

# COVID-19

## Virtual Press conference

**2 July 2020**

### **Speaker key:**

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MK	Dr Maria Van Kerkhove
JO	John
AR	Dr Ana Maria Henao Restrepo
CH	Christiane
Jl	Jim
JD	Dr Janet Diaz
BA	Dr Benedetta Allegranzi
NI	Nina
KA	Kai
BA	Bayram
TO	Tomo
HE	Helen

### **00:00:26**

FC Good evening. Welcome to all journalists and our speakers. I'm Fadela Chaib, WHO Media Officer in Geneva. Sorry for the delay. We are here today in Geneva to brief you about the main outcomes of a two-day forum on global research and innovation on COVID-19 that has just concluded.

The subject of our press conference is of great importance; update on COVID-19 research and development, the science, the health tools and course of the pandemic. Our main speaker is Dr Soumya Swaminathan. She is the Chief Scientist at WHO. We

have also a panel of WHO experts ready to answer specific questions.

We have Dr Maria Van Kerkhove, Technical Lead on the COVID-19 pandemic; Dr Ana Maria Henao Restrepo, Co-Lead, Research and Development Blueprint, WHO; Marie-Pierre Preziosi, Co-Lead at the Research and Development Blueprint; Vasee Moorthy in the same department; Benedetta Allegranzi, Technical Lead, Infection Prevention and Control; Dr Janet Diaz, Clinical Care at WHO; and Peter Ben Mbarak; he's a food safety and zoonosis expert.

Journalists can join us through Zoom and follow this press conference on our social media channels and platforms. Today's press conference will be in English only; no simultaneous interpretation; our apologies for that. Without further ado I will give the floor to Dr Swaminathan. Soumya, you have the floor.

**00:02:29**

SS Thank you very much, Fadela, and good morning, good afternoon, good evening, greetings to the journalists who are online. It's a pleasure for me to provide a very brief overview of what happened over the last two days. Many of you may remember that in February WHO convened the first Global Research and Innovation Forum which brought together over 400 scientists and researchers from all over the world.

At that time we had just learned about this new virus, SARS-CoVi2 and the idea was that we need to get together to really discuss what are the major research priorities, what we need to learn about this virus and how it's impacting us.

This resulted in a research roadmap that was released at the end of February and that, I think, has shaped the global research agenda to a large extent. It also resulted in the creation of nine working groups and we'll run through the topics around which the working groups were created.

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Each of these working groups was coordinated by a WHO staff member but basically consisted of experts from around the world. Some of the working groups have more than 100 people; some are a little smaller but experts from all around the world voluntarily joined these working groups and over the last few months have been working on their own areas of expertise and topics.

Today it seems incredible that it is just six months ago that we actually learned about this cluster of cases of pneumonia originating in Wuhan and I think none of us could have imagined when we woke up on 1<sup>st</sup> January that six months along this was where we were going to be, grappling with this pandemic.

We've learnt a lot and so we decided that it was time to reconvene these experts from around the world to take stock of what we've learnt; what are the gaps in knowledge that we've actually been able to fill; to address those, so to get a state of the science position at the beginning of July and importantly to also lay out the existing knowledge gaps and the emerging research priorities and what are the critical research questions that need to be addressed by people all over the world as we go forward.

**00:05:07**

It's clear that research, innovation and science have played a leading role in this pandemic and that the public more than ever has been closely following the science and this has had its advantages and also some downsides because the way science usually progresses is by scientists putting forward their findings and those being peer-reviewed by their peers and then getting accepted for publication. Then these findings are sometimes questioned by future publications that come out and then eventually there's a consensus that forms around a particular question.

In this case everything is accelerated and moving really fast and we've seen a huge explosion of scientific publications and knowledge. A lot of it is in the pre-publication or in the pre-print stage and we see - because we review this on a daily basis - 500, sometimes up to 1,000 publications on a daily basis so it's also very challenging to keep up with the science but also being able to judge the quality of the products that are coming out. Not all are of the same high quality.

**00:06:25**

We've seen incredible willingness for scientists to collaborate so from the time that we started the research and innovation working groups we've seen people collaborating on all aspects and I'd like to say particularly something around therapeutics and vaccines, a little bit more than that.

We've also had the research funders involved from the very beginning through the network that's called GLOPIDAR, which is a consortium of research funders focused on infectious diseases

research. They were present at our February conference and they were also present yesterday and today and they shared what they are doing in terms of funding research into these priority questions so it's really important that we've had them.

We've also had the private sector participate; we've had developers and manufacturers of vaccines and therapeutics and other new technologies. We've had social sciences represented with a working group on social and behavioural sciences as well as an ethics working group, which has been an extremely vibrant and productive working group that has come up with papers on ethical aspects of this pandemic ranging from the ethics of doing different kinds of clinical trials including human challenge [?] studies but also talking about the ethics of contact tracing, using apps for example or the ethics of fair allocation of scarce resources.

### **00:08:03**

So a lot of the difficult topics that we come across in our day-to-day work have been addressed by this working group. We've had almost 1,300 participants so this has been much more successful than an in-person or face-to-face conference because I'm sure we would not have been able to get 1,300 people into this room which only accommodates a couple of hundred.

So there's been incredible participation and as we're all getting used to these virtual conferences we realise how much we can actually achieve so we've had chairpersons, panellists and participants waking up at early hours of the morning and staying up late at night to participate and I must say the technology worked well; it's been very smooth. We were able to stick with time, we were able to go through all the presentations as well as take questions and having the chat function on Zoom was also very helpful because we could all follow the questions and comments that participants were making.

### **00:09:09**

So of the 1,300 participants - they came from 93 countries, from all the WHO regions. If I can give you the percentage of participants by region, 29% came from the European region, 20% from the South-East Asia region, 21% from the Western Pacific region, 8% from the African region, 20% from the Americas and 3% from the Eastern Mediterranean region.

We also had a very wide spectrum of people participating. We found the gender balance was excellent; 46% female and 54% men and about 50% of the registrants were either from academia

or representing member states. Intergovernmental organisations; we had non-state actors; 11% of participants from the private sector, about 3% from the UN. We had national committees, observer member states so we had a huge spectrum, as I said, almost 100 countries participating so that was also very gratifying.

Some of the issues that came up of course were the fact that we've learnt a lot but we have still a lot to learn about this virus. As I mentioned, we have a number of working groups that are looking into more detail and we have the experts here, the WHO focal points who can answer your questions.

#### **00:10:44**

There's an area of work around clinic recharacterisation pathways and management and how we improve clinical care and reduce mortality amongst people who develop this infection. There's another working group, a very vibrant, active one on epidemiology. This has been one of the most hotly discussed and debated topics; how does this virus spread, what are the modes of transmission, what precautions do people need to take, what are the public health measures that are working or not working; that whole area of epidemiology and transmission.

Then we have the animal and environmental research on where the virus originated from, how it is spreading, the viral diversity itself based on the huge amount of data we have on the genetic sequences of these viruses, the management at the human/animal interface.

We've also learnt a lot about which animals seem to be susceptible to this virus, in other words, getting it from humans but we still have to get to the bottom of how it actually crossed the animal/human barrier, when that happened. That's important because we want to prevent further spill-overs and further pandemics from arising so it's important to understand that.

#### **00:12:10**

Then about the virus itself, as I mentioned, the natural history, the transmission and very importantly diagnostics. We have the molecular diagnostics, we have the antibody test, antigen tests; you have other new technologies for detection. What we really would like to see is a very good, sensitive and specific point-of-care test. That would make life a lot easier for the healthcare workers as well as for patients.

Then infection prevention and control; what have we learnt about how to protect healthcare workers in healthcare settings but also how does the public, how do people protect themselves in other settings so there was a lot of discussion about that.

Then, as I mentioned, we had a lot of discussion on ethics and where the ethics working group has contributed and how they could contribute further. Social sciences; I must say that it's very welcome to see a huge amount of discussion on why it's important to focus on social and behavioural research because a lot of what we're talking about involves behavioural change and why it's also important to involve communities and get their views on vaccines and therapeutics and the new technologies that are being developed.

#### **00:13:28**

Finally we had two longer sessions firstly focusing on therapeutics; where are we with the repurposed drugs that were put into trials a few months ago, what have we learnt from the ongoing trials? I must say that I was very grateful to all the researchers who shared data with us for us to do pooled analysis to know where we are so this will inform better patient management.

Then we had discussions on what next; what are the therapeutic agents that should now go into trials, whether they're antiviral agents or immunomodulators or antithrombotics or the new monoclonal antibodies.

Then today we had a fairly long and excellent session on vaccines starting with the vaccine trial design and again 15 of the 17 developers who are currently in human clinical trials shared their vaccine design protocols with us so we were able to compare and contrast and make a presentation on the kinds of trial designs that are being considered by different sponsors or developers of vaccine trials.

#### **00:14:40**

We also then discussed in a panel the various initiatives that are ongoing and how best we could come together in terms of researchers, funders, sponsors and developers of vaccines to conduct speedy trials but with the scientific rigour that would be needed to establish both efficacy and safety beyond doubt.

There was a very good discussion focusing on the science of what kinds of trials would need to be done and what we need to

avoid, what are the pitfalls that we must be aware of where we could actually trip up if we do things in the wrong way.

There was a discussion on how we can use existing networks. One thing that did come out was the fact that a lot of the research seems to be happening in high-income countries, at least from the data that we have from the GLOPIDAR network of funded research and that we definitely need to have more research addressing questions in low and middle-income countries but also involving researchers and institutions from low and middle-income countries.

Therefore a lot of the networks spoke about the capacity that they have and the interest that they have to collaborate and so that's something we will be focusing on. The other message that came was to improve the interdisciplinary science work. While each of the working groups has been focusing on their areas of work perhaps there's a need to also have these dialogues between the different working groups and have more interdisciplinary exchanges so the biomedical group which is looking at clinical care and management speaking with the social sciences group.

**00:16:32**

The vaccine trials that are being planned definitely need to engage civil society, community advisory boards and things like that. Then to focus more on the needs of low and middle-income countries because the pandemic obviously affected Europe and North America and now is spreading through the world and is more and more impacting countries with less resources, bigger populations and therefore the priorities are also changing as time is going on.

So I will stop there with those opening remarks and say that it was an incredible two days. I don't think anybody left their seats; it was four hours on each of the two days, yesterday and today. We've just come out of the meeting so everything is fresh and we'll be happy to take your questions. As I said, we have the experts here who could address some of the more specific questions that you have. Thanks. Over to you, Fadela.

**00:17:37**

FC Thank you, Soumya. I would like to remind our journalists to click on raise hand. This will put you into the queue for questions and please don't forget to unmute yourself when you are called to ask a question and finally indicate to which expert you are addressing your questions.

I can see that Jamie Keaton from Associated Press would like to ask a question. Jamie, can you hear me?

JA Yes, I can, Fadela. Thank you. This is for Dr Swaminathan. Thank you very much for taking my question. We've seen the United States two days ago announce an arrangement with Gilead Sciences about being able to obtain supplies of remdesivir, particularly the equivalent of 100% of production for the month of July, if I recall correctly, and 90% of production for the months of August and September.

I'm just wondering; yesterday Dr DG Tedros mentioned that solidarity remains the buzzword for countries. How concerned are you that solidarity may be lacking in some cases, particularly with regard to remdesivir and what do you know about the stocks that may be needed in other countries that are developing countries that may need it? Thank you so much.

**00:19:09**

SS Thank you, Jamie. I reiterate, I think, what Dr Tedros has been repeatedly saying; that global solidarity is important and not just for this drug but also for other rugs and for vaccines that are likely to be developed over the coming months. This is a test, I think, for all of humanity.

But specifically on remdesivir, as you know, there are many trials still ongoing on remdesivir including the Solidarity trial that's looking at mortality benefit. What we know up to now is from the publications that came out of China that did not show any benefit for remdesivir and the publication from the NIH which showed a reduction in hospitalisation of about 30% so patients who got remdesivir had an average hospitalisation of 11 days versus 15 days for the ones who did not receive it.

We know remdesivir is an antiviral drug but we don't know what its efficacy is. The plan is really to continue with the clinical trials that are ongoing because we definitely need to answer the questions on efficacy of remdesivir, looking at mortality, looking at other clinical outcomes but also establishing the impact that it will have on public health because the benefit risk and the cost/benefit ratio of interventions is extremely important when we talk about an intervention that's going to be rolled out across the world.

**00:20:44**

So in the coming weeks I think we'll be in a position to come to a meta-analysis of the ongoing trial data from published and



ongoing studies to make an assessment of its impact on mortality as well as on other clinical outcomes.

We know that Gilead has licensed this drug to several generic manufacturers so I imagine that in the coming weeks and months we will see an increase in supply of remdesivir being made available but I think it's really important to reiterate the importance again of establishing the benefits of using a particular drug through clinical trials and this was one of the points that came out very clearly from our therapeutics panel.

There were many repurposed drugs that were put into trials at the beginning of this pandemic based on some in vitro data or based on some small anecdotal clinical data and many of those questions today have been answered thanks to the large trials that have been performed.

**00:21:56**

So again going forward there are going to be other antivirals tested. There will be other drugs tested. We need to ensure the same robust trials are performed to answer the questions. Thanks.

MK I'd just like to supplement not about the remdesivir but about solidarity and the question of solidarity. This press conference today is about the findings and the completion of the second large research forum that we've had for COVID-19 and those of us who are sitting up here are representing literally thousands of scientists across the world and the solidarity and the unity and the collaboration that we have seen for science and the advancement of science in this virus that we knew nothing about six months ago is really incredible, is tremendous.

As Soumya has said, the accumulation of data and knowledge and papers and teleconferences that we have had to try to coordinate this research from willing researchers all over the world in so many different topics to help advance our understanding of severity, of transmission, of interventions that depend on medical interventions, public health interventions that are helping us suppress transmission and save lives is outstanding.

**00:23:18**

I think all of us here really are honoured and grateful to be part of a time where people have come together to advance this at an incredible rate.

FC Thank you, Maria. Next question is from John Zaracostas, The Lancet and France 24. Go ahead, John.

JO Yes, good afternoon. Can you hear me?

FC Yes, perfectly. Go ahead, John.

JO I would like to get a bit of a read-out on the presentation by 15 of the 17 vaccine manufacturers. What was the take-away from that, how close are you to getting that short priority list where the money can be allocated going forward? Did you walk away with a shortlist from this meeting or not?

Secondly why was this meeting also closed behind closed doors like the one in February when there's such big interest from the scientific world?

**00:24:30**

SS I'll start and Ana Maria can add on the vaccine trials. It wasn't a closed meeting, John, it was open but it was not open to the media. We had an upper limit of 1,000 and we really wanted the academics, researchers and others to really engage so in fact while the first conference brought together about 400 people, as I said, this one brought about 1,300 and probably many more were observing.

The idea was not to have a closed meeting or anything like that but just focus it on the scientific topics that were discussed and we had a very tight schedule, as you can imagine. We have nine working groups so we literally had ten minutes per presentation and about five minutes for discussion so we couldn't have the kind of discussion... and we thought this might be a better forum.

On the vaccines I'm going to ask Ana Maria to comment on what the analysis was. This was not the forum to make decisions on funding or anything like that. It was more a forum to discuss what are the kind of designs that are out there and how can we best inform those designs so we get the kind of results that would be needed both by regulators and by WHO to make decisions on the use of vaccine. Ana Maria, do you want to say a little bit about...?

**00:25:53**

AR Yes, thank you, Soumya. I just want to clarify, WHO has published on our website the target profile for vaccines that provides the public health perspective of the kind of vaccines that will be important for public health. It was developed through wide consultation with experts around the world. In addition to that we have published the criteria for the selection of candidate vaccines that could be prioritised for clinical trials.

The 17 vaccines we were talking about today are the 17 vaccines which are already in clinical phase. That means they are in phase one, phase two or phase three trials. What was requested from the developers - and we are very grateful to them - was to share openly the design of the phase two trials that they planned to implement.

It was an excellent exercise of transparency and communication because it would allow all of us to contrast the different designs, to look at the trade-offs of different designs and to have a conversation about what can be done to ensure that we did have the best clinical trials, that we have a compatible exercise of speed and reverse designs so we come out with reverse estimates.

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So the main take-off from this is that overall all the researchers were proposing randomised clinical trials - that's a very good thing - and number two, all the researchers were targeting the critical populations and thinking of endpoints that are compatible with the public health needs; and third, there was an open and robust discussions about the need of having stringent success criteria that will allow not only to have robust estimates but will help regulators and public health officials make informed decisions on the deployment of these vaccines.

So we just want to say thanks to the developers, thanks to the researchers who participated because now we have a transparent process of what is in front of us in terms of assessment of these candidate vaccines. But these 17 are going to be joined by other vaccines as they move into the clinical evaluation phase so 17 are the ones today but probably next week and in the weeks to come this number will increase. Thank you.

**00:28:12**

FC Thank you, Ana Maria. The next question is from Christiane Henri. Christiane, can you hear me? Christiane is from DPA.

CH Thank you very much. DPA, German press agency. I would like to follow on exactly what Ana Maria just said. Can you give us some more specifics on the vaccines that are on the table now? Are there several promising candidates or not? Do you expect rapid progress?

I think in your last briefing, Dr Soumya, you said if we are lucky we might have several million doses ready by the end of this year. Is this timeline still valid or did you get new information that might have changed that? Thank you very much.

AR Thank you for the question. I want to say that we are very lucky in a sense because there is a very broad pipeline of vaccines. We have four types of different vaccines. We have virus vaccines using live attenuated virus that are commonly used also as platforms for vaccines we use today.

We have virus vector vaccines which use replicating; others that use non-replicating vectors. We have modern platforms, nucleate acid vaccine, DNA and RNA vaccines and we have protein vaccines using protein subunits [?] and viral-like particle vaccines.

**00:29:53**

As I said, an increasing number of these vaccines are moving forward from phase one into phase two, 17 of them. Of those which are in the clinical phase we have one candidate vaccine for the University of Oxford; the ChatOx that you have commented a lot on in the media, which is moving into phase three.

But we have another five vaccines that are now into phase two. We don't know at what pace the race is until we get the results of these clinical trials. So we are very encouraged by the progression of these candidate vaccines across the clinical phase evaluation and we are looking forward to having the results.

Whether or not we will have the vaccine in a given timeline depends on factors that cannot be anticipated. What is good is that there's a lot of consensus, a lot of work together, a lot of collaboration. As Soumya mentioned, there are a number of global enterprises and collaborative efforts to accelerate the evaluation of these vaccines and moreover the availability.

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So for now the pipeline continues to be a healthy pipeline. We have nearly 150 candidate vaccines moving forward with evaluation, which every day gives us more hope but we will not know when we will have the vaccine until we have the results on efficacy.

FC Thank you, Ana Maria. We will move now to Jim Rupe from radio in the US. Jim, can you hear me?

Jl Yes, thank you very much and hello, everyone. Thank you so much for making yourselves available. I have so many questions.

FC Just start with one, please.

Jl I promise. Yes, I know you're getting to the vaccines and you'll get to the therapeutics. My question is, what exactly is the state of the science now, what is known about the virus that wasn't known before, are there things that you thought you knew that you know better now or that were discounted...? Where are you in knowing exactly how this thing behaves and what we can look forward to in the future?

FC A good and interesting question. Maria.

**00:32:12**

MK Sure. Jim, nice to hear your voice and a good question, as always, probably one of the most interesting and difficult ones to answer succinctly because I think every single person up here could give you an answer about what we know now versus what we didn't know before.

As I've mentioned previously, the acceleration of the science around SARS-CoV2, the virus that causes COVID-19 disease is really incredible. My area as it relates to the R&D blueprint and the R&D forum is around transmission, around severity, which of course overlink with several different pillars, and around the evaluation of the impacts of interventions. I could probably speak for an hour on each and I won't; for another time, Jim.

But one of the most interesting areas right now that I think is really critical for us to understand, besides transmission and severity, is around the evaluation of interventions. As we wait for therapeutics and for vaccines, which are advancing at an incredible rate, we have tools right now that can break chains of transmission and can save lives.

**00:33:26**

So through different groups, through our mathematical modelling network and through the collaborations we have with academics and member states... is to really do much deeper dives into understanding the use and implementation of different interventions; when were these interventions used, how were they used, the combinations in which they were used as they were implemented but also as they were lifted.

Because we all know that we have a long way to go with this pandemic and many countries are seeing success in suppressing transmission. Others are really dealing with overwhelming outbreaks at the current time and so as countries are lifting some of these so-called lock-down measures we need a better understanding and more detailed analyses about how countries are actually lifting those, in what way they are doing this, how; just as they introduce them, how they lift them is just as important.

So we will be working very closely with member states and doing much deeper analysis about the use of these interventions so that when we think about going forward in this pandemic and when we do see resurgence in some areas we can have better advice and use the experience of other countries about how we can use interventions, hopefully not needing to do these widespread lock-downs as we go forward because it isn't a matter of public health versus the economic or social impacts. We have to find a balance between both of them as we move forward. But others may want to supplement.

**00:35:05**

FC Janet Diaz, Clinical Care.

JD Hello, thank you. Gosh, what have we learned? I think we have confirmed over time that severity of disease seems to be standing with what we initially saw in China, which means about 20% of patients so a subgroup of patients are developing severe disease and a smaller subgroup developing critical disease.

So I think that's what we have learned and confirmed over time and seen that same type of breakdown in different countries. We have also learned with the recent release of the Recovery trial that corticosteroids seem to be reducing mortality. Why is that, what is the mechanism for that?

I think that's something we still need to figure out more and understand more but it does lead to the hypothesis that some virus-induced inflammatory state that is suppressed that happens in a subgroup of patients that we need to better understand with the treatment that leads to hypoxia, leads to needing oxygen, leads to potentially needing ventilation.

**00:36:21**

With the use of corticosteroids that is suppressed, potentially reducing mortality. Over time people were describing an inflammatory response to the virus and I think we still need to

further understand that; what biomarkers are elevated and correlating with severity of disease to help us identify these patients earlier so we can apply treatments earlier. I think that's important.

What else have we learned? Oxygen therapy and I guess we go back to the basics. Until we have other known therapeutics that will treat the virus we do know supportive care so identifying patients early, those that are with complications, those that have hypoxaemia, that need oxygen so that the early interventions with oxygen therapy can be lifesaving.

For countries that have limited capacity with oxygen, have resource limitations surging oxygen systems is important and making sure that the staff is trained on how to deliver oxygen, how to maintain oxygen supplies and how to surge oxygen supplies is also critically important. Thank you.

**00:37:39**

FC I think we have also Dr Benedetta Allegranzi - she is Technical Lead, Infection Prevention and Control - who wants to say a few words. Benedetta.

BA Thank you. One of the major concerns of the international community in this outbreak has been health workers' infections and I think that now following reports and studies we know that personal protective equipment - in particular medical masks, respirators, eye protection, gowns, gloves - do protect health workers if appropriately used. Also we have learned and confirmed that appropriate hand hygiene protects healthcare workers.

Conversely also we have now evidence that shortages and inadequate practices, for instance for hand hygiene, do put health workers at risk. So I think this is clearly a call to all those invested in this outbreak, in particular governments but also the international community, to really continue to take care of personal protective equipment procurement in the context of access equity among countries around the world. This is the first message that is really key; the attention to this problem should not decrease.

**00:39:20**

The second point we worked on from WHO with academic institutions was to find out what is the best way to make fabric masks for the population, the community to protect them and we achieved very interesting results in terms of knowing the type of

materials, the number of layers to be used, the shape, the level of protection or especially the level of filtration, allowing source control that is needed and that is available using specific materials.

All of this can be found indeed in WHO guidance that has been informed by this research and we have a recent document on masks, in particular with focus on the general public. These are some key messages that have emerged from research and from the discussions during this meeting.

SS I'd like to mention one other area, Fadela, and that's the area of genetic sequence data that we've got. I think this is probably the first time that we've seen almost all countries willing to share the genetic sequence data of this virus in a public database through GISAID, through GENBANK.

We have over 60,000 sequences currently shared and this has allowed scientists to do a couple of things. Most importantly it's allowed epidemiological tracking because there are different clades [?]; because of the natural mutations that occur in the virus they've been divided into different clades.

#### **00:41:24**

By looking at the proportion of these clades in different parts of the world at different times you can actually try to put together the story of how this virus moved around the world and where it came from, where the outbreaks actually originated from so that's quite useful to understand and also to try and go back to see when the first mutations may have been introduced in a particular geographic area.

But also it helps us to track the mutation itself. We know that there are certain parts of the virus which are more critical like the spike protein and the receptor binding domain that are also the target for vaccines today so if major mutations occur in those domains it might actually affect the development of vaccines.

#### **00:42:14**

Similarly there have been hypotheses by people from different countries saying a particular mutation corresponds with a particular clinical profile; less severe or more severe disease. So it allows us to study and so this kind of pooling of data, both clinical data as well as sequence data and if the two could be combined then it gives you a very powerful database to actually see if actual, specific changes in the viral genome, mutations actually have impact or not on clinical outcomes.



This is only possible when you have large data; it's not possible with a few tens or a few hundreds of cases. That's again... I think, for the first time we've seen... and this is a very good model, I think, for the world to think about future pandemics or diseases which can cause potentially epidemics or pandemics and having a mechanism for global sharing of genetic sequence data gives you an opportunity.

In fact the genetic sequence data was made available by Chinese scientists on January 11<sup>st</sup>. On January 13<sup>th</sup> I think we had the first diagnostic assay that was published, WHO working with a lab in Germany published the first. That allowed countries to get their diagnostics up and running and similarly the first vaccine candidates were also being made in January based on the sequence data because, as you know now, sequence data allows you to do a lot of things.

**00:43:43**

So the RNA and DNA vaccines were all being prepared in the lab within a matter of days of getting the sequence data so it just shows how powerful this is and how essential this is and why the world needs to think about some of these mechanisms and how to support mechanisms; platforms like GISAID for example, to make it easy for scientists to share this.

GISAID was set up for influenza data sharing but very quickly they were able to expand to accommodate the SARS-CoVi2 virus. Thanks.

FC Thank you, Soumya. Now we will move to Nina Larson from Agence France Press. Nina, can you hear us?

NI Yes, hi. Can you hear me?

FC Yes, perfectly. Go ahead.

NI Thank you for taking my question. Related to what was just being said, I was also wondering if there was any discussion about the studies of waste water that have shown indications that the virus may have been present in European countries for instance last year, if that was something that was discussed.

**00:44:57**

I also was wondering on the issue of asymptomatic transmission if there was a discussion about what seems to be perhaps the case, that when you have asymptomatic people that if they pass it to someone they are themselves asymptomatic, if there's anything to do with that. Thank you very much.

FC Maria will take this question.

MK Thank you very much. Yes, there were really rich discussions about transmission in general, about how the virus can be transmitted, the different modes of transmission, when people transmit the virus, when they have symptoms or when they don't and then the context in which transmission occurs.

Your question specifically about asymptomatic transmission; yes, people who are infected with the SARS-CoV virus; many of them develop symptoms but some do not and when someone does not develop symptoms we call them asymptomatic, meaning that they don't have those symptoms and some people can transmit.

We've known since February that individuals can be infected, not have symptoms and possibly transmit to others and that has been confirmed through studies, these very detailed investigations that are ongoing.

**00:46:18**

What we're really trying to understand is the relative importance of when people transmit and how they transmit and the context in which... What we know is that this virus transmits through respiratory droplets from an infected person, most often when they have symptoms but it can happen just before they develop symptoms or right at the time of them developing symptoms, meaning they're very, very mild.

It can happen when people are infected and don't develop symptoms at all and so that makes control measures that much more challenging, which is why we need a comprehensive set of measures in place to be able to break chains of transmission, including making sure we find those cases that we know about, we find all of their contacts and we quarantine those contacts.

By doing so you effectively isolate people so they can't pass the virus to someone else, whether they have symptoms or not. So what we really need to better understand is how often that is happening; how often does it happen that someone that doesn't have symptoms and never had symptoms transmits further? How important is it that someone just before they develop symptoms passes to someone else? We know that is important? How does that affect our control measures?

**00:47:33**

The other thing that we need to spend much more time talking about are these events in which transmission occurs. We know that it happens during close contact between people when

they're within 1m, prolonged contact; that means more than just in passing.

We're quite alarmed by a number of super-spreading events that are happening in a large number of different types of controlled, closed settings. For example we've seen outbreaks in long-term living facilities; we've seen outbreaks in healthcare facilities; we've seen some clustering events and mass gatherings and different types of religious events; in meat processing plants; in expatriate dorms.

There're a number of settings where we need to do much more detailed analyses to really understand why and how transmission is occurring so that we can prevent this from happening going forward.

**00:48:28**

Then briefly on the waste water, this is an area of interest that we are looking at and that a number of countries are looking at to potentially look at testing waste water for the SARS-CoV2 virus to see if that could be a sentinel signal for whether or not the virus is circulating.

There are some papers that have come out recently and we are aware of those papers. We've actually reached out to a number of those authors to get more details. Some of those are in pre-print, which means they have not gone through peer review and so we've reached out to those authors to really understand how they've conducted their studies and what those can inform us going forward. Benedetta, I don't know if you want to add anything about... Okay.

FC Thank you, Maria. We will now move to Kai Coppersmith from Science. Kai, can you hear me?

KA Yes, thank you very much for taking my question. This one's probably for Ana Maria. I just wanted to ask whether there's any news on fist of all the lopinavir/ritonavir arm of the Solidarity trial given the results for Recovery; and any discussion on, now that recruiting is going well, how to move forward, prioritising the next drugs to test.

**00:49:50**

FC I think Ana Maria will respond. Thank you.

AR Thank you, Kai. First on the Solidarity trial we are very pleased and very grateful to all the researchers from the 31 countries who have now approvals for participating in the

Solidarity trial so they have the national regulatory authority approval and the ethics review approval.

Of those 21 are already randomising hospitalised COVID patients in nearly 400 hospitals and we have a global network of about 1,300 clinicians so we are active in the six WHO regions. We are very pleased about that because that gives clinicians and researchers from all around the world the opportunity to contribute to the Solidarity trial.

We are also very pleased with the increase in the recruitment rates so we are now getting to 5,500 patients included in the trial. Unfortunately we have high rates of transmission but the good scene - and this was discussed within the forum and encouraged by several of the speakers - is that given that the virus is moving around the planet and that the rates of transmission are uncertain it is very important to use global platforms like the Solidarity trial to be able to evaluate not only therapeutics but also vaccines because that would allow us to have the therapeutics and the clinicians in the places where the incidence rate is high at the time of introduction.

### **00:51:22**

In terms of the results there were two presentations on the data that is available because it was important for the community to learn what we have learnt from the therapeutics that have been evaluated so far.

As you probably know, there are nearly 1,700 clinical trials that are registered. Unfortunately the majority of these trials never started, started and were cancelled or recruited only a few hundred patients so in total there was an independent review which suggested that the three major trials contributing to the evidence for hydroxychloroquine, lopinavir, ritonavir and the steroids including dexamethasone were the Recovery trial from the UK, the Active trial from the NIH, NIID and the Solidarity trial led by WHO.

### **00:52:17**

There was a discussion of the preliminary results of these trials that suggests and confirms that hydroxychloroquine unfortunately doesn't have the positive effect that we were hoping on mortality for COVID patients.

There were also discussions on the potential effect of lopinavir and the preliminary data suggests that this effect is not there but we are looking at the analysis. Then there were discussions on

how to look into the steroids so the Recovery trials that are publicly available were again discussed and WHO put forward a proposition for a full systematic review of the data on remdesivir and on steroids.

That will shortly be shared with the community because we value and we think it's important for all of us to look at the integrated, critically appraised evidence. Thank you.

FC Thank you, Ana Maria. I will take now a question from Bayram al-Turk from Anadolu Agency. Bayram, can you hear me?

BA Yes, I can hear you. Thank you so much for taking my question.

FC Go ahead.

BA Can you hear me? Hello?

**00:53:31**

FC Yes, perfectly, Bayram. Go ahead, please.

BA Okay. Mr Ghebreyesus yesterday stated that 50% of all cases so far have been reported just in the past month and the United States had novel coronavirus cases jump by more than 50,000 for the first time yesterday.

On the other hand, while the number of cases increases rapidly [unclear] the mortality rate drops significantly. My question is, so can we say that COVID-19 is losing potency as it spreads more? What do we know and what don't we know? Thank you.

FC Thank you, Bayram. Maria or Soumya.

SS I think we have to be very careful when we talk about mortality rates because it's calculated in different ways by different countries and at different times. Case fatality rate is the number of people who died divided by the number of people how have diagnosed disease.

But you also know that there's a gap between somebody getting the infection progressing and then dying usually two or three weeks later. Unfortunately that happens and so it also depends on what denominator you take when you calculate case fatality rate.

**00:55:00**

It's been suggested by scientists that really to get an accurate idea of case fatality rate you should divide by the number of cases two weeks ago, not the number of cases today.

There's also infection fatality rate and there was some discussion on that during this forum. That probably gives you a better idea of the actual mortality so the number of people who are infected in the community. This number is not often known because what you know is who gets tested and those are only those who get really sick or those who are able to access testing.

So in places where these seroprevalence studies have been done to look at the prevalence of antibodies in that population it's clear that the number of people infected often is about ten times the number of people who actually get diagnosed as cases, which is what gets counted.

So if you look at infection fatality rates - and that is a much lower number and the figure that was presented was an average of about 0.6% so that's much lower than the case fatality rates of five, six, 7% that we've been talking about.

#### **00:56:14**

But again this depends; again pooling all the data that's still coming in from studies on the seroprevalence in communities will give us a better idea. But the bottom line is that there is a significant proportion of people who die - even if it's 0.7 or 1% that's still high - and it disproportionately affects people with certain risk of underlying conditions, including obesity in young people.

We have to remember that young people are not immune from severe disease or death. It's less common than in older people but we should not become complacent that it's fine for young people to get infected because there is a subset, particularly those with obesity, those with habits like smoking for example, who are at higher risk of complications and death.

So I think when we talk about death rates and mortality and we start comparing it's really important to really look at how that's being calculated before we do comparisons.

The other thing we've seen is many countries have been able to update their death counts later so it's not on a real-time basis, even in high-income countries and certainly in the low and middle-income countries the death reporting is not real-time; it takes time to catch up. Particularly when people die at home in the rural areas there's often incomplete cause of death reporting so we have to keep all of those things in mind when we talk about case fatality rates and especially when we start comparing between countries or between regions. Thanks. Do you want to add anything, Maria?

## **00:57:51**

MK Thank you, Soumya. That articulated very well the challenges of estimating and comparing mortality. As you've said, it's a very difficult thing to calculate. I wanted to touch on the question around the potency of the virus. We've received that question quite often; is the virus changing? You mentioned the mutations, the changes.

These are natural changes that we're seeing in an RNA virus, changes that we expect and there's a large group of scientists that are part of this group that are looking at these viruses very, very carefully and looking at what these changes actually mean.

We have not seen any indication that the changes, these mutations confer any difference in terms of transmissibility and severity but it is something that we are very carefully watching.

## **00:58:43**

It's not just a matter of comparing the sequences themselves but more work needs to be done to really understand the viruses and what these changes mean if anything. I think that's an important thing to add.

Then just to mention on the serology because this is part of the core work that we do within the epi working group - and again given we're six months in it's pretty astounding that we have seroepidemiologic studies that are underway.

WHO is working in a number of areas with our partners, in three different areas on serology. The first is to evaluate the serologic assays that are currently in development and working with partners at FIND and other collaborating centres across the globe to look and see, how well do these serologic assays perform against real samples.

The second area of work is around what we call the Solidarity 2 collaboration, which is developing assays and having a panel to be able to develop a standardised serologic assay. We have more than 110 collaborators from 43 countries in this collaboration.

## **00:59:52**

The third area of work is what we call our unity studies, which is... WHO has drafted these core generic protocols for six different types of studies on healthcare workers or on household studies or on cases and contacts to support countries in conducting seroepidemiologic investigations themselves.

Currently we have 45 countries that are implementing these studies right now and we have an additional 34 that are intending to implement them so we're building research capacities, we're supporting countries in conducting these so that they can better understand what is the extent of infection for SARS-CoV2 virus among certain populations, to better inform their next steps as they move through this pandemic.

FC Thank you, Maria. I think we will take the last questions; one from Tomo Nagoshi from Kyoto News. Tomo, can you hear me?

TO Yes, can you hear me, Fadela?

FC Yes, perfectly. Go ahead.

TO A short question on the participants; I believe in the February meeting we had experts or officials from Taiwan but was this the case this time as well? Thanks so much.

AR Thank you for this question. As Dr Swaminathan mentioned, the forum was open to researchers all around the world. We circulated an open registration tool in which experts, regardless of whether or not they were in our list of experts, were registered. This is how we have experts from all around the world and we know that some of the experts participating actually were from Taiwan.

Again Dr Swaminathan insisted we make a big effort to have experts from all around the world and they could on their own register. It was open to all researchers.

FC Thank you, Ana Maria. We will take maybe the last question from Helen Branswell. Helen, can you hear me?

HE Yes, thanks very much for taking my question. It's for Ana Maria, please. Ana Maria, is anybody in phase three? If I can sneak in something else in terms of vaccine, did you hear anything that relates to the question of whether or not any of these vaccines are inducing - if there's any risk of vaccine-enhanced disease associated with any of these vaccine candidates? Thank you.

**01:02:38**

AR Thank you, Helen. The theoretical disease of enhanced disease has been the object of extensive discussion in our expert groups and also in the expert groups by other collaborators. Indeed all the protocols that were presented or the majority of them have the potential to evaluate enhanced disease.



I just want to explain, there are three levels of the evaluation; first, is it in the preclinical phase? So there are ongoing efforts to try to establish animal models that will allow us to evaluate enhanced disease in animal models.

That has been assessed as a potential way to evaluate but it's not sufficient. In addition to that you have to start by going through the clinical evaluation phase and evaluating it in humans. The most important part of the clinical trials to be able to document enhanced disease is to have longer-term follow-ups and most of the trials that have been planned include 12, 15 and two years' follow up.

In addition it has been clearly identified that there is the importance of post-marketing surveillance of safety as an additional element to document enhanced disease so most of the sponsors or potential sponsors, developers and researchers are fully aware of the importance and the majority of them are making provisions in the protocols for the phase 2B/3 trials for longer-term follow-up, for measures to document information from vaccines in hospitals, etc, so that this can be ascertained.

#### **01:04:11**

[Unclear] it remains a theoretical challenge, a theoretical possibility but it's well considered by all.

FC Thank you, Ana Maria. I think we will stop here for today. It has been a long day for everyone. Thank you for your interest and I don't know if one of my colleagues wants to say final words. If not we will conclude this press conference. Maybe, Soumya, final words.

SS Yes, maybe just final words. We did also have some discussion on the transmission from human to animals. This may be of interest to some people and it's clear that there are some animals like the felines - cats and ferrets and even tigers can get infection so human to animal but very little evidence of the reverse.

#### **01:05:09**

Also interesting data presented on the virus and how long it can survive on the fur of animals and so on so there's very little risk from domestic animals because there was some concern about domestic animals becoming a source of infection.

However you will have seen the reports of minks in mink farms actually getting the infection and even perhaps being able to transmit it to humans so this is again an active area of research,

as I mentioned, the animal/human interface and it was a robust discussion because of course it's relevant not just for this outbreak but also for the prevention of future pandemics.

So the whole issue of how does one not only have surveillance for these emerging viruses that can cause a barrier but also surveillance among different species of animals to see what viruses are circulating and importantly also to think about how markets that deal with meat and food need to be regulated; what are the minimum hygiene standards that need to be put in place and also the illegal trade of wildlife, which can actually aggravate some of these conditions.

So that whole area of research, the one health where the group actually has people from FAO and OIE in addition to scientists from around the world was also one of the areas that was discussed.

#### **01:06:46**

So overall I think we had, as I said, in a limited time covered a huge area of topics and were able to get glimpses into what's going on in these different areas but we will probably follow up with more in-depth interactions with the scientists within the working groups and perhaps also between working groups; the interdisciplinary work that was very much encouraged and welcomed by the participants in order to take all these areas of work forward.

We're happy that WHO has been able to bring together scientists from around the world to collaborate but also to accelerate, I think, the science. Our goal is to see that the learnings from science are as quickly as possible channelled into impact for patients and communities. That's the goal of this research. It's not an academic exercise; it's how do you take the learnings, put them into interventions either in clinical or in public health so that we start seeing and impact on the pandemic.

#### **01:07:51**

That's why WHO is so involved in this and keen to try to make this happen in the best way possible. Thank you very much, all of you, for having come and for those excellent questions that you had today.

FC Thank you for your attendance, journalists as well as our colleagues from WHO. As usual we will be sending you the full audio file and the transcript will be available as of tomorrow on

the WHO website so see you next time and have a nice evening.  
Thank you. Bye.

**01:08:38**