

Science, Solutions, and Solidarity: A Conversation with the World Health Organization

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00:00: Good morning everyone. Welcome back to the Aspen Security Forum. Good afternoon, for those of you, like Dr. Tedros and his team in Europe, good evening for those of you further East. This is a great pleasure for us to have a conversation with the Director-General of the World Health Organization, Dr. Tedros Adhanom Ghebreyesus. I think as all of you know, he is from Ethiopia, he is the first African to hold the post of Director-General of the World Health Organization. He is a legendary infectious disease specialist, and he's had a lot of experience in public service, he was Health Minister of Ethiopia, and he was Foreign Minister of Ethiopia. He's joined today by two of his colleagues, Dr. Mike Ryan of Ireland who has done extraordinary work since 1996 on global health including during the SARS and Ebola epidemics and including in the campaign to eradicate polio. We're also joined by Dr. Maria Van Kerkhove of the Institut Pasteur in France, she's an infectious disease specialist working now with the World Health Organization.

01:04: I'm really pleased to also introduce our moderator, one of America's most distinguished journalists, and that's Lester Holt, who's the host of NBC Nightly News. I'll turn this over to Lester in just a moment. NBC is our strategic partner, we're very grateful, Lester, for your partnership and that of all your colleagues at NBC. When the questioning starts, Lester is going to call first on Mayor Keisha Bottoms of Atlanta, Georgia, she'll ask the first question and we'll take as many questions as we can. Dr. Tedros, I know you have an opening statement, I just wanted to say this, as an American I thought it was a great mistake for our government to announce its departure from the World Health Organization and then to withdraw its funding. And a lot of Americans agree with me that during a great global pandemic we should be pitching in and helping the rest of the world, not taking our funds and leaving. I also hope, and I think a lot of people hope, that the World Health Organization can reform itself, can account for its deficiencies. But most of all I wanted to say, because we are all in the middle of a global pandemic, we wish you well, we thank you for what you're doing, we thank you for being with the Aspen Strategy Group this morning, this afternoon, where you are, so please Dr. Tedros, please take the floor.

02:25: Yeah, thank you, thank you so much for that very kind introduction, and thank you also for this opportunity. It's a great opportunity for us to have this opportunity from Aspen Security Forum, but also NBC. So I'll go straight to my statement and then we will also receive questions with Mike Ryan, my general, and also Maria Van Kerkhove. By the way, to just correct, Maria Van Kerkhove is our senior lead on COVID, and she's from the US, I just wanted to correct that. And I want to extend my sincerest thanks to Aspen again and NBC for inviting Dr. Mike Ryan, Dr. Maria Van Kerkhove and I to speak with you today. The events of the last seven months are a tragic reminder of the insecurity and instability that diseases can cause. The COVID-19 pandemic has changed our world, it has stress-tested our political, economic, cultural and social infrastructure and found us wanting. It has pushed the limits of health systems, both weak and strong, leaving no country untouched. It has humbled us all.

04:04: The world spends billions every year preparing for potential terrorist attacks, but we have learnt lessons the hard way that; unless we invest in pandemic preparedness and the climate crisis,

we leave ourselves open to enormous harm. Since WHO was created over seven decades ago, we have worked to galvanize collective international public health action to build a healthier and safer future for humanity. From ending smallpox to bringing polio to the brink of eradication, from rolling out treatment for HIV, TB and malaria to millions of people across the world, to responding to hundreds of emergencies. Building up all health systems and ensuring health for all is our best shot at delivering on the goal of the global health security. 15 years ago, the global community came together and adapted the international health regulations in 2005. Its implementation by 196 state parties was a major step in the coordination of international action to enhance global health security.

05:18: Following WHO being notified of an atypical strain of pneumonia circulating in Wuhan Province, China, the IHR, the International Health Regulation was triggered, and the world was subsequently informed of the outbreak in early January. The genome was mapped within the first week of January, and in the second week of January, it was publicly shared and WHO published how to build a PCR test for COVID-19 from our partner lab in Germany. In the third week, WHO identified and began contracting for validated production of quality PCR tests. And by the first week of February, WHO began shipping tests to cover to over 150 labs around the world which enabled the world to track and trace the virus around the world quickly. And it was under the IHR, the International Health Regulation that WHO declared a public health emergency of international concern on 30th January, WHO's highest health security alert under international law.

06:29: At that time, there were fewer than 100 cases and no deaths outside of China. Today, more than 18.5 million cases of COVID-19 have been reported to WHO, and 700,000 lives have been lost. No country has been spared. Low, middle and high-income countries have all been hit hard. The Americas remain the current epicenter of the virus and have been particularly hit hard. Just three countries have reported over half of all cases. No single country can fight this virus alone, its existence anywhere puts lives and livelihoods at risk everywhere. It's never too late to turn outbreaks around and many countries have done just that, so it's never too late to turn the situation around. Our best way forward is to stick with science, solutions and solidarity, and together we can overcome this pandemic.

07:37: COVID-19 has also exposed how misinformation poses one of the greatest security threats of our time. Misinformation can spread faster than the virus itself. Since the beginning of this pandemic, WHO has been working to address misinformation. We have worked with all major tech companies to counter myths and rumour with reliable evidence-based advice. Last month, WHO brought experts together from across the world to hold the first conference on how best to tackle the COVID-19 infodemics. Through our daily situation reports and regular media engagements, WHO offices have kept the world informed. Myself, Maria and Mike have ourselves done more than 90 press briefings. We have on a weekly basis briefed our member states to present the latest scientific knowledge, answer their questions and to share and learn from their experiences with COVID-19.

08:42: WHO will continue to support everyone, everywhere and work with leaders, communities and individuals to foster global solidarity, suppress the virus, and save lives and livelihoods. Even as we fight this pandemic, we just ended the second largest and probably the most difficult and complicated Ebola outbreak in history, in the Democratic Republic of the Congo. We have applied lessons from previous outbreaks and innovations developed and researched ethically in conflict

situations to bring the deadly disease under control. And just this week our team in Lebanon is responding to the large explosion that has killed more than 130 people and injured at least 5,000. Whether it's COVID-19, disease outbreaks or responding to humanitarian and natural disasters, all are intrinsically linked to global health security. While health has often been viewed as a cost, the first coronavirus pandemic in history has shown how critical health investment is to national security and universal health coverage is essential to our collective global health security. Building back stronger health systems will require political will, resources and technical expertise in high and low-income countries alike. That's why WHO's highest priority is to support all countries to strengthen their health systems so that everyone, everywhere can access quality health services when they need them.

10:22: COVID-19 has already taken away so much, we must seize this moment to come together in national unity and global solidarity to control COVID-19, address antimicrobial resistance and the climate crisis. For all our differences, we are one human race sharing the same planet, and our security is interdependent. No country will be safe until we're all safe. I urge all leaders to choose the path of cooperation and act now to end this pandemic! It's not just the smart choice, it's the right choice, and it's the only choice we have. I thank you. Thank you so much, again.

11:14: And I guess this is where I begin. Let me first of all extend my thanks on behalf of my colleagues at NBC News, we're very pleased again to be a participant in Aspen, this is obviously the topic-one of a story we cover every night. I wanna thank Dr. Tedros and Dr. Ryan, Dr. Van Kerkhove for taking part in this conversation. Before I get into my questioning, I just wanna let folks know that if you wanna be a part of the question and answer session in just a few minutes, raise your hands here virtually and as was noted we will get to as many as possible. But Dr. Tedros, if I could begin with you. I wanna pick up on something you said the other day that I think was a gut punch to a lot of us, it was the idea that there's no silver bullet here. If there's not a silver bullet, can you help us manage our expectations, what's the next best thing?

12:15: Thank you, thank you so much. Thank you actually for starting our discussion with that question. When I said, "No silver bullet," I also said, "No silver bullet right now." And the reason is, as you know we have been working on vaccines, therapeutics and diagnostics, since we had our first meeting with scientists all over the world in February. And of course, we have more than 200 vaccine candidates, and six of them are actually at a very good stage, clinical trials. So there is hope, but at the same time, without knowing the result of the clinical trials, we cannot say that we have vaccines. We may or may not. So the reason I said what I said is, people were... Of course being hopeful about vaccines is good, but many were not doing or using the tools we have at hand now.

13:31: As you now, governments should do testing, should do contact tracing, should do isolating, and also quarantining. At the same time, communities, all citizens should do what is expected from them, that's physical distancing, hand hygiene, wearing a mask and so on. If we can use all these tools, we can suppress and control this pandemic, many countries have shown. So my message was let's do what we can do today to save lives. The tools at hand can help us to suppress the virus, while investing in vaccines, which we may have vaccines or not, but while investing on vaccines, therapeutics and the rest. So it's just to keep the balance. We need to use the tools at hand now to the maximum, but at the same time, invest in vaccines.

14:33: I wanna explore vaccines a little farther. We've seen a lot of inequalities in our world magnified through this crisis. When a safe and effective vaccine is produced, who's at the front of the line to receive it and who's at the back of the line, and what role does WHO have in determining that?

14:53: Yeah, I will start on that and my colleagues will add. As you know, we launched the ACT-Accelerator initiative, end of April, WHO and partners. And we had two objectives: One, to speed up development of a vaccine, second, to ensure fair distribution so that people who may not have access can have access. Because of financial problems, they may not have access. These two objectives are very, very important. But to make it happen, especially the fair distribution, there should be a global consensus to make a vaccine, any product, a global public product. And this is a political choice, a political commitment, and we want political leaders to decide on this. Vaccine nationalism is not good, it will not help us. When we say it should be a global public good, it's not sharing for the sake of sharing. It's only because it has advantages. For the world to recover faster, it has to recover together. Because it's a globalized world, the economy is intertwined. Part of the world or few countries cannot be a safe haven and recover, they should recover together with the rest of the world.

16:22: So what we're saying is, sharing vaccines or sharing other tools actually helps the world to recover together, and the economic recovery can be faster, and the damage from COVID-19 could be less. So when those countries who have the means, who have the funding commit to this, they are not giving charity to others, they're doing it for themselves, because when the rest of the world recovers and opens up, they also benefit. So that's why we're saying we should have a vaccine which is considered as a global public good that can help us to open up the world and speed up the economic recovery, which is hurting many countries. And it's not a charity, and that's how it should be seen. And I hope that many countries now are taking that understanding and joining, and we need to make progress though, more progress, and there should be a political commitment.

17:35: Russia has recently announced that they're targeting October for mass inoculations after apparently cutting short of the trial period, what is your level of concern about any vaccine candidate that hits the market in this calendar year? Should we be worried?

18:00: Maybe I can step in there. This is Mike Ryan. No, I think what we have to be focused on is, yes, accelerating the development of the vaccine, and a lot of people in the US and in many countries around the world are doing tremendous scientific work to accelerate the developments of the vaccine. And I think with over a 100, nearly 140 vaccines on development, of 26 in clinical trials, and six in Phase 3 trials. That's an incredible outcome for a very few short months of work. What we need to do now is ensure that that vaccine is safe and efficacious. The studies are underway, six Phase 3 trials, beginning with larger numbers of patients. And as that work continues, we have to continue to watch out for the safety and for the clinical efficacy signals. Should we find that signal, we should be able to move into production of that vaccine and begin to use it in human populations, but we will still have to remain cautious as we scale up the number of people vaccinated.

18:57: Rare side effects are rare, and they only become apparent when you vaccinate lots and lots

of people. So there will still be a need for a monitoring phase, even when we start to ramp up the vaccinated population level. There are no cutting corners here, I think many experts in the States, the head of NIH, Tony Fauci and others have spoken. This is about accelerating the process of development, putting the risk in financial side of the equation, not on the safety side of the equation, and ensuring that there's enough production to meet the needs around the world. And that is the key issue, are we going to have enough vaccine for everybody who needs that vaccine around the world?

19:38: I'm curious to get your thoughts about this notion of human challenge of giving, purposely exposing people in the trial to the active virus, the ethical concerns about them. What are your thoughts, Dr. Tedros?

19:55: I can begin. Dr. Tedros can follow-up. The human challenge, we've had a group looking at human challenge studies. Certainly for those of you out there who don't know these things, this is where you would intentionally expose a person who's been vaccinated to the virus in order to see if the vaccine works. On the face of it one would never attempt that with an extremely dangerous virus. In this case, young, healthy adults don't tend to get very sick and there could be a justification for that in certain circumstances. This is usually done when there's very low level of human disease and therefore it's difficult to demonstrate efficacy. In this case we have disease all over the world, we should be able to demonstrate efficacy of the vaccine in a traditional way by large scale population-based trials.

20:49: But we've had a committee looking at this, we have laid out the premises for when and where and how this could be done. Obviously, we do not fully understand the long-term consequences of natural infection even in younger adults, and we will have to think and be very, very careful for instituting human challenge studies. They will have to be very carefully assessed for their ethics and the potential health effects. But there are circumstances certainly in which such trials can be justified with the appropriate ethical oversight.

21:25: Alright. I wanna ask you about schools. UN Secretary General António Guterres has warned of a generation of catastrophe because of school closures during the pandemic. It's obviously something we're wrestling with here in the United States, but globally it's a huge question. Doctor, can you offer what the WHO guidance is on school re-openings, what works, what doesn't work, and what the level of risk we should be willing to accept?

21:54: So thank you for that question, it's a really important one all across the world. We have laid out some guidance on the considerations for when schools should be closed or when schools can be opened. I think what we need to think about are a couple of things. One is what is the risk of this infection in children? What do we know about that in terms of the virus' ability to infect children? We know children can be infected. What is the disease that is caused in children? And we know for the most part luckily, most children who are infected will have a mild disease and recover just fine. But that is not universal. We do know that there are some children that could develop severe disease and some children unfortunately have died. And we do know that children can transmit this virus. We're still learning about this. We're still learning the extent of transmission among children of different age groups.

22:43: And so that is a large unknown that we have right now. Some countries never closed their schools, some countries have and are now opening up their schools. We are seeing some transmission that is happening in schools and we're learning about this. What we've done is we've tried to offer some considerations for those taking decisions about when schools can be opened. You have to remember that schools aren't in isolation, schools are within communities. And if the virus is transmitting in the community. Then the virus can transmit in that school. It's not only the children that we are concerned about, it's the people who work at those schools. So if the virus is present in the community, we need to really focus on driving down transmission in the community and to think about opening up the schools.

23:25: We also need to consider how these schools are run in terms of the number of children per class and if there are physical distancing that can take place, if there's hand hygiene available and running water and being able to wash hands. We need to look at the control measures that are in place that can be put in place in schools and the ability of those schools to rapidly be able to detect cases. But it's something that we're still learning about, and we need to make sure, I think the big thing is, is that if the virus is circulating in the communities, those schools are part of that community and that means that the virus can enter the school as well. But we're still learning quite a lot about this. We've outlined considerations, we've published those guidelines. We have established a technical advisory group that's working with us to look at educational institutions across the globe, because many schools look differently and operate differently across the globe, to look at our guidance and to look at the experiences of countries to see how we can further support decision makers in taking decisions about schools.

24:25: And Dr. Van Kerkhove, let me ask you about the notion of further lockdowns of border restrictions. Are we seeing any of those being effective and that it might be necessary in some cases to impose more?

24:42: So that's a good question as well. I think when people use the word lockdown, that means different things to different groups. We don't actually use that word lockdown because it's actually composed of several different types of interventions that are used. There are restrictions, your stay-at-home restrictions that some countries have used, there are movement restrictions that some countries have used, physical distancing, hand hygiene, the whole package. And I think what the Director General has said and what we've tried to say from the beginning is that it isn't one action. It's actions of individuals. It's actions of communities. And we do see that these measures work. What we're hopeful for is that we will not have to, or countries will not have to impose any of these so called large lockdown measures again. That actions can be tailored and they can be geographically limited to where you have the most intense transmission. They can be time-limited to help countries activate their public health systems to find cases, isolate cases, care for cases, carry out contact tracing, make sure that testing is available and make sure that communities are engaged, empowered, listened to and are part of this fight.

25:58: Dr. Tedros in your opening remarks you mentioned that the Americas seem to be struggling the most right now although obviously the entire world is affected. Can you offer your opinion as to why the Americas are having such a difficult time?

26:19: Okay. So my colleague who will take this.

26:24: First of all, let us take our hat off to all the frontline public workers, frontline workers in the United States and all over the world, who've worked so hard and risked their lives, left their families to look after, to save lives, to stop transmission. We are all in this together. And there are heroes in every corner of the United States and around the world. Every country, at this point, has struggled at different paths and different stages in this pandemic response. No one has had all the right answers and no one has done all the right things every time. This is a new virus evolving quickly, there are lots of unknowns.

27:13: And referring maybe back to Maria's previous answer, I think the lockdown issue is a hugely blunt instrument. It's a very blunt measure. It suppresses the virus by really separating everybody from everybody else, and that's been the struggle. Can we move away from such a blunt measure to a more sophisticated, real-time, localized, targeted, comprehensive strategy based on local data, local action, rapid turnaround of testing, the ability to isolate and treat cases quickly, the ability to identify, track, trace, and quarantine contacts. In other words, if we are to get out of this, and I would say this to the United States as I would say it to many other countries, we have to create a new partnership, a new deal between government services and community action. Communities, individuals have to be empowered, educated. They have to want to participate. They have to take most of the actions needed in terms of physical distancing, wearing masks, hand hygiene, avoiding crowded places. But they need to be facilitated and supported in that if they have to go into quarantine, if they have to be isolated.

28:23: And the local authorities need the data. They need the rapid turnaround of testing. They need to be able to do case finding, contact tracing. We need a massive ramp up of the public health workforce in order to do that. This has to be a major push. And we all have to take a breath, we all have to stand back. And it's very easy to look from one side of this house to the other, one side of this world to the other and point at what everyone else is not doing right. What we all need to do collectively, we need to take a step back, we need to look at the problem again and we need to go at the problem again. And that needs everybody on board. It means bipartisan, all of government, all states, all communities working together. And that requires strong, sustained and trusted leadership at all levels to make that happen. This is not easy. It's easy to say, it's not easy to deliver. We have the tools to suppress and bring this disease under control, and we hope we will have the tools to eliminate this disease as a public health threat when vaccines come along. In the meantime, as the DG said, and I'll say it again and again, do it all.

29:29: A question about the US withdrawal from the WHO. As you know, it doesn't really become effective officially for almost another year or so. In the interim, can you tell me if the United States is actively participating and partnering with the WHO and other nations during this withdrawal period?

29:50: Yeah, thank you. First of all, with regard to the withdrawal, this is, to be honest, we have been working with the US very, very closely. And US is known for its generosity and support and also leadership in global health. And its leadership and support has really saved many, many lives. When I was a minister in Ethiopia, when actually HIV/AIDS was ravaging the whole continent of Africa, and of course, in the rest of the world too. It's the US generosity and leadership that gave hope to individuals, gave hope to families, and gave hope to nations. I remember how the advent of

PEPFAR and also Global Fund, which was established with a significant contribution from the US, saving lives and turned the tide. So that's what we remember whenever we think about the US. So we appreciate that. We appreciate the generosity and leadership of the US.

31:28: Then now, when the US decided to withdraw, the problem is not about the money. It's not the financing issue. It's actually the relationship with the US which is more important and its leadership role. I say this many times, you cannot defeat this dangerous enemy in a divided world. We need a united world. And a united world needs cooperation and solidarity among its major powers. Multilateral organizations can only support, like WHO. The leaders always have been countries and especially the major ones who can bring the whole world together. So that is more important for WHO, the void, not the financial. And we hope the US will reconsider its position.

32:38: If there are issues about WHO or the UN system at large, we are very open for any evaluation or assessment, and the truth can be known, and this can be done from inside without leaving the organization. And knowing the truth is very important for the whole world. We're in a very unprecedented situation. The pandemic has turned around the whole world. This minute or invisible virus has taken the world hostage. So we need to learn lessons from what happened and what's happening, and we need to build the future together. So everybody should be prepared for lessons to be learned, honestly. And nobody is saying anything different from that. So if there is any problem, we will find out and we will learn from it. But now, it's time to work together. Now, it's time to focus on fighting the virus. So I hope the US will reconsider its position. But now as we speak, we are actually meeting today and we were briefing the mission, all member states, and the US has been participating actively and we still have communication. We're working together and we appreciate that. But I hope the relationship will return to normal, and a stronger relationship than ever before. Thank you.

34:36: Dr. Tedros, thank you for that. This is kind of a turning point in our discussion right now. At this point, I'm gonna open this up to folks in the audience. We do wanna start, though, with Atlanta Mayor Keisha Lance Bottoms, who has experience with this many different levels as you know. Mayor, thank you for taking part and I'll let you ask your question.

35:00: Thank you so much, Lester, for recognizing me. I do have a question regarding resources that are available for helping us to accurately track and measure the racial and ethnic disparities with COVID-19. We've seen a significant divide in Atlanta and in Georgia, and of course, that's happening across America. And just with the poor way in which we are collecting data. Are there any other opportunities for us to use other tools to help us track this information?

35:38: Thank you so much for that really critical and important question. Absolutely, I think there's different ways in which data can be collected to really help us understand the disparities, the inequalities, the risk factors that put individuals and populations at a higher risk of severe disease and/or death. And there's ways to do that, through surveillance data, through the routine collection of information that we have from people who are detected through routine surveillance systems. We also have the opportunity to do different types of studies. So research studies that either focus on hospitalized patients and looking at people who show up for health care, who are detected through health care, through other types of investigations and epidemiologic studies that focus on different types of populations. To really help us identify the extensive infection among people, which is

either measured through these molecular tests or PCR tests or serology, which measures antibodies, and those risk factors of why certain people are getting infected and what are those risk factors that put them at a greater risk.

36:38: They can also evaluate not only those types of characteristics but health-seeking behavior, access to healthcare, looking at underlying conditions. I think this is a very complicated story that really needs good information to be able to help us disentangle this. But I think what is most critical for me anyway, is that we have to do everything that we can, while we're learning. We have to do everything that we can to prevent as many infections as we can. And we do have the tools right now to do that and we need to be focusing on that. Because not only do we prevent infections from people who may have an asymptomatic infection or a mild infection, we prevent them from passing the virus to somebody who is part of that vulnerable category and could go on to develop severe disease and die. So there's a lot of ways that we can do this, through surveillance activities, through routine data collection, but also through specific studies that can happen across many different countries.

37:35: Alright. Mayor, thank you for your question.

[overlapping conversation]

37:37: Yes, I'm sorry. Go ahead.

37:37: If I could just briefly add something. I think it's a very important point and I think there is more research needed in this area. There's lots of anecdotal measurement going on and it's very important and it's pointing to some of these deep inequities, be they sociocultural or be they ethnic. But there is no question that these factors are particularly driving negative outcomes amongst many, many groups, and we need to document this much more carefully, much more systematically. And we've been using the... The Director-General created the solidarity fund a number of months ago, and we've been trying to use and identify interesting projects that are maybe not subject to the normal mainstream funding. And we will certainly, based on your advice, look more systematically at how we can fund studies around the world on this particular theme.

38:31: And while I have the floor, Atlanta hosts one of the greatest scientific institutions on this planet, the Center for Disease Control. And as the DG spoke about ongoing work, I would, again, like to thank the United States for so many decades of service of the Center for Disease Control, all around the world. I don't know if Americans realize just how important CDC is, not just to Americans, but to every citizen on this planet. We have worked hand-in-hand for many years. I have learned at the knee of so many great scientists at CDC. So it's just great to have the Mayor of Atlanta on so we can say thank you for hosting such a wonderful institution, and our regards to all our colleagues and friends over there. And the politics of these things will never shake the bonds that scientists have around the world, and the urge and the desire we have to work together to save lives.

39:28: Alright. Our next question comes from Bianca Rothier.

[pause]

39:39: Okay. Maybe we have lost her. The next person we have waiting to ask a question is António Alberto.

39:49: Can you hear me?

39:50: Yes, I hear you. Is this Bianca?

39:53: Yes, exactly. Many thanks for taking question. I'm correspondent in Switzerland for Global News and for Global, the largest TV network in Brazil. My question is specifically about indigenous peoples in the Americas and in Brazil. Two weeks ago, Dr. Tedros said that the WHO is deeply concerned, and yesterday Brazil's Chief Aritana Yawalapiti, one of the most influential leaders, indigenous leaders he died from COVID-19. So does the WHO has an idea about the number of cases and deaths between indigenous peoples in Brazil and could you please give us some more details about the challenges faced by indigenous peoples in Brazil and the work done by the authorities, is it enough? Many thanks.

40:47: Yes, we can get you some specific numbers on Brazil. I just don't have them at hand. If you forgive me, we can provide them afterwards. But the point you raised around the effects of this disease on indigenous peoples is real. I think the mayor referred similarly to issues around ethnicity. There are definite ways in which this virus may be differentially affecting certain groups, but it's more certain that the outcomes of these groups are very different. Whether or not ethnicity or your genetic make-up makes you more susceptible to disease is still in question. But what's not in question I believe is that if you because of your ethnicity, because you're an indigenous person, if you are living in poverty, if you've lived for years without access to adequate healthcare, if you've got underlying conditions like diabetes or hypertension because of lifestyle issues that have been induced by poverty and by lifestyle, then the outcomes in this disease are much, much worse. And the access to health services is much slower, much later and very often not of the same level of sophistication. So there is no question of that.

41:57: There are maybe two groups of indigenous peoples that we look at. One are groups who are living in their traditional environments, be it in the Amazon rain-forest or in other situations. And then there is probably an even greater number of people who come from indigenous backgrounds, who live very often in peri-urban poor situations and they suffer very much the same diseases and the same vulnerabilities as the urban poor in general. And in many countries, indigenous people make up a disproportionate number of people living in situations of poor access because of poverty, because of lack of access and frankly because of racism. So, I think the trick here is really creating access for everyone to health services now to save lives and doing something much more systematic in the long term, which is the greater challenge. And that is how do we reduce these differences and how do we get rid of the inequities that exist over long periods of time that ultimately result in these poor outcomes when we're hit with diseases like COVID-19.

43:05: Alright. Next question is António Alberto. António are you there?

43:09: Yes, hello.

43:13: Yes.

43:16: Okay. So I have two questions but one of them is really short. When you mentioned there is six vaccines almost ready, can you tell us which are these candidates, the ones from Russia, China, United Kingdom included? And my second question is about Spain. Several countries like the United Kingdom and Switzerland are declaring quarantine against travelers that come from my country. Is the situation in Spain worse than in other parts of Europe? Thank you very much.

43:58: I'll start with the second part of that question first. So the question you have specifically about certain countries and different measures that are putting into place. I think the way I would like to answer that question is the fact that we have had many countries across the world, and even in Europe, we'll focus on Europe for the moment, that have had success in bringing really terrible outbreaks under control. And I think that is a sign of hope for countries that are really going through something very, very difficult right now, including my home country in the US. But what I want to say about the introduction of new measures again or the re-introduction of some measures, is I think that everybody needs, all countries need to be in the mindset that we have to be ready, at the ready to quickly detect cases. So if we can quickly detect cases, we could prevent those from forming clusters and we can prevent those clusters going into community transmission again.

44:55: And what we're seeing is a number of countries that are introducing measures in a localized, strategic and appropriate way so that they can really stamp out some of these fires, these little fires that start, before they turn into big flames. And I think that that's something that everybody needs to be prepared for. So even countries that have had success in suppressing transmission, I'm seeing some articles that will say, well, they were once a sign of hope. I think they are still a sign of hope, because many countries have structures in place, they have surveillance in place, they have workforces in place to quickly detect these clusters and bring them under control, so they don't move into community transmission. And so we need to apply what we are learning, we need to use the tools that we have, so that we don't get into difficult situations again.

45:43: And maybe just some more detail on the vaccines side of things. Yes, I did mention that there are six candidates currently in phase three trials, and I think I said before there was about a 140 candidates in some form of trial, I think that's actually up at around 165 at the moment, with still 26 in clinical trials of some type. Six candidates that I referred to, three are from China, one is the AstraZeneca, University of Oxford. There's Moderna NIAID vaccine, and then the Pfizer vaccine, BioNTech vaccine. They're the ones that are currently in phase three. And just a word of caution, phase three doesn't mean nearly there, phase three means this is the first time that this vaccine has been put into the general population, into otherwise healthy individuals to see if the vaccine will protect them against natural infection. In fact, it's the beginning. Up to now, all of the studies have been around safety, immunologic, immunogenicity and ensuring that the vaccine generates an immune response in a small number of humans and doesn't generate adverse events that would prevent the vaccine moving forward into trials. In that sense, there are sort of gates that the vaccine has to go through. This is not a gate, this is a race for the vaccine now to demonstrate that it can protect large numbers of people over a prolonged period of time, and we would hope that more studies will enter into these trials.

47:16: The candidates that are in trials, in which what is good, some are RNA or nucleic acid vaccines, and two are non-replicating viral vector vaccines and three are inactivated viruses. So we've got a good range of products across a number of different platforms, across a number of different countries, that's good, but we're going to have to wait and see what the outcome of these are. There are a large number of other candidates out there, and we are working to see. Because there's no guarantee that any of these six will give us the answer, and we will need and probably will need more than one vaccine to do this job. So we are working with partners all over the world to duplicate... We've been working on the Solidarity drug trials in which we're doing multiple country trials on drugs, we're also building a platform for Solidarity vaccine trials, which will allow a greater number of potential vaccine candidates to be tested in a larger number of countries. And as I said before, in countries with high incidence, so we possibly can avoid being able to use challenge trials as a way of demonstrating efficacy.

48:24: Listen, I thank you all for your answers, regrettably, our time has expired, but thank you for what you're all doing, we're depending on folks like you. I hate the fact that it could ever be a cliché, we are all in this together. And so we appreciate you spending some time with us today, and I wanna thank Aspen again for including me. Thanks everyone and good day.

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