

Science and Technology Committee

Oral evidence: UK Science, Research and Technology Capability and Influence in Global Disease Outbreaks, HC 136

Wednesday 13 January 2021

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Members present: Greg Clark (Chair); Aaron Bell; Dawn Butler; Chris Clarkson; Katherine Fletcher; Mark Logan; Carol Monaghan; Graham Stringer; Zarah Sultana.

Questions 1636 - 1787

Witnesses

[I](#): Professor Wei Shen Lim, Chair, Covid-19 immunisation, Joint Committee on Vaccination and Immunisation; and Dr Mary Ramsay, Head of Immunisation, Public Health England.

[II](#): Sir Mene Pangalos, Executive Vice President of BioPharmaceuticals Research and Development, AstraZeneca; and Tom Keith-Roach, President, AstraZeneca UK.

[III](#): Nadhim Zahawi MP, Minister for Covid Vaccine Deployment, Department of Health and Social Care; and Antonia Williams, Director (Covid vaccines), Department of Health and Social Care.



Examination of witnesses

Witnesses: Professor Wei Shen Lim and Dr Mary Ramsay.

Q1636 Chair: Today, we will consider the roll-out of the vaccination programme against the coronavirus—a programme the existence of which demonstrates the extraordinary achievements of scientists in this country and around the world.

We are going to hear first from the chair of the Covid-19 work of the Joint Committee on Vaccination and Immunisation and the head of immunisation at Public Health England. We will then take evidence from senior executives at AstraZeneca, and, finally, we will hear from the Minister for Vaccine Deployment and his lead official at the Department of Health and Social Care.

It is with pleasure that I introduce our first two witnesses. Professor Wei Shen Lim is a consultant respiratory physician at the Nottingham University Hospitals Trust and, most particularly for this purpose, is chair of the Covid-19 work of the Joint Committee on Vaccination and Immunisation. Joining him is Dr Mary Ramsay, who is the head of immunisation at Public Health England. I welcome you to the Committee and thank you for giving evidence at what I know is a very busy time—a time that has reflected a lot of very hard work in the weeks and months past, for which we are very grateful.

As you know, one of the purposes of our inquiry in these sessions is to understand the rationale behind some of the decisions better to know what the evidence is for them. Obviously, one of the big decisions that has been made recently is to change the dosage of the vaccines that are being administered at the moment.

When we took evidence as a Committee just before Christmas on 23 December, Professor Wendy Barclay, the head of infectious diseases at Imperial College London and a member of NERVTAG, told the Committee that to change the dosage regime at this point one would have to see a lot more analysis coming from the vaccine clinical trial data. Professor Neil Ferguson, also speaking at that meeting, said that the MHRA—Medicines and Healthcare Products Regulatory Agency—is authorising vaccines on the basis that people will receive two doses. It would require an entirely different regulatory submission to authorise just a single dose.

Professor Lim, will you describe the new analysis and evidence behind the change in dose?

Professor Lim: JCVI looked at all the data for the Pfizer vaccine trials before Christmas, probably around the same time that you spoke to Wendy Barclay and Neil Ferguson. At that time, we noted that the vaccine had a very high level of protection after the first dose. We had at that time also considered whether a first dose provided sufficient protection that one eventually might consider using a single dose, but we also felt, like Wendy and Neil, that at that time there was insufficient data to suggest a single-dose schedule. Indeed, as you know, even now JCVI's



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advice is that the schedule is a two-dose schedule. That has not changed. We maintain that a two-dose schedule is the right schedule.

The difference at the moment is that we have been more permissive in when the second dose can be given. To reiterate the advice as it currently stands, JCVI advises that the second dose of the Pfizer vaccine can be given between three to 12 weeks after the first dose, and the AstraZeneca vaccine can be given between four and 12 weeks after the first dose.

I will go into why we think it is possible to extend that dose interval, but I do want to make the point that we are not saying that a single dose is sufficient. Two doses is the schedule, but we are saying that you can extend the second dose.

Q1637 **Chair:** That is understood, so it is the timing of the dose.

Professor Lim: Indeed—correct, yes. If we go back first to the regulatory position when the vaccine was first approved by MHRA, at that time MHRA approved the Pfizer vaccine such that the second dose had to be given at around 21 days. There was no ability to be more flexible beyond that because of the regulatory situation.

Following the approval of the Pfizer vaccine by the EMA—that the second dose can be given at a minimum of 21 days with no upper limit to that regulation—the MHRA followed and changed its regulatory approval such that the second dose of the Pfizer vaccine is approved to be given from 21 days with no upper limit. That allowed further flexibility, so JCVI considered whether this extra flexibility was worth while and beneficial in a public health sense.

Q1638 **Chair:** To be clear, the MHRA approved—licensed—the change of dosage regime.

Professor Lim: They have given regulatory approval. Regulatory approval has always been given; it is just the specific wording around the second dose and when it can be given that was changed—correct. That allows the flexibility to extend the second dose from a regulatory point of view. JCVI had to consider whether that is useful from a public health point of view.

Towards the end of December, as you will know, we had a very bad situation in the UK, and we still do, first, because of the increased transmissibility of the new variant and the very high rise in the number of cases. At the same time, although the vaccine campaign or programme is being rolled out, we are still limited by the vaccine supply that we have, so there is a constraint to how many vaccine doses are available.

The science was well advanced by the end of December. Apart from the Pfizer vaccine trials, we had trial results being reported by the AZ vaccine and the Moderna vaccine. I will go through those in detail.



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The Pfizer vaccine's effectiveness after the first dose has been reported by the manufacturers and others as being 52%. That counts the vaccine effectiveness from day one after the first dose to the second dose, which is around 21 days. However, we know that vaccines do not work immediately, so if I receive a vaccine today, I am not protected tomorrow. It takes about two weeks for the immune response to be generated before I become protected.

Public Health England has therefore taken the data from the Pfizer vaccine trial and calculated the expected vaccine efficacy from the time we would expect the vaccine to be effective, which is about 14 days after the first dose is given. The vaccine efficacy for the Pfizer vaccine, therefore, from 14 days to the time of the second dose is about 89% or 90%—very high.

A similar calculation was done for the AZ vaccine trials from day 22 after the first dose—when you would expect the vaccine to have an effect—to the second dose. They calculate a vaccine efficacy of about 73%.

An important feature of the AZ trials is that the timing of the second dose varied across populations and in different parts of the world because the trial was done in different areas. The second dose was given at varying time intervals across the studies. They were able to show that the first dose effectiveness seemed to last up to 12 weeks.

I will give you an example of the range. If you look at the published results, over 60% of people who received a second AZ dose received it after six weeks. In the UK part of the trial, over a third received their second dose after 12 weeks, so there was quite a range of timings to the second dose.

Chair: Thank you.

Professor Lim: Do you want me to carry on? There is lots more.

Q1639 **Chair:** That has given us a good introductory summary. My colleagues will have some further questions of detail on that, but we are very grateful for that. Let me ask a couple of supplementary questions.

The JCVI published a paper—a short statement, as it was called—on new year's eve, 31 December. The conclusion was that protective immunity from the first dose of the AstraZeneca vaccine is likely to last for 12 weeks, I think as you have just said, and then that has in brackets "unpublished data". Clearly, a lot rests on this, and the standard of science, as you know, is to publish data to allow it to be examined by fellow scientists to have confidence in it. Is there any reason why that data is not published?

Professor Lim: It is commercially sensitive data; it is not owned by JCVI, so the publication status of the data is dependent on the people who hold the data. MHRA and JCVI often view unpublished data ahead of



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publication in order to make decisions. Just as we saw the Pfizer data before the Pfizer vaccine trial was reported, so the same has occurred.

Q1640 **Chair:** But when very important public consequences follow from it, peer review and the opportunity for fellow expert scientists to interrogate the data are clearly very important. We have seen some published analysis of the clinical trials data. Would you not think it appropriate to publish that data given that there is such a radical change in the regime that results from it?

Professor Lim: I agree. I fully support the publication of the data, but it is not within JCVI—

Q1641 **Chair:** Is it the protocols of the companies—that you would like to publish it but the companies will not allow you to do so? Is that the problem?

Professor Lim: Yes, we do not own the data, so we see the data under a non-disclosure agreement.

Q1642 **Chair:** I see. So it would be for Pfizer and AstraZeneca, to take the two cases in point, to authorise that. That is very helpful.

Professor Lim: Indeed.

Q1643 **Chair:** That may be the case in relation to the second point that I want to pick up from that paper of 31 December. In annex A to the paper, when you consider the Pfizer vaccine and the effect of a changed dose regime, you note: “The Pfizer estimates were verbally given by” Public Health England “during discussion”. Again, to have something that is given only verbally clearly does not allow the normal process of scientific scrutiny. Is that for the same reasons of commercial confidentiality?

Professor Lim: Yes, that is right, but subsequent to that meeting, where it was given verbally, the necessary data were published alongside the FDA briefing document. It is not in their peer-reviewed journal publication but in the FDA briefing documents. One has to look quite hard, but it is there.

Chair: I see, so that is in the public domain and that can now be examined. I want to summarise accurately your view—that you think it is appropriate and desirable that the data should be in the public domain so that they can be looked at by peers. I am grateful for that.

Q1644 **Carol Monaghan:** Professor Lim, I want to talk about the JCVI priority list for vaccination. There have been a lot of calls for key public service workers, including, for example, teachers, police and unpaid carers, to be moved higher up the priority list. We know that in other countries—for example, the United States and Germany—these individuals would be higher on their list for prioritisation. Why is the JCVI advice different?

Professor Lim: This is a question that obviously we review regularly, and different countries have to make their own decisions about what to



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prioritise in terms of their values. For the UK, it was agreed very early on with the Secretary of State and the Prime Minister that for the first phase of the vaccine programme we would prioritise the saving of lives, so the prioritisation groupings that you see reflect people who are most at risk of dying.

This is not to say that essential workers are not included. Any essential workers, whether they are in healthcare or are teachers, who are themselves personally at risk of dying, either because they have an underlying health condition or because of age, would be included in the first phase of the programme.

Q1645 **Carol Monaghan:** Professor Lim, I do not think any of us would disagree with healthcare workers and the elderly and care home residents being vaccinated first; I do not think any of us would have a problem with that. I suppose the question is, why are some of these key public service workers not in the next phase of vaccination? I understand that at the moment they are right down the list, so do you have any points to make on that?

Professor Lim: We have not decided who or how to prioritise the second phase of the programme, so at the moment for the first phase of the programme, a teacher, say, who was 50 years of age would be included in the first phase of the programme. Anybody who is below 50 of working age and without health conditions would be considered in the second phase. It may very well be that essential workers are prioritised for the second phase.

There is a subsidiary question to that, which is how we identify who is an essential health worker and whether it is easy to identify them in such a way that they can be called up in a mass vaccination programme, but those decisions have not been made yet.

Q1646 **Carol Monaghan:** Professor Lim, am I right in saying that a mathematical modelling used in virus transmission was used as part of the decision-making process for prioritisation?

Professor Lim: Models are always used for looking at how different strategies might work. The model you might be referring to is really modelling two large, different strategies: one is to target people who are individually personally at risk; the other strategy is whether to target people who transmit the virus, as opposed to people who are personally at risk.

As an example of the stark contrast, the people most likely to transmit are those who have the most number of contacts, and they are generally the younger population, whereas the people most at personal risk are the elderly. That is where modelling is very powerful.

Carol Monaghan: Can I just check on that?

Chair: Carol has frozen. I do not know whether you can hear us still,



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Carol.

Carol Monaghan: Were these figures used as part of the modelling?

Chair: Will you repeat the question, Carol, as we lost you for a second there?

Q1647 **Carol Monaghan:** Apologies; I will try again. A typical primary school teacher will have 30 children in their class in close proximity for a day. A typical secondary teacher could have up to 180, possibly 200 individuals in their classroom over the course of the day. Were these figures used when this modelling was considered?

Professor Lim: The modelling considers transmitters versus people who are most at risk. Coming to your specific question about teachers and who they encounter, the current understanding is not that teachers transmit to children but more likely the other way—that children as a group might transmit to teachers—so from a transmission point of view, if you wanted to block transmission, you would have to vaccinate children to prevent teachers from becoming infected.

Perhaps more importantly than that, which is the basic fundamental question, is the question whether vaccines block transmission. At the moment the trials indicate that vaccines stop people becoming unwell with Covid-19. We do not have sufficient information to know whether a vaccine blocks transmission. Therefore, trying to target transmitters—the transmission group—as the strategy is currently not possible because we do not know whether the vaccine will do that.

Q1648 **Carol Monaghan:** I am using teachers as an example, but we could also talk about, for example, members of the police force or prison officers. Was any consideration given to the impact on public services if individuals in these groups were infected? I know, for example, that it takes only one or two teachers or prison officers to become infected to put the whole system under strain.

Professor Lim: Going back to the science, if a vaccine does not stop transmission, then vaccinating one prison officer does not stop that prison officer necessarily transmitting the virus to another prison officer, and the same would apply for anybody in any other work situation. The vaccine would only stop the individual who has been vaccinated acquiring symptomatic disease. A model that uses the vaccine to stop transmission at the moment would not be based on any evidence that the vaccine does that job.

Q1649 **Carol Monaghan:** So this was solely based on transmission and not looking at the impact. I am going to move on because I have a couple of quick questions for Dr Ramsay.

Dr Ramsay, do we have enough data for phase 2 of prioritisation, and, in particular, are you confident that you could identify other key workers that we may wish to prioritise?



Dr Ramsay: If, as Professor Wei Shen says, the vaccine does interrupt transmission, then I think there are questions about whether we should just vaccinate all the adult workforce—all the adults, I should say, not even necessarily the workforce. But if we want to prioritise within that group, that will depend a bit on the supply situation at that time.

We have quite good data from the ONS, for example, on mortality in occupations, so we have been able to look at that, and we did look at that in phase 1, but, as you say, the issue is probably not mortality but more the resilience of the workforce. That is a decision that probably is beyond the health data that we normally work with, so there will be other factors that we have to consider at that time.

It is almost a societal decision, I guess, on which occupations we most want to protect to keep our society going. That will be part of other Government Departments' data collection and I am sure that SAGE has already looked at some of those occupations. For example, it has already looked at occupations that seem to be at higher exposure. There is data on the number of contacts people have—from survey data, from the ONS—so there is a range of data, but I think some qualitative and societal priorities will have to be within that.

JCVI's role and PHE's role essentially is to provide evidence and to get data, but it is Ministers who make the final decision. That is where the roles of the other Government Departments and their sectors will probably be incorporated.

Q1650 **Carol Monaghan:** If it is beyond the scope of the NHS to have that sort of information, who would be best placed to identify the individuals that we might wish to prioritise?

Dr Ramsay: You might want to ask the Minister that later. Clearly, there is a value judgment—an economic judgment—that is a bit broader than the pure health decisions. JCVI is making decisions on deaths and cases and those sorts of things, so we do have that data.

We do have occupations on the pillar 2 testing data, if that is what you are referring to. We know, for example, the rates of infections in different occupations, so we do have some data on that.

What we do not have perhaps is the impact of some of those softer things—for example, people being off work and isolating because of family members and those sorts of issues. That is maybe where that broader data that is probably collected through other parts of Government would be more useful.

Q1651 **Carol Monaghan:** I know we are pushed for time, Chair, so I will just make a very final point. I am talking specifically about identifying individuals whom you might wish to prioritise for a vaccine.

Dr Ramsay: In order to call them in, for example?



Carol Monaghan: Yes, exactly.

Dr Ramsay: Yes, I have got you there. I think we would have to work with the appropriate industries to do that. Obviously, most of the larger industries in particular, and the public sector industries, will have occupational health services who can identify people, and if you look at what we have been doing for testing, there is a system where people self-identify as key workers, for example, and there is a check on that. I think we can use that technology to roll out the next phase if we are targeting specific occupations, yes.

Carol Monaghan: Thank you, Dr Ramsay, and thank you, Chair.

Q1652 **Chair:** Thank you. I think Professor Lim wanted to come in briefly.

Professor Lim: I want to remind everybody that in protecting people within a constrained vaccine supply, the estimates are that we have to vaccinate only about 250 people aged over 80 to save one life, and for care home residents we need to vaccinate only somewhere between 25 to 45 care home residents to save one life. If you were trying to vaccinate, for example, train operators, you would have to vaccinate many thousands of operators to save a life. It does not mean that that is not important, but it is weighing up the values there. It is a policy decision about what value one wants to weigh up.

Carol Monaghan: Thank you, professor.

Chair: That is a helpful example. I turn to Zarah Sultana, who had a question on prioritisation that she might put at this point.

Q1653 **Zarah Sultana:** Data since the beginning of the pandemic has indicated that patients from ethnic minority backgrounds are more susceptible to contracting the virus and dying from the virus. The initial JCVI prioritisation list did not prioritise BAME communities. Why was that?

Professor Lim: That is a very important point. In fact, it is not just people from ethnic minorities but other disadvantaged groups that are important. JCVI's advice is in two parts, and both are equally important. The first part is the offer of vaccination, which is based on the priority groupings.

There is a second part that is often overlooked. The second part of the advice, which I think is equally important, is that the roll-out or deployment of the vaccine needs to be tailored locally to ensure high vaccine uptake, particularly in disadvantaged groups. That will include people who have lower socioeconomic status, perhaps in more deprived areas, and people from ethnic minority backgrounds.

That is a really important bit because it is one thing to offer a vaccine but the offer of a vaccine—and I have said this before—needs to be understood in the correct context, it needs to be accepted and the individual then needs to receive the vaccine before the vaccine has any



effect. So the two parts of the advice must go together: one is the prioritisation, which is the offer, but the second is the local, tailored delivery of the vaccine to local communities.

Q1654 **Zarah Sultana:** In the next phase of the vaccination strategy, will vulnerable groups, including BAME communities, be prioritised? Will we see a change in that beyond the age stratification and some occupational indicators currently being used?

Professor Lim: Maybe I am not being clear enough, but within the groups now, we are seeing that, when the vaccine is offered, it needs to be tailored such that the delivery of the vaccine—the information that goes to why a vaccine is important, how to get to a vaccination centre and all these things—is targeted in a way that disadvantaged groups, including ethnic minorities, are able to accept and uptake the vaccine within these priority groups even now, not waiting until later.

Q1655 **Zarah Sultana:** I completely get that and share that concern.

The Royal College of GPs has asked whether a risk score that accounts for ethnicity, geographical and socioeconomic indicators, and other factors, has been considered by the JCVI and Government strategy to make sure that those who are most vulnerable are prioritised. Has a risk score been used?

Professor Lim: This probably refers to what is called the QCovid risk score, which is an algorithm that tries to identify a whole range of factors and provide an individual risk score. This would mean ranking the entire population of the UK individually according to a risk score. JCVI considered that option versus the age-based option that we have described so far.

We must remember that the importance of delivery of the vaccination programme at speed means that any prioritisation programme needs to be simple and easily operationalised. An individualised priority score by an algorithm may be individually more accurate but is by no means simple to deliver, so we opted in favour of the age-based programme, which we felt gave the best balance between deliverability and targeted prioritisation.

Q1656 **Zarah Sultana:** On age stratification, I had meetings with local GPs, who mentioned that the rigidity has meant that practices have not been able to go beyond the scope of age and occupation in some instances. They have been unable to minimise wastage after they have administered the vaccine to all over-80s, primary care staff and care home staff. In the next phase, will we see a decentralised approach where local knowledge is prioritised and GP practices can ring up people who might be just outside that specific age bracket to make sure that they can minimise wastage?

Professor Lim: I think this comes back to the first point I made, which is that JCVI's current advice is in two parts. The first is the prioritisation



and the second is the tailored local deployment, which needs to pay attention to disadvantaged groups and avoiding vaccine wastage, so this is not advice to come later on; this is current advice that we should do what we can operationally to be flexible to avoid vaccine wastage.

Q1657 Dawn Butler: Professor Lim, I understand that the dosing schedule had to be changed—we need to vaccinate as many people as possible because of the new variant. On 23 November, the Oxford vaccine group announced that their 90% efficacy was based on half a first dose and a full second dose a month later. I am wondering why we did not consider doing that as a way of vaccinating more people more quickly.

Professor Lim: Yes. I think everybody has seen that the Oxford published results, as you say, in *The Lancet* suggest that the half dose/standard dose regimen had a higher vaccine efficacy than the standard/standard dose. However, subsequent analysis, which was presented to JCVI, indicated that the effect of the half dose/full dose may actually be due to the dose interval. In other words, the people who had the half dose/full dose were those who were vaccinated at a longer time interval—roughly six to 12 weeks' time.

What they have seen in their data is that people who have the second dose later probably have a three times higher antibody level than those who are vaccinated earlier. So, if anything, it suggests that increasing the dose interval is beneficial overall rather than a smaller dose interval.

Q1658 Dawn Butler: Is that not a better solution than giving a first full dose of the Pfizer vaccination and then delaying the second dose?

Professor Lim: What I mean is that the analysis shows that the effect of half dose/full dose is explained by an increased interval, so it is not a half dose/full dose that provides the extra protection; it is the increased interval that provides the extra protection.

Q1659 Dawn Butler: Okay. I still think it sounds as though that should be considered.

It has now been discovered that if you use a smaller needle with the Pfizer vaccination you can get six vaccinations as opposed to four vaccinations. Is that now being rolled out, and does that in any way mean that we can now, instead of delaying the second dose, administer the second dose within 21 days, as the testing showed it works more effectively?

Dr Ramsay: Yes. By using low dead-space needles we have been able to get more vaccine out of each vial of the Pfizer vaccine and of the AstraZeneca vaccine. That means overall we have more vaccine to go around, which is really good, and PHE bought the needles from the start, so it was really very early on that we discovered that and we are able to get more out of the vials, which is excellent news.



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Because that was slightly unexpected initially, we had not planned for that additional dose and it is a bit variable because it does depend on the technique of the drawing up and the individual vials. It does mean that there is more vaccine, but it is not enough to change the whole programme. I still think the priority is to get as many people as possible with that protection from that first dose and go back and do the second dose later when we have more supply.

Q1660 **Dawn Butler:** Dr Ramsay, you said that the two doses can be mixed in rare circumstances—“extremely rare circumstances” I think was your exact phrase. Can you tell me out of 100 how many times you would expect that to happen?

Dr Ramsay: I cannot tell you that. I think the guidance that was written—it was reported rather unfairly in *The New York Times*—was written for the situation when someone turns up and maybe you do not know what vaccine they have had. It could be for the next several months—well, we may be using three or four vaccines in the near future. It was written in the context of what to do if someone turns up and you do not know what they have had, or they turn up and they had a dose many months ago and are now coming in for their second dose because they went away or were ill or something like that.

As far as I know, it has not happened yet, but that is probably because we started with one vaccine and we are only just beginning to use the AstraZeneca vaccine now. We know that these errors do happen from time to time where people get given the wrong vaccine, but we wanted to keep that operational flexibility because, if someone has not attended for their second dose and they come back, it may be your only opportunity to get them. If it is the only vaccine you have in your fridge and that person is in front of you, then you want to, obviously, give them that second dose. That is the context of the advice and it is really just allowing the physicians who see the individuals to have that flexibility.

Way down the line—this is not just for now but how we do all of our immunisation programmes, because we may have moved on to a different group of vaccines in the future—this is how we help to maximise coverage. It is part of a judgment that the clinician makes at the time, that it is in the best interests of the patients to give them the second dose. As far as I know, it has not actually happened yet.

Q1661 **Dawn Butler:** Yes, but mixing the dosage of vaccines is not recommended at the moment, is it?

Dr Ramsay: Not at the moment, and we may well have data very soon that shows it is fine, but, on first principles, we do not expect the vaccines to behave that differently; and, as I said, getting their second dose may be really important for that individual, but it is an individual judgment by the clinician who sees the patient.

Q1662 **Dawn Butler:** I understand the prioritisation, but I want to put it on the



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table that if any more doctors and nurses come down with Covid our NHS will be in crisis, so should we not be prioritising NHS staff and those people who work in supported-living homes, which are not currently being recognised because they are not officially a care home, but they are essentially a smaller care home? Should we not have those groups in the initial prioritisation lists?

Dr Ramsay: I think they are in the prioritisation list. The prioritisation list is about the order in which you do things, not about whether you are eligible or not. With the second vaccine, the vaccine is coming in in much larger numbers, so the NHS is going to be able to compress things very quickly—we are talking about a matter of weeks between the different layers of the group. Indeed, we may do three or four groups at one time to get the demand high enough for the NHS capacity to match it. I think that is going to happen and be scaled up very quickly. I am hoping that almost all healthcare workers will be done this month. I think that is the plan for the NHS, as I understand it.

With some of the smaller care homes, one problem has been the fact that the Pfizer vaccine was a frozen vaccine that you could not move. Therefore, they started by vaccinating the larger care homes. My understanding is that the plan is that they are going to move on very quickly now that the AstraZeneca vaccine is in to be delivering in those smaller care homes as well, and indeed even taking vaccines into people's homes for people who are housebound, which will mean that those communities are going to get access.

Chair: Thank you very much. We do not have much time left and we have several colleagues wanting to come in, starting with Graham Stringer, Aaron Bell and then Chris Clarkson.

Q1663 **Graham Stringer:** Professor Lim, may I take you back to the first series of questions that Greg asked about the lack of data made available by AstraZeneca and Pfizer, which is clearly unsatisfactory? Have you asked them to publish that information?

Professor Lim: It is shared under a non-disclosure agreement, so we can request, but we have no, you know—

Graham Stringer: I understand.

Professor Lim: It is not within our power to release the information.

Q1664 **Graham Stringer:** I understand that you do not have the power and what the legal situation is, but have you asked them to publish and had a response to that request?

Professor Lim: We have asked them when they are to going to publish, but we have not asked them to publish.

Q1665 **Graham Stringer:** Do you not think it is in the public interest, given there is concern about the data and the change in the vaccination regime,



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to ask them immediately to publish that data? I think we would all be interested in their response.

Professor Lim: I think you have AZ in the next panel discussion and it would be appropriate to ask AZ when they are going to publish the data.

Q1666 **Graham Stringer:** But would it not be appropriate for you in your position to ask that of Pfizer and AstraZeneca? I do not understand your reluctance to ask. I understand that you do not have a right, but why do you not request?

Professor Lim: We can request it and we will look at the statutory agreements as to what we can do. It is in everybody's interests to have the data published and we want it published.

Q1667 **Graham Stringer:** Will you request?

Professor Lim: As I said, I will check what we are allowed to do as an independent body. If we are allowed to ask, then we can ask.

Q1668 **Graham Stringer:** It would be a strange regime if you could not request.

You have given some very interesting information, which I was not aware of, about the efficacy in the timing of the AstraZeneca vaccine, but can we talk about Pfizer? The Pfizer vaccine is a kind of vaccine, based on RNA, that has not been used before, is it not? You have no direct empirical evidence about the change in the period of the two vaccinations. Have you therefore done a risk analysis?

Professor Lim: I think it is important to understand that all the vaccines encode the same protein. They are different vaccine platforms but they deliver the same spike protein—the full-length spike protein. The spike protein is the stimulus to the body's immune response, to generate the immune response, and that protein is the same in all the three approved vaccines.

What I did not get a chance to go on to is that the Moderna vaccine, which is also an mRNA vaccine, has released its data, which looks strikingly similar to the Pfizer vaccine data, suggesting that all three show very high protection after the first dose. There is consistency across vaccine platforms that we have very high protection after the first dose.

The Moderna vaccine dose interval is also different. They report results of 90% vaccine efficacy after 14 days from the first dose. Their dosing interval is 28 days; they have a median follow-up of 28 days up to over 100 days in their datasets, so the Moderna vaccine trials extend the information from the Pfizer vaccine trials.

Q1669 **Graham Stringer:** Thank you, but you did not really answer the question: have you done a risk analysis?

Professor Lim: It depends what you mean by a risk analysis. We have considered the balance between suggesting no extension in the dose and no prioritisation of the first dose over the second dose versus the advice



that we have given. We are balancing the known benefit of vaccinating twice the number of people with a first dose, which has about 90% vaccine efficacy, versus not doing that and vaccinating half the number of people. There are models that have been run to examine this difference in strategy. The models all suggest that one should prioritise the first dose.

Q1670 Graham Stringer: I understand the arithmetic basis of twice as many people being vaccinated at that level, but the risk is surely the drop-off in the immune response to it, which you do not have direct empirical evidence for. That is the question I am asking about, not the simple arithmetic of, "If it all works, this is what will happen."

Professor Lim: Yes, and risk models have looked at waning immunity and different rates of waning immunity over time, and they still show that prioritising the first dose is important. These models have been published. The most useful models to look at are those that have come from Canada, where they are advising a delay in the second dose.

Q1671 Graham Stringer: That is very helpful.

Dr Ramsay, has changing from three to four weeks to up to three months caused any organisational problems? Have you overcome these organisational problems, and have you changed the consent forms that were originally for a second vaccination after three or four weeks?

Dr Ramsay: Organisationally, I think there was a short-term problem when there were people who had appointments. GPs were having to reschedule people, which was a little bit of extra work for a very short period. My understanding now is that people are being scheduled at the 12-week mark.

There is not a requirement for a signed consent form. What happens is people have a process of consent and as part of that they get given information. The information they are being given now does say that they will be vaccinated between three and 12 weeks after the first dose, so it does not promise them a vaccine at three to four weeks, if that is what you mean. As part of their informed consent, they are getting information that is very clear on what the schedule now is.

Graham Stringer: Thank you very much.

Q1672 Chair: Thank you very much indeed. You mentioned that there might be reasons that we might quicken the pace, such as the use of the needle that Dawn asked you about. If we were able to exceed the intended pace and had vaccinated all over-70s by 15 February, would it then be your view that we go on to lower age groups or quicken the second dose?

Dr Ramsay: Because the current advice from JCVI is that they go back and do the second dose for the first group, I am expecting that to happen in parallel—that we will be carrying on rolling out the next groups at the same time. That is an operational decision for NHS England—what their



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capacity is and what they think the best kind of balance is—but JCVI at the moment is saying that the second dose should be given no later than 12 weeks or scheduled no later than 12 weeks.

If we have additional data, the balance may be in favour of doing more first doses. The situation may change as the science changes because this is a very fast-moving field, as you can appreciate, and so—

Q1673 Chair: I thought you said at first that once you had done the first wave of the most vulnerable and elderly people you would go back to doing the second dose, but what you are saying is that that might depend on some later review.

Dr Ramsay: What I am saying is that is the current position. What I am also saying is, like we changed the schedule very quickly before Christmas, this is a very fast-moving field and, if more data emerges, it may well be that in the balance of those first doses, getting more first doses into people is a priority, and if we are seeing very high levels of protection, for example, in the vulnerable group, it may be more important to get more younger people vaccinated. That is the point I am making.

Q1674 Aaron Bell: To follow up from what Greg just asked about—what you might call an optimistic scenario—in a more pessimistic scenario, where we still have quite constrained supply, will people getting their second dose within 12 weeks be absolutely prioritised above people getting their first dose, Dr Ramsay?

Dr Ramsay: As I said, that is the current policy position—that the second dose is important. We do not want to go beyond that 12 weeks because we would not want to see cases arising.

As I also said—we will be reviewing the data, and we have a plan in place that is going to look at the data every week as it comes out; it will start to come very quickly—it may well be that we can afford to be a little more relaxed about how we go back. That is what I was saying, but it will depend on supply and the data and the evidence at that time.

Q1675 Aaron Bell: So is there some possibility based on data that we might yet extend beyond 12 weeks for the second dose?

Dr Ramsay: I think that is unlikely, but it is always possible. As you know, in the Covid situation, everything has changed when new evidence comes around and if the epidemiology changes. If we see the disease being controlled by this lockdown, that obviously gives us less immediate pressure to provide protection in certain communities. So it will depend on what happens with the data.

Q1676 Aaron Bell: Thank you.

Professor Lim, if I could take you back to the protection figures you talked about earlier—the 90% or so for Pfizer and the 70% for Oxford—you said that vaccines stop you becoming unwell. Do those 90% and



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70% figures refer to the percentage of people who never get any symptoms or any positive test, and the 10% and 30% who are not covered have only a very mild dose of Covid once they have been vaccinated? That is my understanding. Is that correct, Professor Lim?

Professor Lim: Yes. The headline figures—the top figures—are about getting symptomatic Covid. The definition of “symptomatic” varied between the Pfizer trial and the AZ trials, but it is symptomatic Covid that you have the 90% and 70% for. Where people have had Covid, there has been a milder disease. We have had very few—in fact, no hospitalisations or deaths in the AZ trials, as far as I know.

Q1677 **Aaron Bell:** A line that has been going around on social media is that the vaccine does not stop you getting Covid. Is that a fair characterisation? Would you describe what the percentage figure means?

Professor Lim: I do not think that is right. It stops you getting symptomatic disease, which you can describe as Covid, yes. It does not stop somebody necessarily acquiring the virus—asymptomatic infection.

Q1678 **Aaron Bell:** You cannot stop that.

Professor Lim: It might be able to, but we just do not have solid data on that.

Q1679 **Aaron Bell:** The working assumption is that that limit is also the point about transmissibility, for which we do not have the data yet.

Professor Lim: Exactly, yes.

Q1680 **Aaron Bell:** You said we have not decided on the next stage of prioritisation, for all the reasons we discussed earlier. Is it your understanding that that will be a decision for the JCVI alone, with, obviously, evidence taken from interested parties, or is that a decision that might be taken over by politicians or other groups to decide the priority in the second phase?

Professor Lim: JCVI is an advisory body. We provide the advice to the Secretaries of State. The policy is still a Government ministerial decision.

Q1681 **Aaron Bell:** It would be difficult for the Secretary of State to turn down your advice, so are you intending to give clear advice as to prioritisation in the second phase?

Professor Lim: Yes, we are. But there are some limits to what we can do, so we may not be the right people to, for example, define what or who is an essential worker.

Q1682 **Chris Clarkson:** I and two of my colleagues on this panel represent seats in Greater Manchester, where, in real terms, we never left lockdown restrictions. Since June we have had one form of the tiering system or another, and that is certainly replicated across the rest of the country, so the big question that people are asking is, how many people need to be vaccinated before we can start to lift non-pharmaceutical interventions?



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Dr Ramsay: Is that for me?

Chris Clarkson: It is to both panellists, please.

Professor Lim: Mary can answer that.

Dr Ramsay: I was expecting this one. I have been asked this a lot of times. It does really very much depend on whether the vaccine will protect against transmission. We know the vaccine will prevent symptomatic cases, as we have just discovered, and that will reduce deaths and hospitalisations, which in itself is going to make it easier to relax restrictions, but if the vaccine is still allowing people to spread infection—to transmit infection—which is what we do not know yet, then it will not necessarily prevent some of the factors because we may still have rates of disease that are going around, and that means that it will be able to pick out people who are at risk.

If the vaccine does prevent infection, it is supposed to be around 60% or 70% of the population that you need to get your R level—you will remember the R level—below 1, which means that the disease is on the decline. But, obviously, as you vaccinate more people, you can potentially reduce the social distancing measures and we can balance the two together.

I think it is very likely that the vaccine will have some effect on transmission; it may not be complete. We will be measuring that very closely, not surprisingly, and that may allow us to relax, and in a more gradual way. I do not think we will be able to say that we can definitely stop all those measures until we know whether the vaccine prevents transmission and what level of immunity you get in different groups of the population—different age groups—and how long that immunity lasts, because, obviously, if it protects against transmission only for a few months, we would have to reinstate measures at a later time or go back and boost everyone. There is a lot of uncertainty in this area, but I do expect the vaccine to give you some relaxation from those measures.

Chair: We are running out of time, so if answers as well as questions could be crisp, I would be very grateful.

Q1683 **Chris Clarkson:** It would be fair to say that we might have to walk back out through the tier system—to count back down.

Dr Ramsay: I think that is right, yes. It may be gradual, yes.

Q1684 **Chris Clarkson:** Is it likely that the entire population is going to need to be vaccinated—you mentioned 60% to 70%—or will there be certain categories and age groups that we decide are likely to be more asymptomatic and therefore do not need it?

Dr Ramsay: Yes. I think it depends a bit on what we want. We may need to accept, if the vaccine does not prevent transmission, that we are going to protect the people who are really vulnerable and going to die and have



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serious disease, but we allow the disease to circulate in younger people where it is not causing much harm. That may be the situation we go to, like we are with things such as flu. We accept that a lot of people get flu but we protect those who are most vulnerable.

That may be the outcome. I am hoping it will be a bit better than that, but you are right: we may need to vaccinate a very high proportion of the population to prevent this disease from ever being a problem again. I think that is some way off yet and there is a lot of data we need before we can go to that stage.

Q1685 Katherine Fletcher: Professor Lim, you touched on the fact that the vaccines that we have already passed target the same area of the spike protein, so they are different vehicles for the same area acquiring immunity. What are the mutations going to do to that? I understand that the “UK variant”, first identified in Kent, does not seem to have some effects, but we have heard evidence that other variants—one identified in South Africa, and there are undoubtedly more that we have not found yet—are having a series of mutations on that spike protein. Where are we with understanding whether our current vaccination efforts will be in vain with new mutations?

Professor Lim: That is a very important question, and it is useful at this point to indicate that the UK is one of the best-placed countries in the world to examine genomics. As to the genes and the virus mutations, we have one of the best systems, absolutely.

We know that mutations occur almost all the time. It is not that we have just had one mutation; there are mutations happening all the time and there are many variants, so this is under constant review by scientists in the UK and across the world to check whether there are any mutations or any variants that arise that might interfere and escape vaccine.

Q1686 Katherine Fletcher: What is your sense of it? With the South African one, are you worried? I am worried. I understand it has mutations effectively down at the base of the spike, but do you have any data on that?

Professor Lim: Yes, data are being generated all the time. At the moment, as you say, we have the most data on the UK variant and that does not suggest it will be any less well protected against by the vaccine. We are generating data on the South African variant.

Am I worried? Everybody is worried about a new variant that might escape the vaccine, so, yes, it is an area of intense scrutiny all the time.

Q1687 Katherine Fletcher: When is it likely that we will have been able to put the newly identified South African variant through the serology to see whether it is slipping through our current vaccine net? When is that data likely to be available?



Professor Lim: We are actually probably in a very good position again because of the Oxford link. The Oxford trials have been conducted in South Africa, where a lot of the cases are due to the new variant anyway, so we are told that very soon the Oxford and AZ trials may be able to examine in quite some detail whether their vaccine will protect against new variants. I think this is a matter of weeks—

Q1688 **Katherine Fletcher:** So at almost the same time—I am going to push you slightly—as we target getting through the first cohort, mid-February, we will also probably have a longer-term view on whether we have identified a variant anywhere in the world that can slip through the net of this current vaccine regime. Is it about the same time?

Professor Lim: We will know from the Oxford trials very shortly about the South African variant. Whether we identify variants occurring anywhere in the world is dependent on where a variant appears. The UK, as I said, is very good, so we identify variants very quickly. But if a variant were to appear in, let us say, Brazil, I do not know how good Brazil are, but I do not think they are as good as the UK, so a variant could appear there and we may not know about it until a bit further down the line.

Katherine Fletcher: This pesky biology-plus-time equation will stay with us for some time. I thank you both for your time. I know how busy you are at the moment and it is hugely appreciated.

Q1689 **Chair:** Thank you, Katherine. I have a final question to wrap up. Clearly we have had some discussion of the dosage regime and the timing between the doses. Britain is a leader in comparative research and in particular in randomised controlled trials. Are we rigorously applying our research expertise to these different doses so that we can find out rather than casting around for what might be the optimal regime? Millions of people are about to be vaccinated. Are we making sure that we are doing it in a way that can be compared, so that we can know for sure what is the best regime?

Professor Lim: I think those discussions are under way. Trials are already being planned to measure the antibody levels at different dose intervals to give us some idea what happens to the antibody levels. That is obviously not quite the same as running a clinical trial, but a clinical trial will need to include thousands and thousands of patients—or people, rather—so that is quite a different scale of trial and that is under discussion, I believe.

Q1690 **Chair:** But we have got to where we are through clinical trials and we have thousands upon thousands of people being vaccinated. Surely right now and the last few weeks is the ideal opportunity for us to discover, perhaps before anywhere else in the world, what is the best dosage regime for these vaccines.

Professor Lim: I agree absolutely.



Q1691 **Chair:** How quickly can we expect that?

Professor Lim: We are discussing these even now in this week coming, and I have had discussions about whether we can randomly assign people within a clinical trial to different dose schedules, so some people get the second dose at, let us say, three weeks, some get it at six weeks, some at 12 weeks, or some even further out. Those discussions are live and happening right now.

Chair: I hope the discussions bear some fruit very shortly. We are very grateful for your time this morning. As Katherine says, you are playing a crucial role in what is an optimistic time. You are responsible for the deployment of vaccines that we know give substantial protection and we are very grateful for the time that you are giving. Thank you very much indeed.

Examination of witnesses

Witnesses: Sir Mene Pangalos and Tom Keith-Roach.

Q1692 **Chair:** I am very pleased to welcome our second panel of witnesses. They are Sir Mene Pangalos, who is the executive vice president for biopharmaceuticals R&D at AstraZeneca, and Tom Keith-Roach, who is the president of AstraZeneca UK. Thank you very much indeed for joining us, and congratulations and thank you for the extraordinary work that you have conducted during the last year, in an unprecedented time, to have resulted in a vaccine that is going out and is being deployed protecting people all around the country. For that, the nation, and indeed the world, will be in your debt.

If you caught some of the previous session, you will know that, reflecting some of the questions that parliamentarians are getting, we have some questions on the next steps, as it were. One of them was on the appropriate dosage regime. Perhaps I can ask whether you, Sir Mene, have considered and support the changed dosage regime from the one that was originally proposed.

Sir Mene Pangalos: Yes, I do. I think the data that we have generated so far with our vaccine in particular shows that, when you cut the data by interdose interval, that increased interdose interval actually increases efficacy. We have seen that with the J&J adenovirus vaccine; they also have an interdose interval of eight weeks. While four to 12 weeks gives you maximum flexibility initially in implementation of the vaccine, I think what we are seeing with our data so far is that, as you go towards the eight to 12-week interval, you actually increase vaccine efficacy.

People are protected, as you know, after the first dose to around 70%, but we think that that eight to 12-week interval is the sweet spot and, hopefully post pandemic, when you want to get more routine dosing, we think that that eight to 12-week interval is going to be where we land, so we are very supportive of that data.



Q1693 **Chair:** Thank you. That is very clear. Has that just been discovered? Was that not evident during the clinical trials?

Sir Mene Pangalos: It became evident as the results of the clinical trials were seen. As you recall, Oxford initially started the study as a single-dose study. We then had some challenges around supply during the clinical trials, so, fortuitously, what ended up happening is that, during the clinical study in the UK in particular, we created this variable interdose interval that allowed us to explore what happens at different weekly gaps between the two doses. That is ultimately why we have the data that we have now, which suggests that you do get an improved efficacy and immunogenicity between that eight to 12-week interval.

Ultimately, the vaccine is effective between four and 12 weeks—clearly effective—but we are starting to see suggestions that eight to 12 weeks looks even better.

Q1694 **Chair:** Thank you. In response, you may have heard my colleague Graham Stringer's question whether the JCVI could publish the data notwithstanding the non-disclosure agreement to allow the science community to scrutinise this evidence.

Sir Mene Pangalos: I was a little bit surprised because the MHRA have published it all. It is all in the public domain already. All of that data has been published by the MHRA in their analysis and assessment of the data. We also have a lot of the data published in *The Lancet* that we published a few weeks ago, and, of course, any new data we have we will continue to publish in scientific journals for scrutiny by the scientific community. It is very much part of our plans. We obviously have to get the data presented appropriately and written up appropriately, but we have published over 10 papers so far on the vaccine and will continue to do so, so we very much want it in the public domain.

Q1695 **Chair:** I see. So the evidence that the JCVI cited in the paper of 31 December that was stated to be unpublished is now either published or you have no objections to it being published.

Sir Mene Pangalos: No, because when you say "published", it is in the public domain; it is not published in a peer-reviewed journal, so we want to publish it in a peer-reviewed journal. A lot of the data is already in a peer-reviewed journal, *The Lancet*, including some of the data around interdose interval and slightly different cuts of interdose interval, but, ultimately, anything that has not been published we will publish.

Q1696 **Chair:** I understand. It is in the public domain even though it may not have been published in a refereed journal.

Sir Mene Pangalos: Yes.

Chair: We understand that.

Q1697 **Katherine Fletcher:** Gentlemen, thank you so much. I am aware that your time is precious. You are going to get a lot of questions that are



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basically, “How much vaccine we can have and how quickly we can have it?” because everybody is desperate to go and hug their mum/grandma/favourite pal.

Sir Mene Pangalos: We know.

Q1698 **Katherine Fletcher:** I think it would be valuable for the Committee and the public if perhaps, Sir Mene, you could talk us through the steps you have to go through at a high level to produce the vaccine so that we can start to understand the areas that limit production and supply. It is not a tap that you just turn on and pour vaccine out of, is it?

Sir Mene Pangalos: It is not. I will let Tom answer, but I will give you the high level. There are two major steps. One is that you have to make the drug substance, which involves growing the cells and then generating the virus that you use for the vaccine. Then, once you have generated that virus, you have to make it into a drug product, which means filling and finishing it and then getting that product approved by the regulator and making it suitable for release for public consumption. Those are the two main phases, basically—making the drug substance and then turning that drug substance into drug product in the fill-finish facilities to enable you to get it approved by regulators and then released for public consumption.

Q1699 **Katherine Fletcher:** What is the longest bit? What is the thing that takes ages that you cannot speed up?

Tom Keith-Roach: Maybe I will take that for you, Mene. Drug substance manufacture is a 58 to 60-day process that you cannot speed up. That is the complex biological process of actually growing the adenovirus vector.

Sir Mene Pangalos: Just to be clear, you have to grow cells, and cells divide at a certain speed, and you cannot do it any faster than the speed at which the cells divide.

Q1700 **Katherine Fletcher:** So when I sow my beetroot in the allotment, while I might want to eat the beetroot quickly, nature has to have the time to take its course.

Sir Mene Pangalos: Exactly.

Tom Keith-Roach: Exactly right.

Q1701 **Katherine Fletcher:** In this instance, nature is taking 56 to 60 days to grow.

Tom Keith-Roach: Fifty-eight to 60 days, exactly. Then, as Mene said, from drug substance, you have to actually manufacture the drug product; that includes filling and finishing, packaging and batch release. That takes a further 28 days. If you look in total, you are talking about a three to four-month process. Within that you have, as you would imagine, extensive quality testing on every batch. Actually, more than 60 quality tests are performed, which range, as Mene said, from checking vaccine,



genetic sequencing, ensuring the vaccine can carry the spike protein to purity, to dosing, to environmental conditions. What we can say—

Q1702 **Katherine Fletcher:** I am going to interrupt you because I am conscious of time. Basically, you are checking that it is in there, it is the thing that is going to work and there is nothing else in there that should not be, but that takes about 28 days.

Tom Keith-Roach: Yes, it does. What you can say is, because of that, we can now look at the volume flowing through the early stages of drug substance manufacture and where we are at a point in time with that and down to the batch level. We can then, understanding the timing of the remaining steps, be extremely clear and specific to the Vaccine Taskforce about when we expect those batches to be ready for release into the healthcare system. Because of that process, we are able to give a very high degree of visibility and confidence down to the week, and sometimes down to the day, at least through the end of the first quarter of this year.

Katherine Fletcher: Wonderful. Gentlemen, thank you both.

Q1703 **Aaron Bell:** To follow on from what you have just said to my colleague Katherine Fletcher, what will the supply therefore be in April? How many doses per week will you be churning out?

Tom Keith-Roach: Maybe I will start and, Mene, if you want to, add. As you probably know, on the supply, we are committed to bringing 100 million doses to the UK through 2021. I want to reassure all of you that we are working absolutely flat-out to bring those into the health system and into the arms of UK citizens as soon as possible. As you would imagine, we are in daily contact with the Government, the MHRA and the NHS to synchronise that supply with the vaccination programme that you see through the NHS and Public Health England.

If I talk about numbers, it is probably most helpful to talk about our schedule for volume release. Obviously, that is slightly different from volume availability because under the emergency approval regulation under which we are supplying vaccine, every finished batch then still needs to be approved for release, which requires regulatory release from the MHRA and quality release after NIBSC sample testing, which is the final quality test that each batch needs to pass. Only then can it be released into the health system.

Aaron Bell: Understood.

Tom Keith-Roach: Where we stand today is we have released just over 1.1 million doses to date and we are scaling up, as we have said, very rapidly—this will happen imminently—to releasing 2 million doses a week. We are absolutely on track to do that and, therefore, deliver tens of millions of doses in the first quarter of the year. Clearly, there is some small inter-week variation around that average of 2 million doses, but clearly if we average 2 million a week through the course of the year,



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that gets us to the 100 million doses to which we are committed to the UK through the course of 2021.

Q1704 **Aaron Bell:** I see the EU is hoping to make a decision on your vaccine by the 29th as well. Are those doses potentially from the same supplier or are they going to be supplied from other sites elsewhere?

Tom Keith-Roach: No. We have built dedicated supply chains across the world to fulfil our contractual responsibilities. We have a dedicated UK supply chain for drug substance manufacture and for fill and finish. I am delighted to say that the majority of API for the UK come from UK-based suppliers, and the vast majority of our filling, finishing and packaging also is being done in the UK. It is a dedicated supply chain and our ability to commit to that 100 million doses is not affected by approval status in other supply chains.

Sir Mene Pangalos: API is drug substance, just to be clear what we are talking about.

Q1705 **Aaron Bell:** Thank you. Are you able to give a figure for what you will supply, say, by mid-February, which is where the Prime Minister has set a target? How many doses per day or per week do you anticipate hitting by the middle of February—in about a month's time?

Tom Keith-Roach: As I have said, we are scaling up to 2 million a week imminently and certainly we would hope to be there on or before the middle of February.

Sir Mene Pangalos: I would agree.

Tom Keith-Roach: What I would say longer term, as with all medicine manufacturing, is that we are constantly working on process optimisation—yield optimisation—within that manufacturing supply chain. You asked a question about April. We cannot commit to a number above 2 million, but obviously it may be possible, as those process optimisation efforts bear fruit, to increase that somewhat as we move into quarter two.

Q1706 **Aaron Bell:** May I say thank you to your company for the philanthropic approach you have taken to this—not for profit during the pandemic—and your commitments to supplying developing countries in the future?

I have seen the process—last April I went to Cobra Biologics in my constituency of Newcastle-under-Lyme, who are one of your partners—and I recognise the difficulties of the process, but may I ask about what went wrong? That might be the wrong phrase, but we were initially told, when we first started speaking about this vaccine—in the very early stages—that you were hoping to have 30 million doses by September, and we ended up with about 15 million doses in bulk by the end of the year, if I am correct. Are you able to explain what difficulties in the manufacture led to that unfortunate delay?



Sir Mene Pangalos: I can tell you that. This is all around what Tom was talking about, which is the yields that you get from the batches and the batch failures that you have during any manufacturing process. This is a complex manufacturing process, as we said earlier, because it requires cells to grow and the virus to be harvested. Yields were lower than anticipated, we had batch failures, and that is all part of moving very rapidly as you are trying to optimise the process.

We were flying the plane and building it at the same time, taking what was a relatively rudimentary process. We started at process 1 and we are now at process 4. We will continue to optimise, and each time you optimise you improve the yields and the reproducibility of the batch, as it were. We have been going through that process while we have been trying to generate vaccine and run the clinical study, so it is just a matter of working through the process at an accelerated speed while maintaining the quality, as Tom has talked about. It is just part of, I think, any evolution of a biological process that you are trying to manufacture.

Tom Keith-Roach: Mene, perhaps it is a discussion for another day, but certainly it is our position that it does need to become a national priority to ensure that we have the right capacity and the right capability for vaccine manufacturing onshore here in the UK. The steps that the Government have taken to accelerate the Vaccines Manufacturing and Innovations Centre in Oxford are welcome, but we think there is more that we could and should be doing to support and attract new investments in manufacturing capabilities and investment for the future.

Sir Mene Pangalos: Can I just make a comment here? I heard you ask the previous participants about things that can get in the way or things that we are worried about. One thing that I am worried about is maintaining a continuous supply and work on this vaccine. Of course, with the outbreak and the pandemic where it is, I feel it is critical that people who are working on this vaccine are immunised, because if you have an outbreak at one of the centres—which we have had, actually—or at one of the groups in Oxford that is working on new variants, or the people who are working on the regulatory files, everything stops.

This is a concern that I have, so we are pushing to try to get our key workers who are working on the vaccine project immunised to try to prevent these outbreaks. That would be useful, and I raise it with you because hopefully you can help us make that happen. I realise how sensitive vaccinating people, and who you vaccinate first, is.

Q1707 **Chair:** On that point, Sir Mene, have you made that request to the JCVI?

Sir Mene Pangalos: We have made the request to Government and we have got some of the people on the manufacturing lines moving through the process, but I am worried about the people who are working on the variants, the people who are doing experiments in labs, the people who are running the clinical trials that generate some of the data that you are asking for around immunogenicity—all these people. We need to be doing



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that work and we are having outbreaks and cases that are potentially hindering that work.

Chair: It is hard to think of anything more essential than that work. I am pleased that you have raised it today and we will certainly—I know I speak on behalf of my colleagues—reinforce that.

Q1708 **Zarah Sultana:** I want to touch on ensuring that the vaccine is available to poor countries, especially in the global south. The vaccine was made deliberately with the intention of it being accessible, owing to it costing a fraction of existing vaccines, and it being possible to transfer and store it at cheaper cost. In your opinion—this is open to either panellist—what is the main obstacle to the vaccine being able to reach developing countries?

Sir Mene Pangalos: I think, actually, relatively little. I am hoping that we are going to be launching the vaccine in the developing world as rapidly as we are in the developed world. We have agreements with the Serum Institute of India, with CEPI and Gavi, and with R-Pharm. As you know, the vaccine has already been approved in El Salvador, Argentina, Mexico, a number of South American countries and Morocco, and we have approval in India, so the roll-out in the developing world is happening at speed at the same time as we are trying to get approvals in the developed world. The Serum Institute of India is doing a fantastic job. We have a billion doses being lined up through their supply agreements, and that will be supplying predominantly low and middle-income countries.

Q1709 **Zarah Sultana:** I have received casework from constituents about looking at intellectual property and how that could allow more countries—there is quite an extensive list of countries that have already taken up the vaccine—or more manufacturers to produce the vaccine without fearing barriers. Are AstraZeneca and Oxford looking at perhaps an open licence to allow a greater uptake of the vaccine in the future?

Sir Mene Pangalos: No, we are not. Actually, that has the potential to damage the vaccine because you have no control over the quality of what you are doing. We are making sure we give licences to people we trust, such as the Serum Institute of India, which is a well-known, large-scale manufacturer of vaccines, and R-Pharm, which is helping us in the middle east, Russia and the Balkans. We want to manage that carefully to make sure we do have supplies.

We have 3 billion doses-worth of supply lined up for 2021. We have continually said that we need all the vaccines available—not just ours but everyone's vaccines—to hopefully work to enable sufficient global supply to deal with the pandemic at a global level. But I do not think giving up IP or giving IP freely is the answer because, ultimately, you want to be controlling where you manufacture and the quality of the manufacture to make sure that you do not have any negative or detrimental data generated on the vaccine that could actually then hamper immunisations around the world.



Q1710 **Dawn Butler:** Thank you both very much for coming this morning. I have two quick questions. What is the consequence if the cold chain is broken with your vaccine?

Sir Mene Pangalos: Our cold chain is relatively straightforward, I would say. It is just refrigerated, so it is like a flu shot. We have a very stable vaccine. I think the stability data we have is out to six months now, so I do not know what happens if you leave it at room temperature, but I think it will be relatively stable in contrast to the mRNA vaccine, which is a little more difficult to handle. This is a very straightforward vaccine, like any other vaccine, in terms of the cold chain: it is refrigerated; you take it out of the fridge; you use it; you put it back in the fridge; and it has been shipped on ice.

Q1711 **Dawn Butler:** How do you feel about the mixing of vaccinations?

Sir Mene Pangalos: I think it is a very important question and something we are starting to investigate already, both pre-clinically and clinically. We will find ourselves in a world where people will have taken an mRNA vaccine, or a human adenoviral-based vaccine or our chimpanzee-based adenoviral-based vaccine, and we will need to know in one, two or three years' time what happens if you had an mRNA vaccine first and then get an adenoviral-based vaccine or vice versa, and also what happens if you run out of an mRNA vaccine. Can you then dose someone with an adenoviral vaccine or vice versa again?

Those experiments are very important to do in the clinic and in the laboratory, and we are doing them. As you know, we announced a collaboration with R-Pharm, with the Russian vaccine, to look at heterologous boosting, when you use one vaccine first and then the other. We are doing an immunogenicity study to look at what happens to the immune response. We will be doing the same in the UK with mRNA vaccines and trying to generate that data as quickly as we can to give, again, people the information they need to understand how they can mix and match vaccines or sequence vaccines if and when some become available or less available.

Tom Keith-Roach: Could I add just two very brief points that I think are important? These are questions that we have had from colleagues in the NHS over the last week.

The first is on cold chain. Clearly, once the vaccine has been out of refrigeration for more than eight hours, it should not be used.

Secondly, although this may not have been your question on mixing, we had a conversation about overage earlier and getting potentially more vaccinations out of a vial than was initially anticipated. We have an eight-dose and a 10-dose vial, and we put a small amount of overage into those vials. As you heard earlier from panellists, with the Pfizer vaccine, the healthcare professionals have been getting potentially one more dose out of the vials. We need to be very clear that, if they do



choose to do that, they need to be giving a full dose, and what they cannot do is mix vaccine from two different vials in order to constitute one full dose. That might not have been the vaccine mixing you were asking about, but I think it is worth clarifying.

Q1712 Dawn Butler: Thank you, yes. I think as regards getting more out of the vials, it is because of using the low dead-space needles; there is less dead liquid in the needle, so that is how they are managing to squeeze out more vaccinations.

You mentioned that these experiments on the mixing of vaccinations should be done in the labs. What happens if they are done on an individual as opposed to in a lab?

Sir Mene Pangalos: They are done in both. They are done in the lab and in the clinic. In the clinic you would look at immunogenicity, so you would not do efficacy studies. What you would look at is the immune response when you mix and match vaccines, which is one experiment that we have already started doing in combination with the Russian vaccine, where you just look at the antibody response and the T-cell response, and you understand what happens relative to when you dose the same vaccine sequentially. It is just that you can do this by immunogenicity first and then after that you may go into efficacy studies.

Q1713 Dawn Butler: Do you have any idea when those studies will be released?

Sir Mene Pangalos: I think there are plans afoot to do that in the UK with the Pfizer vaccine and our vaccine, given that those are the two major vaccines being implemented in the UK. As I said, we have conversations; we have experiments starting to do it with one of the Russian vaccines.

We also want to think about doing this with the Moderna vaccine, but, ultimately, I think Governments and healthcare institutions around the world will be wanting to do this themselves because they are going to want to know, ultimately, how to implement their vaccines as effectively as possible. So it will not just be done by companies.

Q1714 Chair: Mr Keith-Roach, Sir Mene has explained that production is subject to things that can go wrong and there were some teething problems, but now you say you have a high degree of visibility of the schedule and you expect to have 2 million doses a week on or before the middle of February. Will you give us a feel for the trajectory to that from where we are today? For example, from next week what would you expect to deliver to the NHS?

Tom Keith-Roach: I expect us to get there very rapidly; the middle of February is, therefore, a conservative position. We have been asked not to share in public forums in detail daily delivery schedules and locations, for security reasons. As you can imagine, it is very sensitive, but I can reassure you that we will scale to 2 million doses a week very, very quickly.



Q1715 **Chair:** Asked by NHS England?

Tom Keith-Roach: By the Vaccine Taskforce. Perhaps that is a question for the Minister later.

Q1716 **Chair:** Without wanting daily delivery details, clearly there is a huge amount of public interest. The Government are publishing daily information about how many vaccines have been administered. It is encouraging to hear you say that this is going to increase sharply. What would you expect to be able to deliver next week to the NHS? I cannot see that that engages with any national security.

Tom Keith-Roach: I do not have that data in front of me, but perhaps we can come back to that in the form of a written response.

Q1717 **Chair:** I get the impression that you are a man with fingertip control of this operation. You must have a feel for what you expect to be able to supply next week.

Tom Keith-Roach: I would prefer not to guesstimate that here, with your permission, Chair.

Q1718 **Chair:** But we can at least assume it is in excess of 1 million.

Tom Keith-Roach: We can confidently say that.

Chair: We are very grateful to both of you for your evidence today. We are conscious that it has been an extraordinarily busy and hugely productive year, but for you the work has not finished: both operationally and in some of the trials and investigations into mixing and dosage it very much continues.

I echo the thanks of members of the Committee for the high-mindedness in the approach you have taken in making this available on a non-profit basis during the pandemic. I think the whole world is grateful for that. Thank you very much indeed for your evidence.

Examination of witnesses

Witnesses: Nadhim Zahawi MP and Antonia Williams.

Q1719 **Chair:** Welcome, Minister Zahawi. I think you have an official joining us virtually. I can now see Antonia Williams on the screen. Thank you very much indeed. Nadhim Zahawi is the Minister for Covid Vaccine Deployment in the Department of Health and Social Care. He is also Minister for Business and Industry in the Department for Business, Energy and Industrial Strategy. Antonia Williams is director of Covid vaccine deployment in the Department of Health and Social Care.

We are very grateful to you for appearing. I know that for the Minister it has been a busy week in parliamentary appearances with statements and debates in the Chamber. Lots of questions have come up during our session this morning. There is huge public interest and, it is fair to say, excitement about the relief at hand with the vaccinations, so everything



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we say is motivated by a desire to help you in your important work.

First, what is the rate-limiting factor in the pace of delivery? Is it the supply of vaccines or the logistics of deploying them?

Nadhim Zahawi: Thank you very much, Chair. It is a pleasure and privilege to appear before your Committee. I know that you take these things very seriously and delve into them in detail, as you have just done with Mene Pangalos and others in the previous session.

The NHS put together a plan that we published this week. It has a number of modes of delivery. If you recall, on 8 December, when the first vaccine from Pfizer-BioNTech was approved by the regulator, we began in hospital hubs. There is a reason for that. The chief medical officers all agreed it is very important with a novel vaccine that, as you begin to deploy at scale, you are able to observe for at least a couple of days how that is going.

We then rolled it out into primary care networks. These are five or six GP practices, some supported by community pharmacies, covering 30,000 to 50,000 patients. They decide who leads and the others support that, and they began vaccinating with the Pfizer-BioNTech vaccine.

They are very good at reaching the four cohorts that are the most vulnerable. They started with the over-80s and residents of care homes, and then the people who look after them. Those were the top two cohorts. We went further down to categories 3 and 4, which are the target for the middle of February, to offer a first-dose vaccine to those four most vulnerable cohorts.

This week we launched seven national vaccination centres; more will launch next week. Fifty will be up and running. We will then look at more sites, and bring on board community pharmacies and the independent sector.

On your question about the rate-limiting factor, there are two points. One is the initial volume. In any manufacturing process, especially one dealing with a biological compound such as a novel vaccine, it is lumpy at the outset. There is no doubt that it was, but it is getting better.

Q1720 **Chair:** We have just heard that from the previous witnesses.

Nadhim Zahawi: It is, as you heard just now, beginning to stabilise and you get a much clearer line of sight. I now have line of sight of deliveries all the way through to the end of February and am getting more confidence about March as well. We have millions of doses coming through in the coming weeks and then next month and the month after.

The second challenge is focusing on the most vulnerable. If you are to reach the over-80s you must have a delivery mechanism to get to them, hence our choice of primary care networks as the volume provider, with



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the national vaccination centres working hand in hand and, as has been described, the other modes of delivery. Those are the two limitations.

Q1721 **Chair:** Which one is biting at the moment? If you had more vaccines, would you have the wherewithal and networks to deploy them, or is it that you are waiting for more vaccines?

Nadhim Zahawi: It is now getting better.

Q1722 **Chair:** To be very clear, what is the constraint at the moment? Is it the availability of vaccines or the ability to deploy them?

Nadhim Zahawi: The constraint around deployment was because you had to handle the vaccine initially at minus 70° C in the cold chain, which you have heard about. Not every hospital or primary care network can be stood up at the same time. The bulk came forward, but not every one of them, so that was a constraint. We now have approval for AZ.

Q1723 **Chair:** I understand the reasons why both are difficult in both deployment and, as we heard from AstraZeneca, manufacturing. This is not a point of criticism; it is a factual point. At the moment, are we held back? I do not want to place a pejorative interpretation upon that. Are we being constrained by the number of doses we have or our ability to deploy them? Which of those bites?

Nadhim Zahawi: It is not binary; it is both. We have gone from having a challenge around deployment of a vaccine at minus 70° C and a second vaccine coming along, which was approved and deployed only on 4 January. Again, it had to spend a couple of days in hospital deployment before we moved it out to primary care. Day by day you will see greater volumes going out. The NHS plan has built a deployment infrastructure that can handle the volume that the manufacturers can deliver. That is the assurance I can give you.

Q1724 **Chair:** We were just hearing about this. Let us talk about the volumes and the delivery. We have heard from AstraZeneca that that is opening up. How many are you expecting next week?

Nadhim Zahawi: We are not releasing week-by-week figures, and hopefully you will understand why when I explain. There is a series of tests of batches by the manufacturer. The manufacturer carries out a series of tests. You have probably read about things like sterility tests and other tests as well. Then there is a batch test by the regulator at the end of that process for quality control. Batches could move week by week because a batch may fail and another batch comes in. I think it would be misleading this Committee and the House to say what we are getting this week because they do move around, and it is part of the supply chain challenge. Brigadier Phil Prosser said it is like standing up a supermarket chain in a month and growing it by 20% every week.

Q1725 **Chair:** We understand that. We have just heard from Mr Keith-Roach. To quote him, he said he had very high visibility on what he was supplying



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and that has now stabilised, as you know. You have the numbers because they have been given to you. He said he had been told not to give them because it was a matter of national security. Could you explain that a bit?

Nadhim Zahawi: I would remind you that I also said we have a clear line of sight to the end of February already, which is really good news. We are saying that we have millions coming through this week, next week and the next month and the month after.

Q1726 **Chair:** Millions next week?

Nadhim Zahawi: Every week we are going to move forward to hit the 15 million target by mid-February.

Q1727 **Chair:** You have a clear line of sight.

Nadhim Zahawi: I have had this discussion with the officials dealing with this. It is not so much about security nationally; it is a matter of security as to where deliveries come in and how they are effectively distributed to the deployment infrastructure.

Q1728 **Chair:** I am not asking which surgery they are going to and whether they might be hijacked on the way, but just the national total.

Nadhim Zahawi: In seven days' time the NHS will begin to share data at local level. We will do a data cut on Thursday at regional level as to how many people have been vaccinated, but as of a week's time, roughly, Simon Stevens before another Committee confirmed that they would be sharing more data at local level so that MPs and local government, which is doing a tremendous job in this endeavour, can begin to see where deliveries are so that everyone can understand when they are getting it.

The more time I can give to a primary care network to plan ahead, the better the outcome. The supply team focus is very much on making sure that we give as much time as possible. It is difficult in the early days. It gets better as we move through the process; it gets even easier in the weeks to come. It is not about wanting to withhold information from the Committee, although there is a consideration here because the whole world is looking to acquire vaccines at the moment.

Q1729 **Chair:** You think people are going to zoom into the country to confiscate the supply.

Nadhim Zahawi: No, but the more we talk about or, dare I say, show off about how many vaccines or batches we are receiving, the more difficult life becomes for the manufacturers, although clearly they are doing a tremendous job. I want to place on record our thanks to Pfizer and AstraZeneca.

Q1730 **Chair:** Minister, I think you have been the first, along with the Prime Minister and Health Secretary, to celebrate the achievement we have had there. I am surprised you are becoming a little shy about it.

Nadhim Zahawi: Only in terms of volumes.



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Q1731 **Chair:** Before I turn to my colleagues, let me put it perhaps in a different way. What is the weekly rate of vaccination that we need to attain to get to the Prime Minister's target of the middle of February for all the over-70s and the most vulnerable categories to be vaccinated?

Nadhim Zahawi: We keep a scale-up week by week. You saw that from 4 to 11 January we delivered as many jobs as we did the previous three weeks.

Q1732 **Chair:** What is the rate required to meet that target?

Nadhim Zahawi: It will fluctuate day by day, by the way.

Q1733 **Chair:** If you drew a straight line, what would it be?

Nadhim Zahawi: You can do the maths, Chair. You need to grow to 3.9 million next week and the week after that it must almost double again. I now have just under five weeks to mid-February to hit that offering to the four cohorts in England. That is about 12.2 million; for the UK it is about 15 million. If you work backwards, everybody will be able to measure it because we are publishing data daily.

Q1734 **Chair:** On your arithmetic, it is over 2 million a week. Let me leave it at this: are you confident that you will attain the rate of an average of 2 million a week to the middle of the month?

Nadhim Zahawi: I am confident that we will absolutely meet our target. There will be fluctuations at a daily level because of different modes of delivery. Let me give you an example. It is really important to vaccinate in care homes. It probably takes the day's work of a GP, or 10 or 12 hours, to do a care home with between 50 and 100 residents and the staff. To vaccinate in a primary care setting, some have done the full box—they have done 975—and some have got the six doses as well and have done over 1,000 in a day, so there will be fluctuations.

The great challenge, if I may just try to bring it to life for you, is making sure we get to the most vulnerable, because the easier thing to do as volumes come in is just to open it up. Some other countries, like Israel, have said, "We'll vaccinate anyone over the age of 60. Just queue up and we'll get you vaccinated." That is much easier to do. The Joint Committee on Vaccination and Immunisation has stated that, if you vaccinate the most vulnerable—the top four cohorts—that represents 88% of mortalities; the top nine cohorts represents 99% of mortalities. That is a much greater challenge for delivery than just saying, "Let's open the doors and allow everybody to come forward," because then those who are the most vulnerable may not be the ones you are vaccinating.

Q1735 **Chair:** In terms of delivery, commendably, the Government have been planning for this for months now; they have procured it long in advance. It is a great piece of foresight and anticipation. We knew, or hoped, these vaccines were coming, so why were delivery networks, whether they be national centres, GPs, pharmacies—thousands of them across the



country—not prepared and ready to go? Why was it not like Sunderland on election night where everyone is primed and waiting for the receipt of the vaccines to be able to put them in? Why is it having to be built up gradually over time?

Nadhim Zahawi: That is a great question. I am glad you pay tribute to the Vaccine Taskforce, because we are not only a nation of shopkeepers but a nation of great traders and had the foresight to be able to negotiate those contracts with the seven leading teams that we felt had the best chance of getting to a vaccine. We were the first country to engage with BioNTech and Pfizer as well in a meaningful way, which is why we were the first country to approve it and deploy it.

Your question is linked to my answer earlier. If you set the exam question for the NHS, which I think has built a first-class deployment infrastructure, and say to yourself, “Look, just go for speed. Let’s vaccinate as many people as possible as quickly as possible and forget about the most vulnerable cohorts”—other countries have said, “We will vaccinate anyone over the age of 60”—you could see much greater volumes. The Prime Minister, rightly, said we would follow the Joint Committee on Vaccination and Immunisation. It is harder but much better to target very forensically the over-80s and those who look after them and residential care homes, and deploy and get the numbers. That is the tension.

Q1736 **Chair:** That network is being built, is it not?

Nadhim Zahawi: No; the network was ready to go.

Q1737 **Chair:** It was all ready to go?

Nadhim Zahawi: As soon as the vaccine was approved, that network was ready to go with the military embedded, as you heard from Brigadier Phil Prosser. It was in the planning process ready for the vaccine to be approved so we could deploy it. But I go back to the challenge: do you not worry about the most vulnerable and just go for volume, or do you target very specifically, which is what we are doing, and get volume? You need to do both things together.

Chair: That is very important.

Q1738 **Graham Stringer:** Minister, I am bemused. You seem phobic to numbers. Why can you not tell us in detail the vaccine capacity that is online? People are intelligent; they can recognise there might be hitches; batches might be contaminated in some way. Why can you not tell us those figures? Why can you not give us predictions day by day, week by week? There is a huge national interest in this and you are keeping the figures secret and spending huge amounts of money. That is an extraordinary position. Why are you so phobic to numbers?

Nadhim Zahawi: Mr Stringer, with respect, I think I am quite the opposite. It was this Government and this Prime Minister who insisted on



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having a target to meet: that the four most vulnerable cohorts would be offered a vaccine by mid-February. It was this Government and Prime Minister who worked with the NHS. They rose to the challenge to publish weekly, initially, and now daily, real numbers that we could stand behind, not predictions as you put it. It would be very wrong to publish predictions in my view.

This Government will tomorrow publish, with the NHS again, regional numbers. We will go further. As Simon Stevens said yesterday to another Committee, we will start to go to much more localised numbers so that everyone can see.

Information and data that are robust and correct, Mr Stringer, are our ally in this endeavour. I say this every day to many colleagues here in Parliament and in local government. I spoke to the metro Mayors—the M9—yesterday. They all agreed that the right thing to do is share as much information as quickly as possible with the country because the nation expects it. That is why we are publishing daily data.

I am slightly disappointed by your point that we are phobic to numbers. On the contrary, the one thing we are not doing is saying to you, “We’ve had x million deliveries.” I am saying to you that we have a clear line of sight for volumes all the way through to the end of February, which means I am confident of hitting the target of the four most vulnerable cohorts being offered a vaccine by mid-February; that is, 12.2 million in England and 15 million in the United Kingdom. I am sorry you feel that way.

Q1739 Graham Stringer: I do not feel that way. You are not answering the questions. You did not answer the Chair’s questions; you are not answering my questions.

Let us try it from a different angle. How much Pfizer vaccine and AstraZeneca vaccine are in stock now? Can you give us a flow chart of when that is likely to be deployed over the next weeks? You did not give Greg Clark the answer to very similar questions. Why can you not give them to me? It is not a question of targets. Targets are fine; they can be hit or missed. People want to know what is likely to be the outturn. I want to know as a Member of Parliament whether you are spending the money wisely and whether the vaccine is getting out as effectively and efficiently as possible. I also want to know that we are getting the vaccine to the most vulnerable people as quickly as possible, but it is possible to do both, as you said: to get it to the vulnerable and get greater volumes out. To know whether we can do that we need those flow charts of what volume is available.

Nadhim Zahawi: Thank you, Mr Stringer. The NHS is doing everything that is humanly possible to get the most vulnerable vaccinated as quickly as possible. What we have absolutely committed to is meeting the target of offering a vaccine to the top four cohorts by mid-February.



Q1740 **Graham Stringer:** Will you answer my question about how much Pfizer vaccine and how much AstraZeneca vaccine is available?

Nadhim Zahawi: As I have said to you, deployable doses move. I am a chemical engineer by background. Any manufacturing process begins lumpy and then stabilises and smooths out. That is the process we are going through at the moment. There are challenges at the outset. It is much more difficult for the NHS, which is where I think you are coming from. Many colleagues have had similar feedback from their local primary care networks that they do not have enough visibility of when deliveries are coming in, which I think is where your question is coming from.

The NHS supply team is working to make sure we give as much notice as possible for deliveries that are coming in, but it would be unwise and wrong to say to the NHS, "You must publish every single batch that is coming in," because batches move around.

Q1741 **Graham Stringer:** Minister, you are not listening to the question. I am asking how much Pfizer vaccine and how much AstraZeneca vaccine is available in stock now. I might ask in the future—I see no reason for you not to answer—when it is likely to be delivered. The idea that there is a security issue is completely nonsensical. Two or three miles from where I am is the Etihad centre, which will be a major centre. If people want to rob the Etihad centre for the vaccine, they can go there. There is no secret about it. Your answers are absurd. Why will you not hand over the information?

Nadhim Zahawi: Mr Stringer, the NHS has built a deployment infrastructure. There is no stock. You heard Brigadier Phil Prosser say that we do not want vaccine sitting on shelves in fridges instead of being in people's arms. The NHS will in the next few days have literally just-in-time delivery, so the idea that we are sitting on lots of stock is not true. What happens in any manufacturing process is that you have lumpiness. You get deliveries that are less predictable.

Chair: You have made that clear. I think we understand that. To be fair, we heard that from AstraZeneca. I think we need to move on.

Q1742 **Graham Stringer:** Perhaps I might ask one last question. It is almost a point, because these are very annoying answers. In the previous session we were told that the process would be tailored to local development. When I talk to local public health people here and elsewhere in the country they say they are starved of information; they do not even know when batches will be delivered. Why is the NHS so centralised that it cannot hand more control to local people? That was part of the problem with the test and trace system. Will you not work more closely with local public health teams?

Nadhim Zahawi: We will absolutely work much more closely with local public health chiefs. We are already doing that. We have a meeting later this afternoon with local leaders and Secretary of State Jenrick and the lead senior responsible officer for the whole of the deployment, Emily



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Lawson. We are absolutely making sure that local public health and local government is embedded in the infrastructure.

I hear your frustration, Mr Stringer. It is coming from primary care networks and GPs who up until now have not had as much notice as they would have liked in being able to book appointments and get the most vulnerable vaccinated. That will improve; I can give you that assurance. Day by day the No. 1 priority of the supply team and NHS England is to make sure we give as much visibility about next week and the week after—if we can give them a fortnight's visibility, even better—so we get more throughput. Ultimately, there are two challenges. You stand up sites. We have 2,700 sites vaccinating. Then you improve the throughput and efficiency of those sites. I give you that reassurance.

Q1743 **Dawn Butler:** Minister, there is really no need to be so evasive because we are all on the same side. We want this to work; we want people to be vaccinated. We took evidence from AstraZeneca. I am not sure whether you heard it, but apparently the people working on the vaccinations have not been vaccinated themselves. That could cause problems in getting the vaccines developed. I do hope you will be able to commit to ensuring that those people working on the vaccines are vaccinated.

Nadhim Zahawi: Absolutely. We have to make sure that the vaccination supply chain and infrastructure is secure, not just in terms of the threat of the virus itself but threats from cyber-attack or other security issues. So we work with them very closely and are very much focused on the Joint Committee on Vaccination and Immunisation. There is an absolute focus on the categories that are most vulnerable, but the supply chain is very much part of that.

Q1744 **Chair:** Will you write to the Committee by the end of the week with a definitive determination as to whether the people producing the vaccines can be vaccinated?

Nadhim Zahawi: I give you that assurance; I will happily write to the Committee, but it is very much part of the critical infrastructure of the vaccination campaign.

Q1745 **Dawn Butler:** Public Health England has said there will be no supply of vaccines on a Sunday. Is that correct, Minister?

Nadhim Zahawi: That is not correct. Public Health England and the distribution side work seven days a week. Up until now they have been delivering exactly what the NHS deployment infrastructure has required. At the front end, the primary care networks and national vaccination centres we have set up this week all work 8 to 8 and make sure they deliver seven days a week. We vaccinated over Christmas and new year. This is a national endeavour.

Q1746 **Dawn Butler:** Therefore, there will be a supply of vaccines on a Sunday. That is good to know. There seems to be a problem with the sign-off chain. Do you know what those problems are?



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Nadhim Zahawi: What do you mean by sign-off chain? Can you expand on that? I am not aware of any problems with the sign-off chain at all. There must be very clear inspection regimes, but that has not hindered the deliveries from warehouse to the deployment infrastructure.

Chair: Dawn, perhaps you would clarify that.

Q1747 **Dawn Butler:** Some pharmacies and GPs have made orders, and apparently those have been dispatched, but there is an issue with sign-off, so they are not receiving the orders in a timely manner.

Nadhim Zahawi: Forgive me. I thought we were talking about the Public Health England warehousing end of the chain, if I can so describe it. You are talking about actual deliveries to primary care networks and GPs. Currently, we are running at 98.5% accuracy of delivery. That is good, but it can improve because clearly for 1.5% of deliveries we are having some problems and challenges, but we deal with those rapidly, and the team is looking to improve that performance even further.

Q1748 **Dawn Butler:** Could you share those challenges with us?

Nadhim Zahawi: It is exactly what you have just described. For example, a primary care network is expecting x number of boxes and it does not receive them, or there is a delay in the process so that if it orders on a Thursday delivery does not happen, but 98.5% accuracy is pretty good. As Brigadier Prosser described it, it is like standing up the equivalent of a supermarket chain in a month and growing it by 20% almost on a weekly basis. We will get better at that as well.

Q1749 **Dawn Butler:** Do you know how many vaccines have been wasted because of a break in the cold supply chain?

Nadhim Zahawi: That is a really good question, Ms Butler. NHS England is estimating waste to be about 10%. We are running way below that, which is really good.

Q1750 **Chair:** It has forecast waste of 10%.

Nadhim Zahawi: It is a forecast.

Q1751 **Chair:** The reality has been less.

Nadhim Zahawi: Much less. GPs are getting the six doses of the Pfizer vaccine and, with the 10-dose or eight-dose vial from AstraZeneca, they also find it has a little more volume.

Q1752 **Dawn Butler:** That is very true. It is a different question from the waste in the cold supply in regard to the Pfizer vaccine.

My last point is a rather important one. You often refer to the number of people offered the vaccines, which essentially is irrelevant, because it is not the amount of people who are offered it that is important; it is the number of people to whom the vaccine has been administered. Can you please commit to stop referring to the number of people offered the



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vaccines? It may be important when you come to do your analysis of the people who have been offered it but declined it, but in order to know how many people have been vaccinated it is important that we talk about people who have been vaccinated as opposed to offered it.

Nadhim Zahawi: I completely agree with you. I want everyone who is offered a vaccine to take up that offer and get vaccinated. It is good for them; it is good for their communities. We are not a country that will mandate that everybody has to be vaccinated. As the Prime Minister said, we do not do those sorts of things here.

The reason we say “offered” is that, like you, we want to encourage everybody to take the vaccine. It is good for their own protection and for their community, but the reason we say “offered” is that they have a choice in whether or not they take the vaccine. What you will see published is the number of jabs we deliver, both first and second dose, and you will see much greater granularity and breakdown of the data week on week. You can hold us to that.

When I say “offered”, I do not mean someone getting a letter saying they will get a vaccine in a month or two months’ time. I mean that the needle is ready to jab someone. I want to send out the message to everyone, “If you are offered a vaccination appointment, please take it up for your own safety and protection.” If we can protect people in those top four categories by mid-February, that is 88% of mortality.

Q1753 **Dawn Butler:** In regard to offering this to people, if you can have the information in different languages and BSL, people will take up the offer a lot quicker.

Nadhim Zahawi: It is in 13 languages, including Kurdish and Turkish and lots of others as well.

Q1754 **Chair:** If because waste is less than was forecast we manage to get ahead of the programme, do you have a view on whether we should give these delayed doses earlier than is now proposed, or whether we should go on to the next category of vulnerable people, the over-60s? Which would you choose?

Nadhim Zahawi: The NHS will look very closely at this. The joint committee has made the prioritisation very clear. This is the tension.

Q1755 **Chair:** I am referring to once you have got through that first wave. There has been a decision to delay the second doses of the vaccine. Once we have done the most vulnerable people, would you want to bring forward that second dose or go on to other people, whether they are the over-60s or perhaps some of the professional categories we have discussed today?

Nadhim Zahawi: Clearly, that decision would be taken with Public Health England and the CMOs.

Q1756 **Chair:** You do not have a prior view on that.



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Nadhim Zahawi: No, other than my own personal view, which is that you want to protect as many people as quickly as possible, so you want to get through the nine categories and then move towards teachers, whom the Prime Minister wants to prioritise, police officers and shop workers as well.

Q1757 **Chair:** That suggests that you include more people rather than going back.

Nadhim Zahawi: But you will start second dosing in March anyway because it is up to 12 weeks for the second dose.

Q1758 **Chair:** But you will keep it within March rather than perhaps bring it forward to February.

Nadhim Zahawi: Correct.

Q1759 **Zarah Sultana:** My first question is about prisons. Prisons, as well as hospitals, nursing homes and schools, are high-risk settings for transmission. There would be considerable challenges if there was an outbreak in this setting. Vaccinating detainees is both good for public health and is a humane approach to a completely disfranchised population. Have the Government considered prioritising vaccinating detainees as well as those who work in prisons?

Nadhim Zahawi: Yes, if they fall into the most vulnerable categories. That is exactly what we are doing to make sure the detained estate is also protected.

Q1760 **Zarah Sultana:** You are not looking at particular settings—in this instance, prisons—but age and vulnerabilities.

Nadhim Zahawi: The Joint Committee on Vaccination and Immunisation has looked at different cohorts and groups, including BAME. It is age that is the determinant of mortality, and at the moment we are in a race against death. We have to try to protect as many of the vulnerable from death as quickly as possible. Of course, once we have gone through the top nine categories, representing 99% of mortality, we can start looking at those who might through their work come into much greater contact with the virus—for example, teachers, policemen and women, shop workers and others.

Q1761 **Zarah Sultana:** The virus does not discriminate on the basis of immigration status and whether people were born here, or have fled war and have sought refuge in the UK. Have the Government made sure that people who are undocumented and have precarious immigration status are considered after the top nine categories, or even within those, making sure that people who are on the fringes of society and very marginalised are being thought of?

Nadhim Zahawi: That is a very good question. You are absolutely right. We are working very closely with local government on people who fall into the top four categories between now and mid-February and then the



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top nine categories, whatever their background, especially those who are really vulnerable. You mentioned some of those people in your question, but they include the homeless as well. We are looking very closely at this with Secretary of State Jenrick and his team and local government, because the metro Mayors and all local government leaders have a role to play. They know exactly where those hard-to-reach groups are. We have to make sure we get to them and protect them as quickly as possible.

Q1762 Zarah Sultana: I want to touch on people who are not registered with a GP—they include homeless people—and the growing use of online GP services. What specific plans have the Government made to make sure that people who are not registered with a local GP physically are not left behind?

Nadhim Zahawi: The best way of reaching those people is not only through local government, which I think is very effective—local government is doing a tremendous job and I thank it for everything it is doing on the vaccination programme—but through charities and the third sector, which really know where the most vulnerable people are. We have a big focus on making sure they also are engaged with us so we reach those hard-to-reach groups. Some councils have done a tremendous job. I think of Somerset and the Traveller community. We want to learn from that and see how we can spread it to the rest of the country.

Q1763 Zarah Sultana: My final question is about 24-hour vaccine centres. There seems to be a lot of support for that on my social media. I am wondering whether the Government will commit to those and how they will make sure that that does not affect the supply to the hospital hubs, local GP surgeries and primary care networks.

Nadhim Zahawi: Forgive me. Could you repeat the first half of your question?

Q1764 Zarah Sultana: I refer to the 24-hour vaccine centres where people want to go, for example, at 3 am to get a jab. Will the Government commit to that? Are the Government looking at it? Will we see it rolled out in the next few weeks to reach the target of 2 million a week?

Nadhim Zahawi: We will absolutely look at all of the ways we can expand the vaccination programme. The challenge, on which I think the Committee now has a very clear view, is that we are targeting the most vulnerable and the hardest to reach. It is much easier to open it up and say anyone can come and you can fill the centres very quickly 24/7 and get the volume, but then you are not really targeting those at highest risk of death. That is the challenge.

At this stage it is much better to be forensic and use the primary care networks and GPs. To go back to your earlier question around people who are unregistered, we have amended their contract so they can vaccinate anybody. They do not have to be registered with them to allow us to



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reach the hard-to-reach groups that you are quite rightly concerned about.

Q1765 **Chair:** Zarah asked about people who registered with the NHS online GP service rather than with a local practitioner. How do they get contacted if they are in one of the categories for vaccination?

Nadhim Zahawi: Every person who has registered, whether online or physically, will be contacted. Those who have not registered do not need to do so. As I have just said, we have amended the contract so that a GP can vaccinate anyone. Therefore, the national vaccination and immunisation system, the single repository that has all the data, is then able to register them, but GPs themselves, online or otherwise, can reach out to people to say, "Please come forward for your vaccination." As I have said, we have amended the contract so they can vaccinate anyone, even if they are not registered.

Q1766 **Chair:** They will be contacted even if they do not have a physical GP in a particular area.

Nadhim Zahawi: Yes.

Q1767 **Aaron Bell:** Minister, thank you for your time today and for the assistance you have given me and other colleagues in resolving local issues on vaccine supply over the past couple of weeks.

To go back to the concept of a rate-limiting factor, as the Chair said earlier, this is not a criticism; in any process there is a rate-limiting factor. The Secretary of State said on the "Today" programme this morning that supply of the vaccine was the rate-limiting factor. Do you agree that is the case at present? I accept what you said previously about the cold chain.

Nadhim Zahawi: That has been very much the case. Anyone who has worked in manufacturing will tell you that. As someone who has read chemical engineering, I can tell you that it always starts as a challenging process and then it gets smoother and steadier as you begin to iron out any issues, whether it be batch testing or any of the other quality controls that you need to have in place. The worst thing we can do with a national vaccination programme, which is the largest in the history of this country, is to make a bad start with the campaign, so it is both safety and the speed at which we then deploy it. I absolutely believe and have seen the ability of the NHS to deploy at volume rapidly.

I want to highlight again, because it is really important, that the challenge is the tension of focusing on the most vulnerable and getting to them. It is much easier just to open the doors and let everybody come through and keep jabbing, but then you are missing those who are at highest risk of death from the virus.

Q1768 **Aaron Bell:** That is understood. Having seen the operation in Staffordshire, clearly it has the capacity to deliver double what it is



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currently getting in supply, so on a local basis—I accept it might not be the case everywhere in the country—it is supply that is the constraint. You have been reluctant to give us any line of sight as to delivery schedules. You suggested we could do the maths ourselves. I did the maths. We need to get another 12 million people vaccinated in a little over four weeks, as I am sure you know. Simple maths suggests that could be 1.5 million next week, 2.5 million, 3.5 million and 4.5 million for the next four weeks. You were reluctant to give us the exact numbers, but is that the kind of ramp-up you are expecting?

Nadhim Zahawi: Very much so. By the end of the month the NHS will be able to deploy 2 million a week and then we keep going.

Q1769 **Aaron Bell:** It will have to be above 2 million.

Nadhim Zahawi: Of course.

Q1770 **Aaron Bell:** In the first two weeks of February it will have to be above 2 million.

Nadhim Zahawi: Of course. The nation will be able to see it because we are publishing data daily.

Q1771 **Aaron Bell:** For the nation's benefit now, because people want to know what is going to happen, we are expecting it to be well over 2 million in February, but that is implicit from the mathematics that you suggested we carry out.

Nadhim Zahawi: Yes, with the single caveat as a reminder that your number, 12 million, is for the United Kingdom. My remit is NHS England. NHS Scotland, Wales and Northern Ireland are matters for the devolved Administrations.

Q1772 **Aaron Bell:** That is understood.

My next question is related to what the Chair asked about the second doses. If an area, county or authority has completed down to priority group 4, will it be able to move on to groups 5 and 6, or are we so committed to the groups 1 and 4 deadline that it will stop getting supplies until every part of the country has done groups 1 to 4?

Nadhim Zahawi: We come back to the balancing of supply and those most vulnerable who need to be vaccinated. We have to make that decision. I hope that by mid-February the whole country has moved at the same pace, which is what the NHS is trying to do right now. Pfizer was more difficult to handle and therefore there were gaps geographically—primary care networks in some areas were more open to deploying Pfizer than others. That got better in days and weeks. It got even better with AstraZeneca because it is easier to handle, so hopefully in the next days and weeks you will see people catching up rapidly and there will be no reason to say that we need different priorities for different regions. We want every region to have the same priority. That is the great challenge for us.



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Q1773 **Aaron Bell:** That is understood, but inevitably some regions will get a little bit ahead at one time or another; they will not be expected to stop, even mid-batch. If they have 300 people left in category 4, presumably they can use the rest of their batch to move on to category 5, and you would expect them to do that.

Nadhim Zahawi: Absolutely, but remember you have to balance your supplies coming through. Ultimately, it is far more important for the whole of the country to protect all four categories by mid-February, because that is the way we get mortality down and protect the NHS.

Q1774 **Aaron Bell:** But there is still significant mortality in group 5, so we need to get on to it.

Nadhim Zahawi: Of course.

Q1775 **Aaron Bell:** Finally, perhaps I could ask about prioritisation in the second phase. We asked Professor Lim and Dr Ramsay about this in our first session, which you may not have seen. There have been lots of discussions and ideas about prioritising teachers, prison officers, bus drivers and those who come into contact with lots of people. Is it your view that that is a decision for the JCVI, or is it also intrinsically a political decision, and would you or the Secretary of State, even the Prime Minister, want to intervene in that decision to make those points to the JCVI?

Nadhim Zahawi: I think it is only right and wise to listen to the JCVI because it will look at this in great detail. The reason it has given us the priority list—the nine categories—is that the thing you want to do is cut mortality and the number of people dying from the virus.

At the moment we do not know what impact the vaccines have on transmission. I am sure you have delved into that in your inquiry session. We know that they protect the individual in terms of immunisation and severe illness in the weeks and months to come. I am going to quote the deputy chief medical officer, Jonathan Van-Tam: “Ask me that question in a few weeks or months’ time and I will be able to answer you,” but the JCVI is best placed to look at this in considering where to go next.

My instinct is to say, rightly so, that those who are most likely to come into contact with a viral load—teachers, shop workers and policemen and women—would be at highest risk of getting the virus and they are the ones on which we should focus, but I would be very much guided by the JCVI.

Q1776 **Aaron Bell:** The working assumption is that it will reduce transmissibility. Therefore, when we have got to a stage where basically the population we are immunising is not at risk of dying, transmission becomes the next most important thing, does it not?

Nadhim Zahawi: I think you have hit the nail on the head.

Q1777 **Katherine Fletcher:** Minister, it is a hell of a job. Thank you very much



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for everything you are doing. As Aaron says, the message is that you are doing this practically 24/7.

I want to pick up two topics with you. I start with vaccine passports. I am confident that when you, NHS England and all the efforts in the UK are successful it is very likely that the UK will be a distance ahead of the world. While I have heard Ministers be very clear that we do not need to use vaccine passports in the UK—I would be grateful if you confirmed that—what plans or negotiations are we having about starting to unpick global travel? Are there any plans to start having vaccine certification to enable that to restart in the coming months?

Nadhim Zahawi: First, I want to confirm to this Committee that we have absolutely no plans for a vaccine passport. We do not know what the impact of the vaccines is on transmission. We have just discussed it with Mr Bell.

Secondly, it would be discriminatory. There will be those who for a number of reasons may not be able to be vaccinated or choose not to be. As the Prime Minister said, we do not do these things in this way in this country; it does not speak to our values of freedom, and I think that resonates with many people. That is an important message to send out to the whole country.

It is much more important to say to people, "It is the right thing for your safety and protection in terms of both immunity and severe infection to be vaccinated. It is the right thing for your community as well, because if we can protect communities it is a good thing to do." I think it is about sharing information and persuading. Information is our ally in this endeavour. Therefore, we will continue to do that.

We will make sure we continue to engage internationally. We are one of the largest contributors to the COVAX programme. I would remind this Committee that no one is safe until the whole world is safe, hence the reason Boris Johnson has taken such a leadership position. I think we are up to £1.3 billion between COVAX and the other efforts going on around the world in making sure that low and middle-income countries get the benefits of a vaccine.

I want to pay tribute to Oxford and AstraZeneca for offering to the world the vaccine at cost while we are in a pandemic. I thank them and the whole scientific community in the UK for that.

Q1778 **Katherine Fletcher:** I wholeheartedly agree. We are all on the same planet together. To press the point, are you aware of any conversations being had about starting to open up international travel in a few months' time, or is that yet to come?

Nadhim Zahawi: The Transport Secretary speaks to his counterparts all the time and makes decisions based on the evidence, hence why he quite rightly decided that the best way to safeguard the UK population was to make sure we had in place a 10-day quarantine system. We have seen



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what has happened in other parts of the world and now require a test three days before coming to the United Kingdom from around the world. That is the right thing to do. He continues to have that engagement.

Suffice it to say this country is a great trading nation; it is an island nation. We want to see air travel opened as safely and quickly as possible, so he continues that engagement around the world.

Q1779 Katherine Fletcher: That is an extremely good segue into the second question I want to raise with you. Today, we have seen worrying reports about a new and potentially virulent strain of Covid identified in Brazil. I would be grateful if you updated us on any planning or insight you have on that.

My question is quite broad. To what extent are you already planning for the next set of vaccines? We are hearing that at some point this is going to mutate such that vaccination in its current shape and form with a lock and key may not be quite as effective. To what extent are you already working with the companies to make sure we have the next one, the next one and the next one as we go through the equation of biology plus time?

Nadhim Zahawi: That is a great question. One of the things the Vaccine Taskforce did was not only identify the candidates that it felt had the best chance of success to get a vaccine but begin to think through what happens next and the next chapter to the story. Viruses mutate. As Sir Patrick Vallance, chief scientific officer, said, the more we vaccinate, the cleverer the virus becomes and it will mutate again. We have to make sure that both the science around the next iteration of vaccines and manufacture is in place. We have made an investment in both.

You have the vaccine centre in Oxford. There has been a £93 million investment in that to bring it forward so it can be ready to manufacture this year rather than on a timetable that was further out. We have gone further with the cell and gene therapy manufacturing catapult. We have put over £100 million into that CGT catapult, if I can describe it as that.

Further, we are making an investment in Stirling, Scotland, and the Valneva vaccine for it to be ready. That is thinking through not only this bit of the challenge but the next iteration, so we can manufacture vaccine at speed.

In addition, we now have the new messenger RNA vaccine technology, which has been proven to be effective. I pay tribute to Pfizer because it is engaging with us on this. We want to be able to produce the next iteration, to manufacture it. We want to be ready if the virus does mutate to a level where we need the next iteration of the vaccine.

Q1780 Katherine Fletcher: That is a remarkable set of foresights. As to timing, we have new manufacturing capability in plan and being stood up; we have a live virus at the moment that is mutating. How long do we have? If a virus mutates and takes out the current three regulated vaccines, in that it makes them ineffective, how long do we have before the new



planning and capability can kick in? What is the window of concern?

Nadhim Zahawi: I quote Sir Patrick Vallance that there is no evidence to suggest that the current vaccines will not be effective against the current mutations we have. Scientists at Porton Down are looking at the Kent variant, which has been so infectious, and the South African variant, but you are right; we have to be ready for the “what if” question. What happens if there is a variant on which the vaccines do not work as well? We have to be ready for that.

The Vaccine Taskforce team thinks we can be ready within 30 to 40 days; we would have the next vaccine being manufactured. We have invested not just in infrastructure but in thinking through how we would do that. That work is ongoing with the Vaccine Taskforce. The reason you can do it much quicker is that, in the same way as you can with other vaccines, it is almost a variation on the messenger RNA and the approval process is greatly shortened.

Katherine Fletcher: That is very welcome news. Thank you very much for your time and all your hard work.

Q1781 **Chair:** Antonia Williams, you have been very patient while the Minister has had the spotlight on him during this session. We are very grateful to you and your colleagues in the Department of Health and Social Care for all your work. Reflecting on where we have got to so far, the essence of our inquiry is to learn lessons on the way so we can continuously improve. In terms of roll-out, what is going well, and what are the areas that you think we need to tweak to get optimal performance?

Antonia Williams: It has been very interesting to hear the discussion today. This is being done at huge pace and scale with a real need to be agile. Some of the earlier evidence we have talked about is that we do not yet know about the vaccine and exactly what impact it will have, and we have to respond to that information along the way.

We have talked about the delivery models. The NHS is at the heart of this, working in partnership with the military and local authorities. I think that is absolutely right. We know a lot about vaccine hesitancy. A major concern for us in this roll-out is about getting as many people as possible to take up the vaccine. We know that GPs are some of the most trusted individuals in communities, along with faith and other community leaders. Putting them at the heart of reaching vulnerable groups and doing that outreach is really important, but, as the Minister has said, there is more we want to do about consolidating those partnerships at local level with local authorities, directors of public health and voluntary and community sector leaders all working together to identify people who may not have been in contact with the health system and support as many of those people as possible to bring them in for the vaccine.

We have been overwhelmed by the support and offers of help from a range of organisations and individuals. It really feels like a great national



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effort. We are pleased with how it is going. We have vaccinated over 2 million people in England alone, but there is no complacency. We have a very ambitious plan and we think it is doable. We are focused very much on mid-February and vaccinating the top four cohorts, who account for 88% of mortalities, before moving on to the roll-out.

The piece that we really need to keep very focused on with everyone's support is the consistency and simplicity of communications that are as widespread as possible and are in as many formats as possible so people understand what we are doing and where and how to get the support they need.

Q1782 **Chair:** How did you choose the target date of mid-February?

Antonia Williams: There were a number of discussions. Clearly, lots of modelling has been done, worked up from local and regional level to the national teams, to look at what is possible, what we understand and the line of sight we have on supply from Pfizer and AstraZeneca, and deploying that. The plan talked about the rate-limiting steps and deployment of supply. At the moment we are building up to get to a steady state and stable position, but that target is based on using all the supply that will have come in from Pfizer and AstraZeneca, getting those jabs into arms and how far down the cohorts that gets us.

Q1783 **Chair:** Is 15 February a readout of what is possible, or is it, if I can put it this way, a kind of motivational target chosen to galvanise people to achieve it? Is it a technical readout or something to run towards?

Antonia Williams: I think it is both. We think it is ambitious and motivational, but we also think it is doable based on all the technical work.

Nadhim Zahawi: I was going to say exactly what Antonia said. It is a piece of work that models from the local all the way through to the deployment infrastructure I described: hospitals, primary care networks, community pharmacies, large vaccination centres, and then more community pharmacies that will come online. It is deliverable but incredibly ambitious, and pushed a little bit beyond the deliverable by Boris Johnson.

Q1784 **Chair:** It is a stretch target.

Nadhim Zahawi: It is a stretch target.

Q1785 **Chair:** To pick up one of the points raised by Antonia Williams about the role of GPs as very trusted local people, there are some primary care networks—groups of GPs—that have not taken on the delivery of the vaccine. Was that expected?

Nadhim Zahawi: It certainly was for the Pfizer vaccine because of the handling issue.

Q1786 **Chair:** What about the AstraZeneca vaccine?



Nadhim Zahawi: Far fewer. The bulk of GPs in primary care networks will be absolutely vaccinating and delivering, some with community pharmacies leading. Colleagues in Parliament have made representations to me. Some GPs, now they have seen the programme operate, have come back and said, "Can we join in?" I am confident that we will have an even spread across the whole country of the vaccination programme.

I want to pick up Antonia's important reference to vaccine hesitancy. I will tell it through a story so you understand it. Nikita Kanani, director of primary care for NHS England, who also goes out to do vaccinations herself, was in a care home. After vaccinating the residents they began to vaccinate the carers. A 60-year-old BAME carer said, "The vaccine is not for me. My family doesn't take vaccines. We don't like vaccines," and so on. It took about four hours, after she had observed her colleagues being vaccinated, for her to turn around with lots of questions to Dr Kanani. By the end of the day she said, "I'll get vaccinated."

GPs are doing an incredible job. I go back to Antonia's point about that trusted voice. We are doing more and more work with healthcare practitioners and social workers who have been vaccinated and can go out and share that experience with colleagues. It is a really positive message, which I think is beginning to flow through. We see from an ONS survey that 85% of adults say they will either absolutely take the vaccine or will consider having it.

Q1787 **Chair:** That is a very instructive story. It shows that for all of the science and technology the human contact can be all important in this. On GPs and the areas where they are not rolling out the vaccine, can you make a commitment or guarantee that the residents in such areas will not be disadvantaged in having to travel further or wait longer than they otherwise would to get the vaccine?

Nadhim Zahawi: I can make that absolute commitment. The NHS and all of us are committed to make sure that no one will be more than 10 miles away from a vaccination site. In 95% of the country that is a fixed site. In the more rural areas, the 5%, we will go to them with roving teams rather than them having to travel any further than 10 miles.

Chair: Minister and Ms Williams, we are very grateful to you for your evidence today. We are very grateful for your work. This is an area in which the Committee, as you would imagine, has taken a very close interest from the outset—everything from the funding of the research, on which we pressed Ministers at times, the environment for trials, the procurement decisions that were wisely taken and now the deployment. This is an end-to-end process that requires every link in the chain to operate for it to be successful. All of us on the Committee function cross-party. We want you personally to succeed as Minister because we want our constituents to be protected, and we are very grateful for the work you are doing on this.



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Reflecting on the course of our inquiries, we do think that, in keeping with the scientific tradition, openness and transparency to allow people to be treated as adults and to understand the ups and downs of processes has served us well so far. I think the openness that the scientists have practised in front of this Committee and in public has been a notable feature of the UK, so I hope that when it comes to the figures in some of these schedules you will find the confidence perhaps to be a little more forthcoming about what is in store in the future. If we ask questions about it, it is because we have the same interest as you do in making it work. We are very grateful for your evidence today.