WHO Virtual Press Conference on the Zika virus

Speaker key:

GR	Gregory Hartl
BA	Bruce Aylward
SV	Sylvain Aldighieri
CM	Claudio Maierovitch
JS	Jamil Shahdi
MA	Marta Ortado
SH	Shin
UM	Unidentified male speakers
UF	Unidentified female speakers
JG	James Gallagher
HB	Helen Branswell
NI	Nick
BI	Bianca
LG	Lori Garrett
TM	Tom Miles
SR	Shri Rupa
JK	Jamie Keaton
CL	Claudia

GR Thank you very much for joining us today for this press conference here at WHO headquarters in Geneva. Before we get around to the introductions I just want one note for the journalists in the room. There are several members of the Brazilian mission here, just so you know that, helping with the connections with Dr Maierovitch in Brazil, who's supposed to be joining this call.

So, now to welcome our two speakers here in the room, who will both give opening remarks before we turn over to questions. First of all will be Dr Bruce Aylward, executive director and deputy director-general for OHE at headquarters, and Dr Sylvain Aldighieri from PAHO who is in charge of international health regulations and operations. We will send the exact spellings of their names and titles to you by email afterwards. It will facilitate things greatly.

So welcome and before we go to the first question, for those of you who are online, please dial 01 on your keypad in order to get into the queue to ask a question. So to the room first here, are there questions please? Can we go ahead? Jamil Shahdi.

JS Have we got a microphone, can I just…?

[Asides]

BA No, I'm just worried perhaps I… Ladies and gentlemen, Bruce Aylward. For those of you who are not part of WHO and our acronyms, OHE is outbreaks and health emergencies, is the area that I cover here.

In terms of the briefing today, as you just saw, we had a briefing of our member states during the executive board. It was hosted by the director-general. While she was moderated, the director-general spoke as well as our regional director from PAHO on the issue of the Zika virus spread and the possibility of association with microcephaly and other neurologic conditions.

Among the announcements that the director-general made was that she would be convening an emergency committee under the international health regulations on Monday next week to look at three or four key issues. First, what should, based on the evidence that we have right now about a possible association, what should be the level of international concern, what should be any recommended measures for countries in terms of the Zika virus, its management or people infected by the disease, and then finally recommendations as to actions we should be taking in terms of research and other areas, product development, related to that.

The director-general's announcement followed a review of the unfolding situation in terms of Zika virus and also of course the microcephaly situation in Brazil. The person who has been working most closely as part of WHO on that in terms of co-ordinating our work has been Sylvain, who is next to me and is our incident manager based at our regional office at PAHO in Washington and you've been on that job since May, if I remember correctly, Sylvain.

And Sylvain answered a number of the questions. Unfortunately Marcos can't be with us right now. Marcos Espinal can't be with us for a medical problem, I'm afraid. He gave the actual presentation, but Sylvain has been closely following the situation. Perhaps you'd like to make a few comments on that presentation before we take any questions. It's just recognizing, I think, most of you were there but some people either on the line or present may not have been at the briefing that we had. If there's something important that I've left out vis-à-vis details, Sylvain would be happy to try and clarify that as well. So, Sylvain.

SV I will give some, I would say, bullet points regarding the presentation given by Dr Espinal. Zika virus is a virus known since the late 40s, 50s. Until the late 2000s it was not considered as a public health threat in the regions where it was circulating or it had circulated. The introduction of the virus in the Americas and confirmed by laboratory in May 2015 was, of course, news for us, but please remember that two years previous to the Zika introduction into the Americas we had the chikungunya introduction and that chikungunya is now circulating and established in the Americas. So, we have multiple viruses transmitted by the same vector, *aedes aegypti*, circulated in the same territories and countries of the Americas: dengue with its four different serotypes, chikungunya virus, Zika virus and other altriple[?]-borne viruses.

So the dissemination, the speed of the dissemination of the Zika virus in the Americas is related to two main factors. First, the population is totally naive in terms of immunology against this virus and naiveté means that you don't have an immunity among the population against this new virus. This is the first one.

The second point is that the vector, *aedes aegypti*, is everywhere in the Americas from [the] southern United States to northern Argentina. There are few exceptions: Canada and the continental Chile. So, it means you have these two pieces of the puzzle: the immunity and the vector. So, this explains the speed of the dissemination of the virus in the American region.

Regarding the outbreak of the microcephaly in northeast Brazil and in other states of Brazil but starting with northeast Brazil, this is an event which was detected much later. There were suspicions of doctors, physicians in October and more evidence in reports with clear data of this outbreak of microcephaly in northeast Brazil and we have used during the briefing to the member states the example of the state of Pernambuco. And you have noticed this dramatic increase in 2015 of microcephaly.

Microcephaly is something which, unfortunately, happens on a regular basis. There is a baseline of microcephaly reported by the hospitals in Brazil and the detection above this result was clear in late October, November 2015. So I would stop here regarding the regional situation and give the floor back to Bruce.

BA And perhaps, ladies and gentlemen, especially if you weren't present downstairs, and to the point that Sylvain was just making on the timeline, in May the detection of Zika virus first, May 2015 in Brazil, as again Sylvain mentioned, and then in October the evidence that Zika was spreading in the region. It was in November and in fact, I think, on 17th November we issued the first alert around an increase in microcephaly in one part of Brazil, which was separate to the Zika outbreak. So we had the Zika outbreak moving and then there was this cluster of microcephaly cases.

And then very quickly thereafter – I believe it was on 9th December – we had an informal meeting of experts to really look at the microcephaly and possible aetiologies of microcephaly and I think, as many of you are now aware, there's a number of infectious diseases that can be associated with congenital malformations that are associated with the brain. There are also a number of possible chemicals or other exposures, so at the beginning of December, when we looked at this the first question was, well, have all of these other things been ruled out, and as well, what is the possible evidence of an association with Zika?

So, there's been – and I'm not sure if you mentioned it, Sylvain – sort of four major types of studies ongoing to try and get an understanding of this and the first is the case investigations, investigating the cases themselves, the virologic investigations as well as the exposure investigations of cases. The second has been setting up case control studies because remember, just if you see something in a case doesn't mean that's causative if it's also in your controls as well so then you need to set up your case control studies to try and understand, is it due to the exposure that you think may be the cause?

More compelling are data that would come from cohort studies so there've been cohort studies set up in Brazil, as you heard from Dr Claudio on the call earlier, and also now set up in Colombia, if I remember, going forward there's a cohort study being put in place. And I should have mentioned, after the case investigations there's the ecologic study, you can call it, where you're looking at a temporal – what is the relationship between time and the event that you're looking at and also the geography. So there's all of this work going on and even today, as people heard in the briefing, there is still a lot of uncertainty as to this association, as to – well, there clearly is association temporally and geographically but there are a lot of places where we haven't seen this as well – and in the number of the people who're affected. It's not possible to demonstrate infection so there're still a lot of questions.

A lot of questions as well: are there other co-factors that may be responsible for this? You've heard in the discussion downstairs people ask, could it be co-infection with other circulating viruses, previous exposure to others? These are all unanswered questions at this point but the director-general wants to convene, as I mentioned, an emergency committee on Monday 1st February under the IHR to look at the evidence that is available and, given that evidence, what can be recommended in terms of measures with respect to the control of both the spread of the virus and possibly any association with microcephaly.

So that's where we stand today. I think that captures the main points that we went through downstairs. Apologies if I've overlooked something.

GR Dr Aylward, thank you very much. And now just before we go over to questions I would like to remind those listening and in the room that we have online, in case you have questions for Brazil, Dr Claudio Maierovitch, who's the director of communicable diseases surveillance at the Ministry of Health in Brazil. So now after the introductions, thank you very…

BA Claudio, can you speak so we know whether or not you can be heard?

GR Claudio, hello?

BA I'd like to check that, to know whether or not I'm going to have to answer Claudio's questions and whether I have to listen more carefully.

CM Hello.

BA Oh, great, Claudio, you're there? Super.

CM Yes, okay, I'm here. I listened to your questions and all your comments.

BA Okay, great, I just wanted to make sure we had a connection. Sorry, Gregory.

GR Thank you. So over to Jamil Shahdi for the first question.

JS Bruce, Jamil from Stado Sao Paulo in Brazil. We all know that when a meeting like the one on Monday is called, many times some of the options are already on the table, that it's not that on Monday you will basically discuss what are the options. But could you tell us what are the possibilities that could be taken, for example on Monday, what is the range of measures that you can actually implement?

And to the gentleman from PAHO, amongst the journalists we have a bit of a discussion whether the three to four million cases that your colleague mentioned today — is that for the Americas, is that for the world, is that for Brazil or is that for Pernambuco? Thank you.

MA Yes, Marta Ortado. I know you said that one of the questions is not answer – is the link between dengue, chikungunya and the possibility of co-infection but could you explain what could that mean, which, what effect could have on the possibility of causing microcephaly, the fact of being two or three of them linked or…?

[Inaudible asides]

SH Thank you. For the sake of the camera I'm going to stand up. Shin from CCTV, the national television of China. I saw on the map that the potentially risky areas also include parts of China so right now are there outbreaks in Asia, including in China? How big a risk is China facing? We know that the vehicle is *aegypti* mosquitoes. Are they found in China as well and if not, can this disease spread into China by some other means? Thank you.

GR Thank you very much. We'll do another round in just a second. To Doctors Aylward and Aldighieri.

BA Okay, so thanks. First, Jamil, to your question about the meeting of the emergency committee on Monday; I think most of the journalists here in Geneva are getting familiar with the IHR mechanism so the emergency committee has two responsibilities. The first is, does something constitute what's called a public health emergency of international concern? And they will look at a number of criteria to determine that: primarily, whether it's an extraordinary event, whether there's risk of international spread, similarly whether there's a need for co-ordinated international action to actually address this. So, they will look closely at all three of those.

The second thing that the emergency committee will do is if something does constitute a PHEIC (public health emergency of international concern) it will provide views and perspectives to the director-general on measures that may be taken to reduce the risk of international spread.

But the other thing that it will do – and this is an important consideration of the director-general in calling this emergency committee – is to ensure that there are no inappropriate measures undertaken by member states in terms of travel or trade. And that's a really important thing to bear in mind right now because that's a major consideration of the director-general in calling this particular emergency committee.

In the face of so much uncertainty around this, clearly one wants to exhibit an abundance of caution with respect to the advice that you're giving to especially women, women who can potentially become pregnant or women who are pregnant. But at the same time, you want to ensure that you are not putting in place inappropriate measures or advice and this is one of the key reasons that the director-general is calling the group together.

In terms of the kind of recommendations, clearly, as Sylvain mentioned, you know, there're measures around surveillance and now we're looking at surveillance in terms of, you know, where is the vector, where is the virus and then where – also surveillance in terms of possible neurologic complications, microcephaly, possible Guillain-Barre syndrome, so there're recommendations. We could have recommendations in that area, could be recommendations in terms of vector control, in terms of personal measures individuals may take.

And then as well – and in particular the DG emphasised this – she's looking for advice on the research agenda and there're really two agendas there. One is enhancing our knowledge of Zika and of a possible association. The second is really looking at an R&D agenda around ensuring we have the diagnostics and other counter-measures that might be appropriate to help reduce spread or consequences of this virus.

So, perhaps I'll address the questions and then, Sylvain, you'll add to the specific points. Is that okay? So, on the second issue that you asked about the possibility of co-infection, you know, this comes back to the situation as, I think, Sylvain, you commented on in the briefing downstairs. You know, we don't have an answer for what actually is going on in terms of the microcephaly so what we're trying to look at – well, what has happened in this area and possibly in French Polynesia where retrospectively it looks like there may have been a small number of microcephalic children after an outbreak there.

And in both places there have been sequential outbreaks of dengue, chikungunya or – and then Zika and so the question is, is there a direct mechanism or an indirect mechanism associated with the antibodies that are generated as a result of one infection; so the mechanism is not at all clear.

And usually what you're looking for is evidence of whether there's a direct infection so right now there is some evidence that there has been infection by Zika virus of some of the children that were affected. There is not strong evidence – and by the way, that was negative in some of the children with microcephaly as will, right. Remember, there's a lot of uncertainty here but at the same time there wasn't evidence, if I remember correctly, of direct dengue or substantive dengue infection or chikungunya but best for Sylvain to speak to those specifics.

And then with respect to China and Asia, at this moment we don't have any official notification of Zika virus in that area. There has been an importation of, if I remember correctly, into a European country by a traveller who'd come from Thailand so there was a possibility that there may have been exposure there; again not proven, not clear. So this is currently being investigated.

Now, in terms of – and again one of the points made in the briefing – you know, we really have four groups of countries. We've got countries where we've got the vector, where we've got Zika and where we've also seen neurologic events. We've got countries where we've seen the – such as Colombia and others – where we have the vector and then we've had Zika but we've not yet seen neurologic events and so there's a different – there's a set of work going on there – others where we have the vector and the still others where we don't have the vector at all.

And so it is not clear yet whether or not the virus will be found in all places where the vector is. We, as Dr Aspinall said in his presentation, we would work as though that is a possibility and ensure people are aware and again, remember many of the measures that are being recommended here make good sense in terms of dengue, in terms of chikungunya, in terms of other vector-borne diseases so really it's a reaffirmation of a lot of those measures, which is good public health practice anyway.

I'm going to suggest, Sylvain – I don't know if you have points you wanted to add to some of that, specific to you.

SV Yes, some other points. I would like to highlight what Bruce said and what I said during the briefing to the member states. We must use dengue dynamics as our reference point. Where you had a dengue outbreak during the previous years and that the mosquito, aedes aegypti, is still present, you have a risk of Zika transmission. This is a very important point.

Regarding the question that Bruce answered, co-infection or circulation, the importance is that, to better characterise the sequence of this different events, we are talking about a human environment of 500 million people where on a permanent basis, depending on the area – but people are moving, mosquitoes are moving and virus trends are moving – you have circulation of dengue 1, which is different than dengue 2, which is different from dengue 3, which is different than dengue 4, chikungunya, Zika and other arboviruses of the same family, including yellow fever.

So this is, our gap in knowledge is what does it mean, this, with the new viruses introduced into our region? Of course my comments when I say 500 million apply only to the Americas. I'm talking between southern United States to northern Argentina in terms of geography.

Regarding the challenges of the Zika surveillance, we have challenges in terms of Zika surveillance because we have good laboratory platform to confirm during the acute phase when the patient has fever and rash and conjunctivitis at some moment. We don't have good laboratory tools to confirm what happened the previous month because this Zika virus has cross-reactions in laboratory work with again dengue 1, dengue 2, dengue 3, dengue 4 and yellow fever and West Nile. This is another virus circulating in the American region from the same family. This is one challenge, the laboratory platform, confirming what happened month ago.

The second challenge is that most of the cases don't – the patient doesn't present many clinical signs. 75% of the patients infected by the virus will not develop any clear

symptomatology or not enough to go to a clinic and see a doctor. So it means that there is a silent circulation of the virus that the established surveillance systems are not able to characterise on routine so it needs more work.

And finally regarding the figures which were commented on at some moment during the last hour, also use the concept and situation of dengue. There were more than two million cases of dengue reported in the Americas last year and dengue is circulated with a lot of intensity since the 80s. We have a new virus, Zika is a new virus introduced. There is no immunity so we would expect huge numbers of infections; some detected, some not detected because of the challenges that I previously explained.

So at the end of 2015 the Minister of Health of Brazil published in his bulletin an estimation of the cases, between 500,000 cases and 1.5 million cases in Brazil in 2015. These were the figures which were available. Building on these figures, using the dengue example, some modellers, some modelling protocols could come up with other figure but definitely the Zika virus in the American region is circulating with very high intensity at this moment.

[Inaudible asides]

SV I'm always speaking of the Americas. I'm sorry. As I told you, we have big gaps in terms of confirmation of the real situation. These are estimates, these are mathematical estimations, this is not data coming from the routine surveillance.

UM But how are they anyway, how many do the estimates show for all of the Americas?

SV We don't have any data at this moment to build on regarding Zika.

UF Your colleague said the figure so we want to know if you confirm it or not [inaudible].

SV If you start with a total number in the Americas of more than two million cases transmitted, reported of dengue per year, with a virus which is already circulating for years, you can come up with a figure of between three and four million cases of Zika in the Americas. I'm sorry if I was not clear at the moment of starting my statement.

GR Okay, thank you. Now we're going to move to some calls from the people online; to James Gallagher, please, from BBC, if you can go ahead.

JG Hello, James Gallagher from the BBC. Sorry, I still want to stick on this three to four million figure because I'm just looking at my TV screens here and it keeps up flashing up on there. So over what kind of timeframe are we talking about this three to four million figure and is it number of people infected or is it number of people who will have Zika virus disease?

GR Second question from online and then we'll get those two answered, please. Helen Branswell, could you go ahead, please? Second question from online.

HB Okay, thank you. Can you hear me? Can you hear me?

GR Yes, we can hear you. Go ahead, Helen, please.

HB Okay, thank you. I know you can't prejudge what the emergency committee will do but I'm wondering if, Bruce, you could anticipate a situation in which WHO would advise women not to get pregnant, as have several countries in the Americas up until now. And if WHO were to take action like that does it have a role to play in ensuring that women in countries where Zika is spreading have ready access to contraceptives?

GR Okay, thank you very much. Doctors Aylward and Aldighieri, go ahead, please.

BA Well, I think the specific question on the number of infected – would you like to speak to that, over what timeframe?

SV First there was a question; are we talking about a person developing the disease or infections? So it would be Zika infections, including people not reporting any clinical sign.

And regarding the timeframe for the three to five million in the region, I would say over a period of 12 months. Again we use the data from dengue which is based on the 12-month period and we expand to another context.

GR Excuse me one second before we go on. You said three to five million. Or is it three to four?

SV Three to four.

GR Three to four million. Thank you. Dr Aylward.

BA Reminding people again, there is a lot of uncertainty about some of the real basics about this disease, even the attack rate, you know, the kind of basic figure, as Sylvain was highlighting, that you would use to try and calculate what kind of a population do you think will be exposed over a particular timeframe; you're looking at attack rates and various other pieces of information, around which we have huge uncertainty right now.

So what PAHO has tried to do is to try to estimate, well, given this possible attack rate, given what we've seen on dengue, what could that look like in terms of numbers. So I think we just have to be clear on some of the uncertainties because these numbers are going to change over time as we get a better fix on what the, some of the underlying characteristics of the virus and its spread.

I think there was another question, Helen, on the issue about measures that should be taken by women with respect to getting pregnant. Well, WHO will – it has not and will not – in the near term, we don't anticipate issuing advice in that regard. The advice that we give is on how women who are seeking to get pregnant or are pregnant can prevent them getting infected or getting exposed to the virus. Decisions about pregnancy; these are personal decisions that people will make based on a whole range of issues and I think that at this point our advice would be again in ensuring an abundance of caution but they should

anyway not be getting bitten by mosquitoes, especially in areas where you have a risk of dengue and other vector-borne diseases.

So that will continue to be our line, I would anticipate, and I can't anticipate, obviously, what an emergency committee is going to recommend but at this point that is certainly the position of WHO.

I think there was a carry-on question about the availability of contraceptive devices, etc. Folks, we're getting a long way from Zika virus and a long way from my areas of expertise right now, but I'm sure that information's readily available online and elsewhere.

GR Thank you very much. We'll go to the room. Nick, Cummings, Bruce, New York Times.

NI Thanks. Only a few day ago the Zika virus was not even an issue that was being discussed publicly by Geneva, by WHO Geneva and now we're days away from having an expert committee. I wonder if you could just unpack a little bit what has happened in a matter of days to bring this from something that was far away and that was a regional event to being an expert committee event.

After the Ebola crisis there was a recommendation that WHO set up a central emergency response capacity. Is that capacity involved in dealing with this particular event? Thank you.

GR I think we'll take a second question.

[Asides]

BI Okay, I'm Bianca Watsef[?] from Global News, Brazil. During the presentation Marcos Espinal said that a study's going to be published suggesting there were correlations between Zika and microcephaly but Margaret Chan said that the relation's not yet established. Can we say that there is a relation or not? It's not clear, I think. Thanks.

GR Okay, thank you very much. Doctors Aylward and Aldighieri, please.

BA Okay, maybe first just deal with the second question because we can quickly clarify that. What we're – the study that he's talking about – actually, Sylvain, maybe you should speak to that because it's an ecologic study that you're closer to. But what you can do with that; you can't show causation and it's really important that we differentiate association, meaning that two things can be seen together in time and place possibly, versus a causation, meaning one thing caused the other.

And an ecologic study is usually going to be one of those studies you do to look for associations. Then you do additional studies to say, is that association actually a causation? There've been lots of associations that have not necessarily proved causation. For example – something really stupid – you know, I drive a Subaru, a blue one and is that because I like it, is that because of it? No, it's because my wife actually liked the blue one that I actually own a blue Subaru.

No, but it's really important to understand the difference; associations and causations and what that study will do is look at that issue. Did you want to speak to that issue? And then I'll come back to the original…

SV No.

BA Okay. On the issue, Nick, that you raised about the calling of the emergency committee and the public discussion around Zika virus, in fact, as Sylvain highlighted, they have gone out on, in PAHO on the spread of Zika virus since last May. We've gone out publicly through our disease outbreak news on the spread of Zika virus in the Americas. We've had your link-up since then but we've gone out since September, October, if I remember correctly, on that, and then went out publicly as well about the phenomenon that was occurring in Brazil vis a vis microcephaly in November, if I remember correctly – in November.

So there has been a public release of this information. As I mentioned at the beginning, what's changing now, right now the public attention to this and the risk of inappropriate measures around travel, trade, etc, is one of the key reasons that you want to bring in an emergency committee to look at this and ensure those measures are correct.

Now, that is different than expert committees that you're going to use to look at the research around this, etc, and as I mentioned, we had a first consultation on that back in December, which helped clarify what that research agenda might look like. And Sylvain has been at the centre of the work in PAHO on that. We're together having a meeting in the beginning of March that'll look at that research vis a vis the issue, Bianca, you raised around causation and the studies ongoing there as well as other studies, and at that point – and at the same time there'll be another research and development agenda looking at the diagnostics, etc, that were discussed earlier.

Nick also raised the question about WHO putting in a central emergency response capacity and is that involved; and yes, you know, probably the most visible piece of that is me. As you know, I took over the Ebola response last year and have been in charge of now working with the director-general and the RDs, the development of a new emergency programme at WHO. And what we've done is repurposing some of our Ebola capacity, bringing in some additional capacity to have an incident management capacity here working with the PAHO incident management capacities, again to ensure that we can provide the best possible information to not only the public but also the member states involved and affected as well as the research communities, etc., and further tighten up that whole agenda of work around surveillance, around vector control, personal protection and measures there as well as the research agendas.

GR Thank you very much. Dr Aldighieri, did you have anything you wanted to add or are you okay? Thank you. Okay, we'll take… Next question is from online and we believe it is Laurie Garrett, although we don't have the spelling of the name correct. Could you identify yourself, please?

LG Yes, this is Laurie Garrett. Can you hear me?

GR Yes, thank you. Go ahead, please, Lori.

LG Okay. A quick question; I know Theo Cruz has experimentally infected culex mosquitoes. There is some evidence from the literature, 1950s and 60s in Africa, of culex infection. West Nile virus took off in 1999 and is now endemic in the United States via culex. Is it possible that the sort of explosive spread seen in the Americas is because it is also being spread via a second viral, I mean mosquito vector, and/or a sylvatic cycle?

GR Okay, thank you, and then we'll go – Tom Miles, Reuters, and then we'll go down there. Oh, sorry, okay. We'll take Mr Tom and then…

TM Tom Miles from Reuters. I'd like to ask about the timeline of what you see in front of us, how quickly you think you might be able to establish or rule out a link with microcephaly and, you know, how quickly we might be able to see something diagnostic or vaccine or some sort of vector control solution, and are we talking about a kind of nine-month time bomb hit given that, you know, this is about pregnancy? If you've got Zika now we're going to see microcephaly in nine months' time.

And also to follow up on my colleague's question about China, all the focus at the moment seems to be on the Americas but I just wonder, given the prevalence of dengue around the world, including in China, you know, should we be worried about an outbreak of microcephaly across the equatorial belt? Thanks.

GR We'll take two more questions and then we'll throw it open.

SR Shri Rupa from the Press Trust of India. I think Tom covered part of my… It's working, yes? I think Tom covered part of my question but I'll still go ahead. Is it fair to say that countries where dengue and chikungunya are endemic, they are more susceptible to the Zika virus? And this I mean in the context of outside of the Americas.

And secondly, how do you anticipate the travel of the virus outside of Americas?

GR Do these three first and then if we have time we'll do Jamie Keaton and maybe one other. Go ahead, please. Doctors Aylward, Aldighieri.

BA Questions and I apologize if we don't answer them all because I'm not sure I got them all. I think Lori's question about possibility of explosive spread due to another vector being involved; do you want to speak to that? Why don't you take the questions you want to and then I'll come in on the others.

SV Yes. The question was regarding the possibility of a sylvatic cycle so a sylvatic cycle; it means non-human primates – I mean monkeys – working as a reservoir of the virus and transmit it with, by other vectors, as in the forest, as it's happened for yellow fever and jungle yellow fever, to focus you on what is the question.

At this moment we don't have any evidence or research in place for looking for this option. Saying that, the high indices of aedes aegypti in the American regions from southern US to northern Argentina are quite enough to sustain the transmission of the Zika virus.

Do you want to tackle maybe the timeline? Because we are…

BA I think you were going to suggest Claudio might like to speak to that question.

GR If Claudio, Dr Maierovitch in Brazil, has anything additional that he might be able to add in terms of these – sorry?

BA Well, in terms of… I think, Claudio, the question was, could the rapid spread be due to another vector or other factors? And you've been closest to the epidemiologic investigations there on the ground. Perhaps you might want to comment on whether there's any evidence of another vector involved or other factors such as a sylvatic factor, as was mentioned by Laurie.

CM [Inaudible] much about other vectors. We have seen some entomologies in the field up to now and we didn't find anything. I think most of things about Zika virus are not known yet and that's a big question for us until now. The same vector, *aedes aegypti*, is transmitting Zika virus. We have some groups that have the *aegypti* cells and are having a good time when they perform colonisation of these cells with Zika virus. That's what we know until now.

BA Thank you very much, Claudio. And maybe just on that point, it would be a mistake to say that the current, what we do know in terms of the ids, as Sylvain mentioned, and the ability for it to spread explains what we're seeing right now. There is not, we're not seeing kind of a pattern of spread that suggests there's something else involved. I think that would be the first point, the only point I would want to add in terms of that question.

Tom, you asked a couple of questions. I'm not sure I got them all right but in terms of the vector control, diagnostics, etc., so what's happening right now is Mary Paul's team is working with the global research community, industry, public sector, etc, to do a scoping and understand what's out there in terms of diagnostics, possible antiviral or vaccine work – and there is work, as people heard during the briefing, from CDC but there's also work going on from many, many other groups, including industry, on diagnostics, in particular with respect to Zika.

So we have scoping of that going on right now that'll pull together all of that evidence, much like we did on Ebola, really look at, is there merit for an accelerated product development agenda around this.

Now, that said, on the diagnostic side, we do have a good diagnostic for actual Ebola infection, a real-time PCR. There's one developed by the CDC. The Institut Pasteur, if I'm correct, Sylvain, also has a real-time PCR. They are making those available to countries that need them and would like to have them.

The challenge that we have – remember, Zika, as Sylvain highlighted, from the Yap outbreak that occurred some years ago and was published in the New England Journal of Medicine… suggested that 75% of these infections could be asymptomatic, meaning that you didn't see a classic rash and other manifestations but…

So in that setting what you want to do is be able to back and look; is there evidence that they were infected? And then you're looking for antibody instead of the virus itself and that's really tough because of the cross-reactivity of the dengue viruses, etc., so you get a positive result. It may be because of a dengue, previous dengue infection or something else. The diagnostic piece of it is tough.

Now, work is ongoing to try and untangle that and see if we can have a better diagnostic to understand that. There're a couple of other more complicated ways to look at evidence of past infection but those are more complex and they're not going to be as easy to use in the kind of environment and work that we're looking at. But right now there's sufficient at least diagnostic capacity to know; has Zika come through this area? You can test for infection. The challenge is being clear on whether someone who has something today – microcephaly – was infected previously – that's the challenge – and then whether or not that association, as I mentioned, is causative.

And in the area of vaccines, I do know that there has been some work done by some groups looking at the feasibility of a Zika virus vaccine. Now, something like that, as people know, is going to be a 12-month-plus timeframe and right now what we're looking at is what would timeframes look like around a vaccine if indeed one was needed, in terms of the diagnostic, as I mentioned, exists today. The timeframe for developing new diagnostic, if it's technically feasible, to have a better antibody detection; well, that should be shorter than that but we really need right now to be working with the tools that we have and we certainly have the tools to understand and diagnose infection.

We also have – as mentioned in terms of vector control, there are a number of measures for vector control but, as I think you heard Lyle Peterson mention, from CDC, control of the IED vector's tough. If it was easy we wouldn't be having the trouble with dengue and with chikungunya. It's not easy to manage the vector and even exposure to it.

There was a question about whether or not China should be worried about a microcephaly outbreak, I think was how you put it. What any country that has got IEDs and is within the dengue belt should be concerned about is the possibility of Zika virus arriving and that is what the surveillance should be for, is for Zika virus arriving.

As I mentioned, at this point, hopefully by, in the near future we'll have more information about whether or not there's a causative relationship with microcephaly or other neurologic events that we've seen but the issue right now is countries should be looking at whether or not there is Zika and if there is Zika then they should be putting in place the capacity to detect any change in neurologic conditions that have been temporally or geographically associated with it in other areas. So that's as, I think, Sylvain, you mentioned, or Marcus in the presentation, would be the key.

I didn't quite follow the question – there were a couple of last questions, one about, will this travel outside America. Remember, it didn't come from the Americas, right. This thing has been moving around. It was found way back in Africa and then it was found in Asia, then was found out in the Pacific and then came around through Easter Island and then it was found – Easter Island, I think, was 2014 it was found there.

SV Yes.

BA And then in 2015; so this has gone around the world but you would expect to be able to detect it – I mean, our working assumption is – in countries where there is dengue as well.

Yes, I'm not sure what the other questions…

GR So very sorry to have to say this'll be the last question and it'll be from Jamie Keaton of Associated Press. You okay?

BA [Inaudible] poor woman's had her hand up.

GR Okay.

JK I want to make sure I just understood that. So you…

BA As long as Jamie doesn't take more than two minutes.

JK I'll be brief. Just to make sure on… So the timeframe for having a vaccine; it's too – I just want to make sure I heard that correctly; it's hard to tell, essentially.

BA Yes, I think we should…

JK Because in dengue for example – look at dengue for example.

BA Yes, exactly. If you look at the timeframe for developing vaccines, like dengue is the other; I mean, this was years and years and years. Now, there has been some work on Zika and right now we don't know what a timeframe would be, even the feasibility of it so what we'll do is a scoping of everything that has been done, landscaping of that and we will hopefully by, within a couple of weeks have a good sense of where people are and then have – much like we did on Ebola – convene people together to look at, okay, how do we prioritise this against what might be needed and then lay out a roadmap and timeframe to try and understand how quickly that could be put together. But it's really speculative right now.

JK You mentioned an appropriate response. I mean, Brazil, as you know, is going to have a major sporting event coming up this summer. Is there, is it conceivable that WHO at some point could recommend that people don't travel to Brazil?

BA Yes, I would think that would be very, very unlikely when you look at the areas affected by this and the scope of this. I think what we want to make sure is that we're giving

the best possible advice to anybody about travel and that is the reason to get the emergency committee together to have a specific look at that issue.

GR Okay, thank you. Claudia.

CL Yes. I didn't follow the presentation so maybe it's a question you answered but I would like to know, what is your level of alert at this moment; are you just being cautious, are you mildly alerted, are you deeply worried about the Zika virus situation?

BA We are certainly concerned. Well, any time you have a cluster of microcephaly – and this is what we're deeply concerned about; it's microcephaly that is unexplained in Brazil. I mean, people have seen pictures. You can just imagine how the families are managing this, you can imagine how people who are seeking to get pregnant or planning to start families are. So certainly deeply concerned for them and we're very concerned that we get an answer to a question of whether or not there is an association to this.

In terms of WHO, how we manage events internally, we grade events internally, as people know, and we've graded this as a grade two event, which means it's going to require substantial, you know, investment by the organisation across our regional offices and drawing on a lot of our resources to be able to manage the full agenda around surveillance, around development of new tools if needed, around the research, etc. So that's where it stands with us.

So I think concerned is certainly the right language to use; alarmed would definitely not be the right language. I mean, we are alarmed that there is a microcephaly outbreak but the association with Zika is, it's concerning that it's temporally associated and geographically associated but at this point really one wants to understand why that's the case because remember, there's been Zika in other places where you've not seen this so it's not straightforward and that's what we have to understand because that will be what will have implications for the possible impact in other areas as well.

GR Okay, thank you very much to everyone, especially to Doctors Aylward, Aldighieri and Dr Claudio Maierovitch online. So to those listening, there will be an audio file and a transcript of this briefing posted later in the day and there will also be transcripts, both audio and written, from the information session at the executive board. Thank you very much, everyone.

BA Thank you.