we are trying to do? Remember, the strands are contain, delay, research, which we have not talked about much, and mitigate. Mitigation is central to this, so should I lay that out? Would that be helpful?

Chair: It would be, yes.

Professor Whitty: Mitigation is about trying to reduce the peak. We are trying to do three things with mitigation. The first is to reduce the peak of the epidemic, so that the gap between what the service can comfortably manage and the reality is made as small as possible. That potentially includes social actions that will have significant societal costs, so we therefore need to have an honest debate with Parliament and society, to say that these things are there. That is the first thing. It is a sort of three-cornered triangle.

Q25 **Chair:** Could you explain, and give a few examples of, the trade-offs that we might have to think about?

Professor Whitty: Could I finish the triangle, and then I will come back to that? This is absolutely central to the debate that I think needs to be had very publicly. The second thing is to try to make sure that the people

most affected by this virus who could become most sick—those at greatest hazard to themselves but also the most likely to go into hospital, older people and vulnerable people—are protected from the virus over the period of this peak. That is reducing the peak by a second mechanism.

The third mechanism is to flex the service, which includes things like pushing away anything that could be postponed. That might include more radical measures, such as bringing in retired people, but it might not, depending on the size of the peak that we are expecting. You put those together and then basically try to minimise the difference between how the service can best manage and where it is at the moment. The service will respond to whatever it finds itself with. I have had the privilege of working in multiple countries around the world. In each one, the way you flex a service is very different. For a short period of time, the NHS may look quite different from the ordinary NHS we are used to, but that will be time-bound. Then, we will revert back to how it normally performs. That is the overall structure.

Should I go into the mitigations?

Chair: I think it would be helpful, if the Committee is happy with that.

Professor Whitty: There are things we can do that are later stage of delay and mitigation in terms of pulling down the peak. I think it is important to stress that if you pull down a peak that is spreading through the population, generally, you do not reduce the number of people who get infected, but you reduce the number who get infected in that central period. That reduces pressure on the service, but it does not necessarily reduce the number of people who will get the virus at some point. Those are all the various things that people talk about, which Italy is doing at the moment: closing schools and public gatherings, and encouraging people to stay at home as well as self-isolation.

There are multiple different things you can do and we have modelled out a lot of those. Basically, you need to ask, how much will this reduce the peak—is it appreciable? Secondly, how much disruption will it cause society? You then put them in a line and say, "We think it is worth doing these things, but not worth doing those things." To take the example of schools, which is one of the most important ones that people consider, for flu we know that closing schools helps to bring down the peak of the epidemic—that is very clear. It is much less clear whether that is true for this epidemic, because children appear to be less affected. We do not know whether that is because they do not get infected—I think that is unlikely, actually—or because they do get infected but do not get symptoms. If they get infected, do they spread it? We do not know. It may be that closing the schools would have only a marginal effect on the peak of transmission.

Also, with this virus, compared with flu, you would have to close the schools for a much longer period of time, because its generation time is longer. The impact on education would be severe. Children tend to mix anyway, so the impact is probably not as great you would imagine, but if

you leave the people for 13 weeks or so out of school, that will have a big impact. The impact on the workforce is substantial, because many have caring responsibilities—as soon as their children are out of school, they leave the workforce, including in the NHS. I am taking that as a worked example of something we might look at and say, "Okay, it would make a fractional difference, but compared with the impact on the workforce and society, this does not look a terribly attractive option."

We will present Ministers with each of these things individually and in various combinations, and say, "What effect does that have on mortality, the peak and on delay, and how much is the social and economic cost? Now, let's find a combination that is a sensible and proportionate response." Importantly, "When will we bring it in?" The answer is not always, "Do it now." It may well be to say, "We will do it, but in three or four weeks' time, and we will stop it at this point in time." Does that help?

Chair: Yes. James, do you have a final question?

Q26 **James Murray:** Yes, I have one about the broader impact of the NHS having its time redirected towards dealing with coronavirus on routine or other targets that it tries to adhere to. You said earlier that you thought that impact would be over a relatively short period during the peak of the virus. Members of the public will be interested in A&E waiting times, referral waiting times and so on. In your opinion, will the impact of efforts to combat the coronavirus on those other targets be relatively minimal over time?

Professor Whitty: It will entirely depend on the size of the problem we face. That is the difficulty. To expect it to have no impact would be wholly unrealistic. It will definitely have an impact; the question is how big an impact.

Another thing we need to think about in the trade-offs is that some of the things that pull the peak down extend the peak. They basically put it further out. You might have something that made it easier to cope over the peak period, but it might counterintuitively have a bigger effect on waiting times, for example. Those are some of the things that we are going to have to lay out in front of Ministers. I am trying to be as open as possible about how we do this, so that people understand the logic of what it is that we are going to have to do in terms of the trade-offs for the system.

Q27 **James Murray:** If it went to the common scenario set out in some of the Government documents about it increasing over the next two to three months, peaking and then declining, how much of an impact would the efforts to combat the coronavirus have on other targets? When do you think it would be back to business as usual after that period?

Professor Whitty: As I say, if the peak comes up as essentially a bad winter but in the summer period, the service will readjust quite fast to that. That will be shorter than the winter period that the NHS has, unsurprisingly, every year. If, on the other hand, you have a very large peak where very large amounts of work have had to be postponed and

some people have had to be put right outside the system for a while, that would have a much more profound effect.

One of the things that we need to be quite careful of is that, in really big epidemics—to be clear, I am not saying that is what is going to happen here—for example, I was heavily involved in the Ebola outbreak in Sierra Leone, where many people had health damage that was not directly from the virus but because the health service could not manage all their other health problems. One of the things we need to do in trying to plan for it is to try to minimise the possibility that that is going to happen—but minimise does not mean zero; it means minimise.

Q28 **Chair:** Before I bring in Amy, I have a follow-up question, because my colleague Tom Tugendhat, Chair of the Foreign Affairs Committee, is here. You mentioned Italy and the approach they have taken in terms of schools and so on. Do you have a concern that the approach of different countries around the world may not be sufficiently co-ordinated, thereby increasing the risk of a second wave, as we had with Spanish flu, and making the impact far worse?

Professor Whitty: Once you get to the point where there is significant internal transmission, what other people do becomes much less important. Up to that point in time, what everybody else does is really critical to what happens in the UK. If it gets to the point where, actually, 99% of infections are self-generated, it does not matter from our point of view—it does matter for them, but it does not matter from a purely NHS or UK point of view—what Italy, America or whoever does. The epidemic will just run and fulfil its course here, so we should not obsess too much about that.

Of course we should be trying to support, in particular, those countries that have weaker health services with science and, where necessary, materiel, as well as expertise, and, potentially, personnel, if it is at a time that is, in a sense, in counter-cycle to our own. That could easily happen. For example, some countries in the southern hemisphere might end up with a rather different peak from our own. We absolutely should not see this as us leaving our responsibility to be global citizens, but I do not think we should exaggerate the effect of other countries' actions on us.

Also, it is important to be clear that the fundamentals of the response will be the same everywhere, because that is where the evidence base is really strong. A certain amount of different cultures do things differently. For example, having worked in various parts of Asia, people are put on to respiratory support in a very different way in many parts of Asia from the way they are in the UK. That is just a medical practice difference. We should be aware of the fact that, when we see other countries doing things differently, we may look at them with some surprise, but they will equally look at us with some surprise and say, "Why are they not doing x?" There is a bit of local tradition in these things.

Chair: Thank you. Amy is going to ask about vaccines, treatments and other things.

Q29 **Amy Callaghan:** Thank you, Professor Whitty, for coming today and taking our questions. Are you aware of the current progress towards a vaccination? What role is the UK playing in that?

Professor Whitty: The UK—to be clear, all four nations in the UK—is playing a major part in the global action to try to get a vaccine. I will put a but on that. I might put the but first and then say what we are doing. The but is that, although I am confident that there will be multiple vaccine candidates around the world, including in the UK, from UK science or supported by the UK financially, entering clinical trials in the next few months, the initial clinical trials are the quick bit in the modern era—that was not always true. The late clinical trials, for safety, and the manufacturing take a lot longer.

To remind everyone—it is really worth stressing it—this is a virus that has a very low mortality. With Ebola my view was that we needed to cut some corners here on safety, because if you have 70% mortality and you were putting healthcare workers into the red zone, actually minor side effects were probably acceptable. If you have a virus that is actually a very mild virus, you cannot afford to take those shortcuts, and then there is the manufacturing process on top of that.

That is a long-winded way of saying that I think—and, probably more importantly, Patrick Vallance, the Government's chief scientific adviser, who happens to be a real global expert on this, also thinks—that a year would be lucky to get this. So, we will not have a vaccine available for the first wave, if we have a first wave. It is important to develop a vaccine, because it may then become important if this continues to circulate in society, which I think there is a high chance it will. But I think we need to be realistic. That doesn't mean there aren't other things we can do on drugs and diagnostics.

In terms of what the UK is doing, we have some of the best scientists in this area—for example, in Oxford—and many other places, including Imperial College, have excellent scientists who are looking at this. Excellent triallists are looking at this, and there is a very innovative regulatory mechanism through the MHRA. We are in a very strong position, and the UK Government have invested directly in supporting vaccine trials, and indirectly via the CEPI mechanism for the international effort to support vaccine trials for this virus. Those are quite significant sums—tens of millions.

This is something that we are taking very seriously, but we see this as a medium to long-term bet and not as, "This will get us out of a hole now". This is very much in contrast to flu, where much of what we do is delaying things until we have a vaccine. We don't think we will have a vaccine in the first wave here.

Q30 **Amy Callaghan:** In a similar vein, are you aware of engagement and progressive working with chief medical officers from across the UK, and engagement with other nations, in reaching a treatment for the virus?

Professor Whitty: I will take that in two parts. On the engagement with the other chief medical officers in the UK, I have daily conversations—often hourly WhatsApps—with the other three CMOs, as Jenny has with her colleagues. We are constantly in dialogue, and this has been incredibly powerful, not just to co-ordinate—although that is important—but to test one another's ideas. We have all got slightly different disciplines and slightly different NHSs. This is a good way of sense checking: "Is what we are about to do the right thing?" So, working with the other CMOs has been a huge boon in this system.

In terms of other treatments, there are a lot of experimental treatments straight off the blocks; what applies to vaccines applies to them. In my view, the much more important question now is: "Can we find drugs that we have a licence for and we know the safety, that are widely available, and that work against this virus?" The answer, I think, is going to be yes. They won't necessarily be perfect drugs, but they may be enough to improve the outcomes for the people in the most high-risk groups. This isn't for everyone—it's for people who are high risk.

For example, one of the drugs—Kaletra, which is an HIV combination drug—may well work against this virus to some degree. There is a new drug called remdesivir, which is experimental but is relatively far down its path—that might work. There is a very old anti-malarial drug called chloroquine—that might work. Let's try these drugs out. Chloroquine would be brilliant if it works, because you could use it in Africa and Asia—it's widely available. And try out these old drugs, because we know they are safe, we know they are available, and they may well have an impact. That, to me, is very important.

Q31 **Dr Evans:** Would Tamiflu fit into that category?

Professor Whitty: No, we don't think so. A lot of drugs have been screened and I am sure that some may emerge that aren't those that I mentioned, and maybe some of those I mentioned won't work, but certainly, as a starter for 10, I think those three are a good thought.

Q32 **Amy Callaghan:** If in time the World Health Organisation confirms that the spread of the virus is a pandemic, what would be the initial steps and responses taken by NHS England in the hours and days following the confirmation, and how would that differ from what is going on at the moment?

Professor Whitty: Because we are moving in a stepwise way, from containment through to delay, and also planning very heavily now for mitigate, I think it is important for the world that the WHO ideally takes the lead on this. It is the international body.

We will, however, carry on with our practical steps whatever, because we need to. The WHO has the difficult act of having to balance China, which appears to be towards the end of this epidemic—at least in some areas—other countries that haven't even started, and some in the middle. Its advice is quite difficult to adjust, whereas we just have to deal with what's

happening in the UK, in the four nations of the UK. We can therefore say, "Right, this is what we need to do for ourselves at this point in time."

Q33 **Amy Callaghan:** Just to confirm, would no different action be taken?

Professor Whitty: I do not think it would make a difference to what we do here. It might make a difference to what we do in terms of supporting other countries in a variety of international activities.

Chair: Thank you. Taiwo wants to ask about schools.

Q34 **Taiwo Owatemi:** Given that France has started closing schools and Italy has closed schools and universities, what is the likelihood of our schools closing? What support is being given to parents who have children at school, and what can they expect for them to be able to plan?

Professor Whitty: This is a critical question. There are broadly three reasons why schools might close. At this point in time, while we are still in the containment and early delay phase, there will be an expectation that a school will close if a single pupil is found to have the coronavirus. It is part of the delay strategy under very narrow circumstances, which PHE would lay out. Jenny might want to go into that in greater detail. But currently, we are not encouraging schools to close just because someone has met someone who has met someone who has had coronavirus, or even because their parents had it. We really want schools to close only when they need to.

Although every individual school has to make its own individual decision—it is not for me to tell a headmaster or headmistress what they should do—when we get to the major epidemic, there are two reasons that schools might have to close. Either there will be so many teachers off that the school cannot function—I think that will be a relatively rare event, but it is a possibility—or the Government will say that schools must close as a public health measure.

On the second reason, as I laid out earlier, we will be putting to Ministers what effect that is likely to have, how strong the evidence is for this particular virus compared with flu, what we think the social impact is, and what the impact is on the NHS. Ministers will then have to make quite a difficult judgment about whether they think this looks like a sensible thing to do in the UK. My own view, clearly, is that it will be less effective than it would be with flu. We have not yet got to the point where Ministers have had a chance to look at the data and make a decision about whether it has a big enough effect to be worth doing. That is very much something under active debate, and I am sure Matt Hancock, my Secretary of State, will want to come and discuss with colleagues this fundamental decision, which obviously affects many families up and down the country.

Q35 **Taiwo Owatemi:** What advice and reassurances can you give to pregnant women and parents who have children who are ill at the moment?

Professor Whitty: At the moment we don't know for sure what the effect of the virus is in early pregnancy, because it has not been around for long

enough—that is an honest fact—but other coronaviruses do not appear to cause major problems in pregnancy. Reading across, it is not something that is a major worry at this point, although we never exclude the possibility. There have been the earliest descriptions of women who caught coronavirus while in the late stages of pregnancy, and so far there is no evidence of any major problems at that point that I would worry about. I do not think this is likely to be a problem, but it is too early for us to be able to say with absolute confidence. I certainly do not think pregnant women should start worrying about this. It is very different from, say, the Zika infection, which was a big risk for pregnant women. This is a very different set of circumstances.

Dr Harries: I am going to add a comment to your first one, because I think a component of that question was advice and a local, community-based element. It is probably helpful to know that, in our planning arrangements, a Public Health England member of staff is embedded in the Department for Education. The advice produced is advertised both on the Department for Education website and that of PHE. There is a helpline, set up by the Department for Education, that is supported by public health advice. One of the unusual things about the public health system in this country is that we have a direct channel from Government through Public Health England and out to every single local authority director of public health, who support their local council and local communities. It is very much a structured system. I think you will find that, in the past few days, although there have been a number of school closures, as information and reassurance goes through, many of those schools have reversed their decisions, as they understand—exactly as the CMO has said—that this is a risk assessment-based process and they can be assured about their children returning to school.

Q36 **Taiwo Owatemi:** From what I understand, school headteachers have been told that pupils should wash their hands a minimum of four times a day. How practical is that and what support will be given to schools to administer that?

Dr Harries: I don't think we are laying down any particular time issues. You have heard the evidence base. Children are not particularly careful about where they put their hands and what they do with them, so from my experience as a parent, four times sounds like a minimum. Supervised handwashing is a good thing, and that is not just about coronavirus.

One of the good things about the messaging in the Clean Your Hands campaign, which was very much promoted yesterday and will continue to be throughout, is that it is a mechanism for encouraging much better respiratory hygiene. In the unfortunate position that we have coronavirus and flu at the same time through a future winter, that will protect against other respiratory disease as well. Children are great educators as they take their habits back to families.

Q37 **Taiwo Owatemi:** Thank you. I have just one more question that may digress a bit. It is well known that individuals, particularly migrants, tend to be apprehensive about accessing healthcare in emergency cases,

because of the Government's hostile environment. How would you advise the Government on relaxing rules surrounding access to healthcare, to stop those who have been exposed and are exhibiting symptoms unintentionally spreading the virus to other people?

Professor Whitty: You make an important point. There are mechanistic answers, which are things that the Government can do something about, and there are wider community answers, which are less easy for the Government to affect directly.

The most important mechanistic ones were making it clear that people being treated or assessed for coronavirus would not have to pay, and the subsequent decision in principle to move coronavirus over to being a notifiable disease. A number of things flow from that, including making it easier for people to access health services—if that is the reason why they are there—without any impediments. There are things being done to try to improve that and I fully accept your point.

Taiwo Owatemi: Thank you Professor Whitty, Dr Harries and Chair.

Q38 **Laura Trott:** I reiterate the Chair's thanks to you both for appearing, and to NHS staff. I will ask about vulnerable groups in particular, starting with the elderly. Professor Whitty, you mentioned earlier that older people are a key part of the mitigate strand, with some degree of isolation from public environments being particularly desired. Can you go into what that means and what people can do to start planning for that if it becomes necessary?

Professor Whitty: One of the keys things is that the modelling is clear that one of the best things we can do to reduce the impact on older people and on the NHS so that both benefit is to isolate older people from the virus. The difficulty is that we need to ensure that we do that without isolating them from society, exacerbating loneliness and providing barriers to social interactions and practical things such as shopping and people coming to help them.

We are giving a lot of thought to the practical aspects of what we can do to provide a package of support for people, as best we can in what will be a difficult period, to help to reduce the risks. Of course, the biggest thing that we can do at this point is not to go too early. We do not think it a good idea—while there is almost no transmission, there is some in the community—as people self-isolating over this period could then have to isolate themselves again. That will inevitably involve some social isolation for some months, which would not be a good thing societally, in our view.

One of the things that we will try to do is work out what we would revise and when we think it is a good idea to start doing it. We would not encourage people to start trying to isolate themselves at the moment. We do not think that there is any benefit to that.

Q39 **Laura Trott:** When we get to the point where the advice changes and we advise older people to self-isolate, what would your advice be for families thinking about their older relatives, and how can we help that process?

Professor Whitty: Remembering that the key thing we are trying to do is make sure that it's the virus, not all society, that does not come into contact with the older person, we will try and give some reasonably practical advice, which we are still working through because this is not straightforward. If I had the perfect solution at this point in time, I would obviously wish to share it with you, but we are still working this through. There are a lot of bits to this. We want to make sure that if people cannot provide face-to-face contact, and they may not be able to for a relatively short time, we work out ways in which we can at least encourage people to make contact through other routes.

One of the things I am thinking of, for example, is what happens when we know that someone has had the virus and therefore we know that they are not going to be infectious after a period of time. What can they do? One of the things that is really remarkable in emergencies—all the past experience shows this—is the altruism of the British public faced with an emergency. I think people will rally round.

Q40 **Laura Trott:** Quite right. Basically, we should expect more advice to be forthcoming soon.

Professor Whitty: Yes, you should, but we want to get it right. This is not straightforward.

Q41 **Laura Trott:** Thankfully, it appears, as you have said, children are relatively spared. On children with respiratory conditions—asthma, for example—should parents be more worried about them?

Professor Whitty: I don't think there is any evidence that children with asthma come to deep harm with this. The attack rates and mortality rates among children are incredibly low, at least if the Chinese data are correct. There are a few caveats to that. At this point in time, my best guess—this may prove to be wrong, but this is where I think it currently is—is that this will be a respiratory infection like any other respiratory infection for children. If they have significant asthma, it may trigger an asthma attack, but no different from, in my view, many other respiratory infections they might have. I would only expect that to happen once. It is not something I expect to be a repeated issue, but that is an issue and that will be a situation where they might on that occasion, if they have got very brittle asthma, need to seek health services.

In contrast to adult health services, I am not expecting child health services, unless the Chinese data are wrong, to come under anywhere near the degree of pressure that I am expecting the adult one to come under. I am much less worried about that than I am on the adult side.

Q42 **Laura Trott:** So you wouldn't advise that parents of children with respiratory illnesses, in the mitigate phase, take self-isolation measures in the same way that you would for other vulnerable groups?

Professor Whitty: If the children have incredibly bad asthma—there are a very small number of children who have asthma so bad that every time they get a respiratory infection they may get into serious trouble—

common sense would suggest that they probably should be in the group who are isolated. As for the people who have a bit of mild asthma and are occasionally a bit more wheezy when they get an RSV virus or some other kind of virus in the winter, at this point in time I don't think we are likely to need to do anywhere near the kinds of things we would have to for the older or the seriously vulnerable adult patients. That may change, but that is my current view.

Q43 **Laura Trott:** You have very helpfully laid out the mortality rate overall for this virus. Can fit and healthy people die from this virus?

Professor Whitty: Yes. Fit and healthy people can die from virtually anything, but it is incredibly rare for it to happen. Any of you and I could die from flu, but it is very unlikely to happen. I think the mortality rates for this are higher than seasonal flu, so therefore the risk is a bit higher, but the data suggest that fit and healthy younger people have a much lower risk. I might add one slight rider to that. For most respiratory infections, you worry about people who smoke. They are more likely to get it and their lung immune system is less good. The evidence on this is not there; it is just a general point.

Q44 **Dean Russell:** I'm interested to know the timeline from a patient perspective. You catch coronavirus. What is the stage process? There have been lots of reports and I am interested in the timing. At what point do you show symptoms? If you have it, how long does it go on for? When do you come out of it and when are you safe to go back to work? That is one of the bits that I am not sure about.

Professor Whitty: That is a really critical question. It looks as if the average time—the median time—between acquiring it and getting symptoms is about five days. For some people, it's a bit earlier and for others, it's two or three days later. We have extended that out to 14 days for isolation purposes, but it is clustered around five days. That is the first thing. For people who have mild disease, which is the great majority of people, to be clear—most people have a mild or moderate infection; some have something which they hardly notice at all—they usually have symptoms for up to maybe seven days, so very similar to a cold or other infection you would have. The minority of people who run into trouble—it appears to start around day six or seven. So it is not from day one. It is rather different from many other infections; there is a period when things are fine and then they seem to deteriorate after about five days to a week. That seems to be the pattern, and then they can have a more prolonged illness. So you have kind of got two patterns—one of mild illness: gets better really pretty fast. The second is moderate illness: some deterioration after that, and a more prolonged illness. There is a range of other models but that, broadly, is how I would define it.

Q45 **Laura Trott:** Just one further question. You have outlined elderly people, children with severe respiratory illnesses and smokers as people who you may recommend to take extra measures for self-isolation.

Professor Whitty: No, to be clear on smokers, my recommendation is they stop smoking. If you are going to give up smoking, this is a very

good moment to do it; but it is not that I am saying they should self-isolate or behave in any other way differently. I am just highlighting that as an additional vulnerability for people who are otherwise healthy.

Q46 **Laura Trott:** Are there any other vulnerable groups who you would recommend take additional steps?

Professor Whitty: There are certain chronic conditions—for example, people on renal dialysis and people with bad diabetes, not in the well controlled area—where I think we are still a bit worried that they are at increased risk. I think what we will be doing is—this is inevitably a case-by-case situation for these people. What we will be doing is giving technical guidance to the medical profession and nurses in specialist clinics, and expecting them to have the conversations with individual patients, saying, "Look, you are in a group who actually need to think differently"—or not—rather than trying to do blanket guidance which everyone then tries to interpret, which I think is going to be really tricky.

Q47 **Dr Evans:** I have some quick practical questions from the coalface. The first one is: history is really important, in terms of contact tracing. How do people get updated guidance on which countries are affected, because it is spreading further and further—if you are sat in a GP clinic, knowing who to ask and whether to worry about whether they have been to Mauritius, or indeed Italy?

Dr Harries: I am happy to answer that one. Public Health England, on the advice, obviously, of the chief medical officer, in terms of the epidemiology of the disease, has the practical responsibility for advice for most of the coronavirus responses. They actually have a page, at the moment, which is updated. You will see there are category 1 and category 2 countries. The category 1s are those where we want people to come back and self-isolate regardless of whether they have symptoms—so the lockdown areas in northern Italy, for example, and the hotspots in Taiwan[3]; it is those areas. Most of the other countries which have a heightened risk, where they have got high epidemiological numbers, are in category 2. From that flows the advice that you would need as a GP on your front desk, but there is, in addition, advice for general practitioners in any case. Equally, most GPs—that I know, anyway—will use the professional travel advice link as well, which is NaTHNaC. That actually goes from a link with PHE to travel advice using epidemiology, and then links with Foreign Office advice as well. So all of those systems are linked, and most GPs will either access through Public Heath England guidance or through the NaTHNaC website, if they are looking to advise a traveller ahead of that time.

Professor Whitty: Just one additional rider to that—just to acknowledge that the four nations have slightly different approaches to this, but broadly that is true everywhere, with slight nuances.

Q48 **Dr Evans:** If it does grow into a bigger problem, is there any thought of either centralising sick notes—because you do not want your GP spending time taking phone calls for sick notes—or, if not, would we temporarily

[3] Dr Harries has clarified that she meant to say 'South Korea'

extend them from seven days to 14 days to cover that period, so there is a repeat every seven days after the self-certification?

Professor Whitty: I am going to blandly say that all these issues are under discussion; but basically these are very important questions and what I do not want to do is give you a half answer that ends up being confusing. You are completely right. These kinds of things need to be thought through.

Q49 **Dr Evans:** The next couple of questions on that will probably get the same answer: are you planning on suspending CQC inspections at this time, if it gets worse?

Professor Whitty: I am going to stick to my previous answer.

Q50 **Dr Evans:** Would you consider using clinical medical students? We have talked about the top end of the population, but clinical medical students coming through have the ability to follow protocols, as do senior nurses.

Professor Whitty: On that one, we have already come to a view that if it gets to the point that we need to, changing what foundation year 1 doctors can do, extending their rights to some degree and extending into the final year of medical students might be one of the things that we would consider, in addition to putting back into service, if they were willing, those who are recently retired. That is absolutely one of the ones that we have already given a view on.

Q51 **Dr Evans:** Paramedics and some GP practices have personal protective equipment. They are not necessarily trained in how to use PPE. Are there any training programmes out there so that people can know how to use that?

Dr Harries: There is, is the short answer to that, but I think the more important thing in managing this incident right from the start, and in fact in developing high consequence infectious disease pathways from the learning we have had from Ebola, is that we have routes into the health system that try to avoid general practice, and that is a design. The idea therefore is that individuals will self-isolate until they can safely be tested or extracted. The message for people is to ring NHS 111 and to stay at home if they are symptomatic. They should definitely not go to their GP. I put that as the background. If a patient is identified in general practice, there are very sensible, straightforward guidelines available for just moving that patient into a side room so that they no longer present a potential risk, and people with the right equipment will come and extract them for you.

Q52 **Dr Evans:** A follow-up to that question. There is confusion about what deep cleaning means and who is responsible for deep cleaning, should someone walk into a practice. Do you have an answer for that?

Dr Harries: Again, there is some very simple guidance on that. As Professor Whitty has said, the virus can be quite easily cleaned away. It is not particularly difficult to remove with quite normal detergents, but there is some very clear advice on that. If a case or a potential case is identified

at a practice, a school or anywhere else, the local health protection team in Public Health England will do a risk assessment of the environment and the individuals who will have come into contact with that suspected or confirmed case and give advice about environmental cleaning as well. In most cases, it will need a deep clean, but not with specific unusual cleaning agents.

Q53 **Dr Evans:** One final question, which is a bit morbid. If things were to get worse, is there enough space in mortuaries and morgues to deal with all the problems?

Professor Whitty: It depends how much worse it gets, but there are plans for that. This is standard planning for many emergencies. The final common pathway sadly for some emergencies can be that a large number of people die at the same time. This is a very standard part of the toolkit of things that local authorities think through, essentially for all emergencies, including major epidemics. Can I just come back to one of the points you raised, which is really important? In a sense, through you, I want to reissue your point, which was hidden in the question. Putting on PPE is easy, but taking it off without contaminating yourself is a lot harder, and people should not be using PPE unless they are trained to use it, because you can often contaminate yourself just because you are not experienced.

Q54 **Chair:** Just before I move on, I have a question from Haslemere health centre in my constituency, which had an instance of the virus. One of the GPs there asked whether we are progressing plans for self-testing. Obviously if you test someone for the virus and they prove positive, the medic concerned then has to isolate for 14 days. Is there any plan for avoiding that having to happen?

Dr Harries: On self-testing, as Professor Whitty has said, we have a test that Public Health England developed very early on in the outbreak for symptomatic individuals at that time. That test is a RT-PCR test. It will either say that you are negative or presumed positive, and then there will be a further test that is sent off to a reference laboratory to confirm that test. That actually is not a CE-marked test at the moment in itself. It is very new, as you can imagine, and the virus itself is very new, so developing testing systems at pace and disseminating new processes takes some time. Having said that, our capacity to test on that basis is extending. We have eight sites; we can do 2,000 tests a day, and I think that by 13 March, it is going to be up to 3,200 with new labs coming on board.

To answer that direct question, though, what Public Health England are actually doing is reaching out to industry to identify any possibilities for things like point of care testing, which might give an opportunity to do that in future. They are actively evaluating new methods to speed up current testing and looking for new methodology, but at the moment, that would not be a feasible way of doing that. They will prioritise tests for individuals, but the important thing as well is to understand that if there is a confirmed case and there has been a close contact, which will be defined

and identified by Public Health England, having a test immediately afterwards that says "The individual is negative" does not mean that they will not develop the illness in the incubation period. We need to be really careful, and I think we have been exercising a highly precautionary approach, entirely appropriately.

Q55 **Paul Bristow:** Thank you both for the answers you have given in this session, and for the answers you have given MPs at other sessions. I want to ask a few questions about public information around the Government's strategies in the delay phase. How will you communicate to the public what is expected of them?

Professor Whitty: It looks as if the delay phase is the bit that is least well understood by the public, so it is clear that we need to explain both why we need it and what is involved. The question you ask is obviously critical. At this point in the early stage of delay, the actions are primarily ones of case finding and isolating cases that come from high-risk areas, which is to try to reduce the possibility of seeding into the community and therefore slow down the initiation of an epidemic, then try to pick up cases early and isolate them in hospital environments so we minimise the chance of transmission within hospitals.

Once we get to the point when societal action is needed—that will not be immediately, to be clear; we intend to say what we intend to do and recommend absolutely based on the science, and when it seems the appropriate time to do it—that will be communicated, including through Parliament, clearly. Talking through Parliament is an important part of this.

Q56 **Paul Bristow:** Parliament will be crucial, but should we be signposting the public to other sources of information? I remember you talking about the websites, which are updated on a daily basis. What about other sources of information, too?

Professor Whitty: We are trying to do three things, the first of which is to centralise our own information in one place so that people do not have to find it scattered across the system. The second is to work with the social media companies and others to make sure that accurate information comes to the fore, rather than the quite large amount of noise in the system, which can otherwise confuse people through no fault of their own. The third is taking out paid-for advertising, aimed at making sure the public know where to go for information that is accurate and giving the key messages in a simplified form, and then signposting so that people can then access the more detailed information. There will be a full communication strategy around this, because it is obviously critical.

Q57 **Paul Bristow:** What you said about social media companies is very interesting. How confident are you that they will be responsible in this regard?

Professor Whitty: I will give you two answers, but this is as someone who does not consider himself a social media expert. My Secretary of State, Matt Hancock, knows a lot more about this than I do. I sat in with

him, phoning up representatives of the major social media companies, and they were really very keen to help. My experience, having tested out various strings of words searching on Google and other search things, is that it seems that generally, good information tends to come quite near the top now. That would not necessarily happen randomly, so I do think they are doing their best to help with this, but obviously any assistance on these kinds of things would be gratefully received.

Q58 **Paul Bristow:** That is reassuring. In an earlier response, you talked about publishing geographical dashboards, maps and information, perhaps with a 24-hour delay. When do you feel that might happen?

Professor Whitty: That is very much a question for PHE, operationally. The rate-limiting step is that we want to be absolutely sure the information that is put out is accurate. My own view is that I would rather have slightly delayed information that we are completely confident of, than jump ahead of ourselves in the wish to be timely and end up with information that we subsequently have to, not completely change, but modify. That is something that I would not want to commit PHE to; it is very much for them. Their intention, though, is to do this quite soon. I am expecting it to be within a couple of weeks—hopefully earlier than that.

Q59 **Paul Bristow:** Finally, I have a question that I want to get on the record, just to be clear. What would your advice be to members of the public on taking any general precautions at this stage such as stocking up on food and drugs?

Professor Whitty: There is no need at this stage to be stocking up on anything. To go back to the point that the Secretary of State has made in the House multiple times, this is going to be a marathon not a sprint. This is going to be a long period. There is going to be a lead time before the serious take-off of this comes, which we will be able to indicate. Obviously, we are working with all the supply chains—in the case of our own Department, looking specifically at health products. There is nothing in the current environment that would rationally lead someone to want to go out and stock up on stuff.

Q60 **Dean Russell:** To reiterate earlier comments, thank you for coming, Professor Whitty, and for all the work that you have been doing and the updates that you have been giving us as MPs. My question is about hospitals. I would be interested to know—and for the reassurance of the public—what the current steps are for hospitals and urgent treatment centres over the coming weeks and months to make sure that they are fully prepared, if you could briefly outline them.

Professor Whitty: Obviously this depends on which stage of proceedings we are in. The first point has been to set up, I think in remarkably good time and order, a variety of ways of testing people safely. Those ways include: being tested at home, which, to acknowledge my colleagues from the NHS, has often required people to volunteer to do things out of hours in their own time to get this to work, which I enormously appreciate; drive-through testing; in pods; and in isolated bits of A&E services to make sure that it runs safely for them, and for the general public.

That bit is already ongoing. The second bit that is ongoing is that we are now rolling out testing in things like intensive care units—just routinely testing to see whether people who have a bad respiratory infection have this, so that we can pick up cases early and understand what is going on. Those kinds of things are ongoing.

What will happen in the later stage, when we get to the mitigate stage? Most of the work around delay and pulling the peak down are actually not primarily NHS problems; they are primarily societal issues that we will have to deal with, although GPs will be very heavily involved in that. Then we get on to the mitigate stage, which is what there is a very large amount of planning for, to say, "Let's plan for a variety of sizes of wave. Depending on which size it looks as if we're going to get, we'll have to respond in a variety of different ways."

It is important that we do not do that in advance of need, because then we start disrupting existing, routine, important medical care. It is important that we do not either overdo it, so that we cancel a whole lot of things that are needed, or, if we have a huge wave headed our way—at this point, we cannot be absolutely confident one way or another—underdo it, and not make enough room to absorb as much of the shock as possible when it hits the service for this quite discrete period of time, for which there will be, I repeat, a beginning, middle and end. We will come out of it the other side.

Q61 **Dean Russell:** Thank you. On beds, infrastructure and so on, do you see a point where we are going to have to turn people away from hospital? What is that looking like? In particular, say that somebody in a ward were identified as having coronavirus. Do you foresee a point where we are going to have isolation wards within hospitals as standard practice for the next few months?

Professor Whitty: To make an obvious point to all of you, but one that is worth reiterating, the great majority of people will be managed at home. They will be fine. We are already in a situation where we are very confident that most people have very mild disease. If someone has very mild disease and they have a place where they can be safely isolated at home, our view now already is that it is both safer, because they are not having to move around, and more comfortable for them to do so. That is where they should be, so that is a sensible thing to do. Obviously, if they need hospital care, they need to go into a hospital, but that is where the majority of care will be had, and it will be safe and appropriate for people to be self-managed there.

Obviously, there is a kind of ramping up. There is already a kind of onion ring: you start off with the incredibly specialised high-consequence infection units; then you go out to the specialised infectious disease teams, one of which I happen to be part of when I am wearing my clinical hat; then you go out to the general medical wards; and then you go out further, bringing in more and more of the service in aid as time goes by.

At this point, we will be managing things as significant infections. If they are in hospitals, people will go into negative pressure rooms if they are available, or into side rooms if they are not, and be dealt with in the way you would with any other significant respiratory infection. However, as with a very bad winter period, for example, you do sometimes get to the point of what is called cohort nursing, where all the people who have that infection are in one place. Then, you do not have to isolate them from one another, but you do isolate them from other patients. This is completely standard medical practice. To be clear, this is simply a reprogramming of the way we already behave; this is not new. It may be on a rather grander scale—potentially on a huge scale—but, in my view, the basic principles of it are not different from what the NHS already does.

Q62 **Dean Russell:** We have seen that the outbreaks seem to be very regional. If a particular region has a particularly bad outbreak, do you foresee some hospitals focusing on patients with coronavirus who have not self-isolated and others picking up the pressure elsewhere for non-coronavirus patients?

Professor Whitty: The first thing is that the modelling would suggest there may be a bit of a delay in peaks between different bits of the country. We do not think it will be huge—perhaps four or five weeks—but some mutual aid may therefore be possible because somewhere has come off the peak before somewhere else. That may provide us with options.

On the point you make, that is not our current plan, basically because we do not know what scale of what we are doing is needed, but that is a very good idea. Actually, under certain circumstances, if you are in a place with multiple hospitals, there are ways in which that might be the kind of thing you might want to do, in the sense that there are already specialist hospitals in some areas. It will entirely depend—I cannot reiterate this enough—on how big the wave is. We do not yet know that. We have to plan for the very top end. My expectation is that it will be lower than that, but how much lower we don't yet know.

Q63 **Dean Russell:** I have a final question about gels. We read in the papers that the shelves are clearing of hand gels and—I saw photos from a supermarket yesterday—even soap. Is there any risk of a shortage in hospitals? I imagine they use tons of it at the moment, because in every hospital ward you walk into you have gels and facilities for washing. Is there any risk of that being a problem in the coming weeks and months?

Professor Whitty: As an infectious disease doctor, I would be disappointed if my colleagues were not already washing their hands between every patient and using gel every time they come in, so I do not anticipate them going up very much. There is obviously a wider risk in the system, but in terms of hospital care, this should be the standard of care already. That is good infectious disease practice.

Q64 **Dean Russell:** I mean with the pressure outside hospitals for those products.

Professor Whitty: On people buying gels, there may be a market; this is a supply and demand thing. I do not see any sign of people running out of soap. I reassure people that 20 seconds' soap and water is the oldest and still the best. That is terrific public health—it is at the cutting edge. Use gel if you cannot get hold of it.

Q65 **Chair:** Thank you again for your time. I have a brief final question for each of you. Dr Harries, is PHE prepared, in terms of the resources and people it needs, for its very important part in the fight against the virus?

Dr Harries: I will preface my answer by recognising that there are very similar systems in each of the UK countries, but I will focus on PHE. PHE has a huge role in these situations. It is very well rehearsed. It has had similar work on Ebola but also on previous respiratory diseases—where we have had cases of MERS, for example—and it has managed them very successfully.

Undoubtedly, with something as large as this, there is a pull on individuals. It would normally manage around 10,000 incidents a year routinely in infectious disease and other health protection issues, and those will continue while coronavirus is ongoing and the team sizes don't change. In the same way that the CMO has described flexing up and down for the NHS, PHE is very used to that. It has mutual support arrangements, which are very well established. It will flex between regions to support.

I would just highlight that it is not only the contact tracing, which you will all be aware of. It has laboratory facilities for testing and it has processes to evaluate potential new drugs. It has epidemiological assessments. Equally, it is the main provider of information and of developing guidance for not only the health profession—inputting to Government advice—but also out to local communities. The links with local authority directors of public health are critical as well.

In terms of the testing capacity, there is a roll-out programme going on to meet the demand. We have not yet used up 50% of the daily capacity, so that is going well. With some of these things, the capacity needs will change as we go forward, because there will come a point with the epidemiology where our testing focus will very much be to ensure that we safely manage the more vulnerable individuals and identify them early, and identification of every single individual will perhaps not be as critical to the response.

I think it is difficult in a really big incident to do this and to keep going, in exactly the same way as it is for the NHS, but at the moment it is very clear that PHE is responding with the continuation, if you like, of the various processes to support the growth in the areas that it can predict it will need capacity in.

Q66 **Chair:** Thank you. Might I ask for a final comment from you, Professor Whitty? The Chinese Government say that 80% of the fatalities have been people over the age of 60. Obviously, people who are looking after

older family members or have caring responsibilities or are older people themselves hear those statistics and they are very concerning. Do you have a message of reassurance that you could give to older people in this country and people who care for older people, about these next few critical months?

Professor Whitty: There are two messages. First, we intend to do what we can to make sure that they are the group that is least affected, as far as we can. That goes back to some of the discussions we were having earlier with one of your colleagues. The second message is that, even in the most vulnerable oldest groups in a very stressed health service, which Hubei was at the point when most of the data came out, the great majority of people who caught this virus, and not everybody will, survived it—the great majority; over 90%. It is easy to get a perception that if you are older and you get this virus, you are a goner. Absolutely not. The great majority of people will recover from this virus, even if they are in their 80s.

Chair: Thank you. You have been very generous with your time this morning. We would all like to reiterate our thanks to you and to all the frontline staff who are working incredibly hard. Thank you for your very informative answers this morning.