THE BROOKINGS INSTITUTION

WEBINAR

FAST TRACK TO RECOVERY: US-CHINA COLLABORATION
ON COVID-19 PREVENTION AND TREATMENT

Washington, D.C.

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PARTICIPANTS:

Welcome:

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QUI YOUNG
President
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Keynote Remarks and Conversation:

DR. GEORGE F. GAO
Director-General
Chinese Center for Disease Control and Prevention

DR. IAN LIPKIN
Director, Center for Infection and Immunity
Mailman School Public Health, Columbia University

DR. ZHONG NANSHAN
Head, Expert Group
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MODERATOR: LAN XUE
Distinguished Professor and Dean, Tsinghua University
Nonresident Fellow, John L. Thornton China Center
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Expert Panel:

DR. TOM FRIEDEN
President and CEO, Resolve to Save Lives
Former Director, U.S. Centers for Disease Control and Prevention

DR. JANE HENNEY
Lead Director, AmerisourceBergen Corporation
Former Commissioner, U.S. Food and Drug Administration

PARTICIPANTS (CONT'D):

DR. WU ZUNYOU
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DR. ZHANG WENHONG
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Moderator:

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P R O C E E D I N G S

GENERAL ALLEN: Well good morning ladies and gentlemen in the United States and good evening to our dear friends in China. And for those of you I've not had the honor to meet yet, my name is John Allen. I'm the president of the Brookings Institution in Washington, D.C. And let me just comment that watching this group assemble on the screen this morning before we kicked off the formal event, it was very heartwarming to see it looked almost like a family reunion with dear friends once again coming together on an important subject and an important topic.

On behalf of my colleagues at Brookings and in our John L. Thornton China Center, I'd like to begin by offering my profound thanks to this incredible group gathered here this morning, this distinguished public health and medical experts who are joining us today. One month ago, Brookings convened a round table discussion with officials, advisors, and public health experts from the Biden administration in China, some of whom are here with us again today. And through that discussion we saw a strong commitment to exploring possible U.S.-China collaboration to address the pandemic. Through that convening and our event here today, we want to take advantage of the change in administration in the United States to set a new course for how the United States and China can each address the shared threat of COVID-19. We want to do this by looking into the future, not dwelling on the past. Without a doubt, clearly the U.S. and China relationship is experiencing a low point. But the presidential transition from Trump to Biden in the United States offers us an opportunity for leaders on both sides of the Indo-Pacific to examine what can be done differently. The Biden administration has made clear, when it comes to issues of our time, there is nothing more important to that administration than bringing the COVID-19 pandemic under control. No country will be able to accomplish this on its own. It will only be accomplished through coordination.

As far as the domestic response, President Biden has issued an executive order condemning and combatting the racism and the xenophobia that has targeted Asian Americans and Pacific islanders through typically references in the last administration, the COVID-19 pandemic by either nicknames or geographic location of its origin. We're very pleased that he's taken that action because we

have to act against the racism and xenophobia as a nation. But there are also practical reasons for the United States and China to coordinate our efforts, and I hope that today's event will present these practical actionable steps to our leaders in both countries to help them take steps to save lives within our borders, but very importantly, beyond our borders. We want to talk about three areas in particular: Medical and research cooperation, vaccine development and distribution, and cross-border travel and global collaboration of public health progress.

Collaboration that we're pursuing is not new. The U.S. and China have a long history of working together to combat disease from SARS in 2003 to H1N1 in 2009 to Ebola in 2015. That's a long history of constructive and productive collaboration. When China and the United States join forces to fight COVID-19, the world will have a better chance to emerge from the pandemic stronger. But if these two great countries fail to take action together, the world will in turn become weaker and more divided.

So we will today, with a keynote conversation, begin the session which will be followed by an expert panel, and we welcome the viewers to submit their questions to us via email at events@brookings.edu. And we are very proud as always, as ever, to cosponsor today's event with Tsinghua University, which has been our institutional partner for 15 treasured years. In the time, we've built a strong and enduring bridge between American and Chinese people, and that is emblematic in the collaborative spirit we see being fostered her today. So I would then like to turn the session over to my friend and my partner and co-convener in this endeavor, Tsinghua University President Qui Yong, who will share his introductory remarks. Ladies and gentlemen again, thank you for joining us today and we hope to have a very productive session for the benefit of both our people and both out countries. Thank you. Mr. President, please.

MR. YONG: Thank you President Allen. Ladies and gentlemen, good morning and good evening. I'm honored to host this webinar with President Allen. On behalf of Tsinghua University, I'd like to extend my sincere thanks to our distinguished speakers and our global audience who have joined us today. 2020 marks a once shared human history. The outbreak of COVID-19 has been a major test for every one of us. As we enter 2021, development of several effective vaccines against COVID-19 offers

the promise of a curable solution to the global pandemic. At this critical moment, Tsinghua University under the Brookings Institution have hosted this webinar, “Fast Track to Recovery: U.S.-China Collaboration on COVID-19 Prevention and Treatment” and as always, (inaudible) policymakers and leading medical experts from both countries who perform (inaudible) policy recommendations as well as for facilitating cooperation medical research, vaccine development, and the distribution and the international protocol for travel and trade.

Tsinghua University under the Brookings Institution, have for 15 years performed a fruitful collaboration. Since October 2006, we have established the Brookings Tsinghua Center, which is efficacious for producing high quality research and facilitating idea exchange of crucial public policy issues among leading scholars and policymakers within China and the United States. I’m honored to have served as a chair over the Brookings and China Consult since its establishment in September 2015. Now our collaborations have (inaudible) extended into new states as well as in the future. The cooperation of the Tsinghua University and the Brookings Institution will continue to serve as a viable platform for a force for mutual understanding and the collaboration between our two countries.

In the face of the pandemic, Tsinghua University has a call to the safety and affairs of our faculty, students, and staff being their first place. Last year we started the previous semester online and delivered hybrid learning in the fall semester integrating online and offline teaching and learning simultaneously. In addition, we swiftly initiated COVID-19 resource projects based on Tsinghua’s traditional strength in size and technology and have achieved substantial progress in medical and vaccine research, fast testing kits, and the intelligent academic prevention systems and equipment. On March 2, 2020, President Xi Jinping, visited Tsinghua to inspect the School of Medicine’s research project on COVID-19. One month later, Tsinghua established the Vanke School of Public Health, Dr. Margaret Chan, former Director General of the WHO was appointed the school’s inaugural dean. Tsinghua has also set up a research fund to encourage and support joint research projects on COVID-19 with global partners. Within nine months, twelve projects have been successfully launched with nine universities and institutions from eight different countries of the regions.

Collaboration is of critical importance in our increasingly networked global community. As we enter the period of vaccine distribution, it's vital that we work together to develop and form policies and recommendations for the next stage. We look forward to working together with the Brookings Institution and our global community to facilitate a faster recovery from the pandemic through academic exchanges and the resource collaborations. I thank all participants for your contributions to this event and hope for lasting outcomes from the content explored today. Thank you very much. Now, I'd like to invite Professor Xue Lan to moderate the keynote conversation.

MR. LAN: The successful development of vaccines and the beginning of the wide distribution and use in many countries; however, the virus itself has not stopped its rapid spread. In the last few weeks we've seen new variants forming around the world. There an urgent need for the global community, particularly the world's two largest economies, the U.S. and China. To join force to stop the pandemic, with addressing COVID-19 as a top priority for leaders in both Washington and Beijing, it is a critical time for collaboration. What are the ways the two countries can work together in medical research and collaboration? How can the two countries work with international organizations such as WHO or COVAX facilitate fast vaccine development and fair distribution? What can be done to develop international protocols for global travel and trade?

To address this issue, we're joined by three leading experts from both China and the U.S. Professor Zhong Nanshan, a member of the Chinese Academy of Engineering and the head of an expert group of the National Health Commission of China, Professor Ian Lipkin, director of the Center for Infection and Immunity, Mailman School of Public Health, Columbia University, and Dr. George Gao, the director of Chinese CDC and a member of Chinese Academy of Science. Now without further ado, let me first invite Professor Zhong Nanshan to make his remarks. Professor Zhong.

MR. ZHONG: Thank you Dr. Xue Lan and then Mr. John Allen and Mr. Qui Yong. So many thanks for inviting me for this Zoom meeting with Brookings Institute and the Tsinghua University. So that's a very interesting topic of this meeting. So can I have my slides, please? Yes -- I'm sorry. Okay, this is my topic. I think that's the subject of this meeting. The fast track of recovery, U.S.-China

collaboration in combatting COVID-19 pandemic. So of course, this is -- Yes, before I talk on that, I would like to talk a little small story with (inaudible). So that's the picture taken one year before, just before I departed from Guangzhou. We met together at 6 o'clock in the airport to talk or discuss together and see how to deal with COVID-19 before I went to Beijing. So I took the picture here, so it's very memorable here. And also I remember another picture was taken, that was 2003, 18 years ago. So that's -- I am -- look handsome and young. And then I think we had been knowing from each other for such a long time and I really appreciate our friendship and so on. So now you look today, you look and it's nice to hear from you. So I think everybody knows that, so yesterday's data. So 113 million confirmed cases and 2.5 million deaths. That's a big problem here.

But as a just decision, I should say the most pandemics in human history of course, the majority are caused by their respiratory pathogen interaction. That's transmission via the respiratory tract. Plague, smallpox, the flu, and this century, SARS, MERS, and COVID-19, of course. So that's a big problem in SARS, so we probably know the host and we know the reservoir. And then outbreak of MERS in Middle East, the host, yes, and the bats also the reservoirs camel; however, so with COVID-19, now we still don't know what's the host, perhaps bats as well, but we don't know which ones that emitted the reservoir. That's really important. I suppose Dr. Lipkin can find out and then during our collaboration we partly can find out what's the reservoir, which is extremely important. If we can stop this transmission role, that will be okay for the next pandemic.

As you know, the COVID-19 caused a big impact of the GDP goal. Unless the GDP such as China and other countries like in the United States, that's a big drop during the year 2020. So that's the impact of the economy. And also the passengers, so the airline industry you can see a big drop here so during the 2020. The passenger threshold dropped to 60%, so in the international flights and the domestics, 50% dropped. Also, I should say that's a percentage of the country reporting at least partial disruption in at least 75% of the medical care service you can see here. So this is global. So one disruption. And in particular, in the low income countries and so on. So more or less, that's a big impact of the medical service of that.

And this is -- you can see, this is the so-called noncommunicable service, like we know, rehabilitation, hypertension, diabetes, asthma, allergy treatment, urgent and dental care, tens of treatment, cardiovascular, all dropped and then our disrupt. And then grows to 50%. So, what China has done, we just mentioned very briefly about that. That's the data, so we have so-called six member national high class expert community (inaudible). And then that's the day of the 20th of January, so we announced that definite human transmission in this -- during this outbreak of COVID-19 and also confirmed medical staff had been infected. Since then, so I think how to go, the strategy, so just in front of the China government, so there are two ways. One is the mitigation and another way is suppression.

The mitigation of course, is the general measure, but because of the very high respiratory ratio, general mitigation may have lost control, and also based on the very painful experience. So 18 years ago about SARS outbreak in China, so this is some idea in the central government, that's a very important point is so-called life supremacy. That's a basic line, basic idea for the central government. So they choose the suppression by this way. So and after that -- so that some action can be taken. So of course, everybody knows the lockdown in in Wuhan and also inside and Wuhan, there's 16 hospitals established to separate the patient from healthy persons. A very important issue is the so-called interagency mechanism launched with so-called early protection and early diagnosis, early isolation, early treatment.

This actually starts with all community level. That's a very important step for China, the whole country. So what happens then? So you can see the first state is so-called blocking action. So it only took about one and a half month to reach the peak and then going down, brought down to the formal situation. And then the very low incidents, probably about nine months, 10 months. And then the accumulated patients going to a plateau, similar plateau. And during the last few months, there are some rural sporadic. So that's a little big improved or increased.

So we have up to this time, so 10 months, can reopen the economy and so on. That's why in China, so you can see the direct lines in China. GDP goal, so it's of course in the first -- second quarter it's going down, and then going up. So yesterday, the central government had announced GDP

increased by 2.3%, seems to be okay by this stat. And also the markets, like the financial Segway to export business. So the export is like this, blue lines in China. So you can see it having a drop. So in the first and second quarter and then going up and then this -- so higher than zero. So the positive improved.

So that's the main problem. And then I think that China had been met with another questions. So we cannot have very strict containment for a long time in order to recover our economy and reopen all the schools and all the social activities and so on. So of course, everybody knows now that the schools are set up and first, immunity, it cannot use that kind of things like natural infection. I'm not going to talk too much about that. But natural immunity and realistic less scientific and inhumanity -- so massive vaccines has been noticed by the people all over the world in actually two or three years' time who have to set up this important immunity. Of course, maybe longer. But now, in China, so we have got six, all together close to 60 trials, 60 topics of different kinds of vaccine being developed at the moment. But six of them and the phase three clinical trial, and here. So five, four, so Sinopharm, Sinovac, and CanSino so now it has been approved, who have conditional marketing. So ABCD this fall. Another one is actually developed by one of the -- developed by a person, is George Gao and then it has been approved for emergency room use. That's good for that. So actually they have developed that. But we can look at this number of those administered. That's data from February, so from 27th of February, of course in the United States, the most doses being given.

So that's in China, so not that many. But that's the absolute dose. Very important is you should see the vaccination dose administered for 100 people. So how -- what's the percentage of that? So Israel is the highest. So 90%, over 90%, and the second is United Arab Emirates that's more than 60%. United Kingdom is also very good and now is increasing fast. The US, United States, so 22%, that's the data given from a couple of days ago. And China is only 3.56%. So when asked today, I asked my CDC friends, what's your -- the plan of the next few months in China? And they replied that planning to reach 40% at the end of June. I said that would be okay. But still need time to reach the so-called herd immunity.

So this is a big problem, is we have discovered a lot of multiple SARS, COVID-19

mutation in the globe. So you can see in Nigeria, U.K. and the USA and then South Africa, Brazil, and so on. And we're got a lot of mutation. So that is a big problem. That's a paper that's coming from New England Journal of Medicine and here you can see using an MRNA vaccine the effectiveness of the nutrlization is much more dropped quite a lot. So as compared with the former one, so that's one problem.

The second problem is the so-called as you know, the anti-monoclonal antibodies are the best way to treat patients with COVID-19. So actually, there are some mutations in the U.K. or in the United States and in Brazil. So both in the end terminal domain and receptor binding domain. The red dot is mutation and the green dot is deletion. So that's because this changed so the anti-monoclonal antibody that is infected will be less. So the big problem is you take COVID-19 virus to decrease the effectiveness of preservation and also decrease the effectiveness of antibody treatment, which is the most effective treatment so far so they modify, improve the vaccines and curtail antibodies as really emergent for the next wave of pandemic in the near future, that we need to have collaboration between the two countries, the two biggest countries in the world, United States and China.

So actually we have already had some collaboration from our part Guangzhou Institute of Respiratory Health and Harvard Medical School. That's the day of February of last year. So we have already had one year of collaboration. It seems to be very fruitful during the recent meeting and in terms of the faster diagnostic technique and so-called vaccine development and so on. So this is why we need to have closer collaboration from each other, to face our common enemy. So thank you very much.

MR. LAN: Thank you very much Dr. Zhong and I think that was a fascinating discussion on the issue and hopefully we'll have more time for discussion. Now, let me invite Professor Ian Lipkin to make his remarks. Professor Lipkin.

MR. LIPKIN: Thank you. First, before we get started, it's so good to see Gao George, and Nanshan and Tom Frieden, all friends of longstanding. I've worked in China since 2003. I'm not going to be showing any data slides today. I'm going to focus instead on my personal views in terms of the history of pandemics and the future pandemic prevention. My mother who died a year -- six years

ago today at the age of 94, was born in New York Harbor on a boat that was in quarantine because of a typhoid epidemic. So I've been involved in this work for 100 years, even before I was born.

Those of us who are over the age of 60 will probably remember polio. It was brought to heal by vaccines. What many people may not appreciate is that this was an international effort. In the US alone, there were two immigrants and the child of a recent immigrant who developed that vaccine. The smallpox eradication campaign was again, a global effort between the west and east. There was a soviet scientist who was responsible for developing the needle without which the vaccine program would not have been successful. I remember when I was training in the 1980s in San Francisco, the emergence of HIV/AIDS. We didn't know what it was and squabbling for two years between two groups, one in the U.S. and one in France, delayed diagnostics and medical interventions that could have saved hundreds of thousands of lives.

And in the late 1990s, although we should have known about emerging zoonotic agents, we hadn't really focused on them at that point. The emergence of West Nile virus in North America was a transformative event and led us to this whole field of one health. In 2003, I was invited by then Vice President Cheney and Minister of Science and Technology Sandberg to work with the Chinese government in addressing the challenges of SARS. And I can tell you that in the time since 2003 and the present, the technology, the infrastructure of the CDC, universities and such, has dramatically changed to the point where it's unparallel worldwide.

I've worked with Ziad Memish and KSA during the early days of MERS in 2012 and with Soumya Swaminathan who is now at WHO, but who was then director of the Immune Council's Medical Research on Unexplained Encephalitis in (inaudible). And finally, as directing bio defense research laboratories after 911 and working under Tom Frieden with something called the National Bio Security Advisory Board and more recently, the Advisory Committee of the Director of NIH, Francis Collins, I've seen the importance of global collaboration. And many of you will know about the film Contagion and some of the public service announcements we've tried to engage in to educate people in the US and abroad.

Over the past 35 years, what I've become convinced about is that the largest obstacles to progress are not technical or scientific, as you've seen our ability to make vaccines and diagnostics is extraordinary. It's international, interinstitutional, and interpersonal trust, respect, and collaboration. And this is why this conference is so important. SARS-CoV-2 is unlikely to be the last challenge that we face. As a species, we underestimate a wide range of viruses, bacteria, antibiotic resistance elements in fungi. These post threats not only to human health, but also to climate and to food security. One of the challenges in public health is when we are successful, everybody forgets about us. Nobody pays attention because there is no problem. So when COVID-19 is in the rearview mirror, it will be very, very important that we keep up this emphasis on what I call the three pillars of success in preventing pandemics. These are intelligence, insight, and implementation.

Let me tell you what I mean by that. So intelligence is surveillance. It has to be global. We have to have data integration and data sharing. We are better at this, but we have problems still. And some of the preprint service that people use to post data are publishing things that are not true and mislead individuals and waste resources. And we could talk about drugs that were promoted by our last president that are a challenge. Insight, basic and translation research. Again, I've seen in the U.S., investments that have waxed and waned in support of basic science research. This needs to be sustained. And finally, implementation. The testing and the rational distribution of diagnostics, drugs, and vaccines that mitigate disease. We need a global food and drug administration. Sometimes there's an outbreak in one part of the world that moves to another. It makes no sense to have multiple FDAs so that everybody has to go through the same process over and over again. We need to work together in a global fashion.

About two years ago, I began working with colleagues in the internal program at the National Institutes of Health, the U.S. CDC, my colleagues at Sun Yat-sen University, Professor Lu as well as public health practitioners and science in China including Jakarta, Mali, Liberia, Indonesia, Mexico, Pakistan, Saudi Arabia, Israel, Brazil, the DRC, and India. And we got some funding from the Scholl Foundation to build a program that is designed to complement WHO, not to replace it, not to

replace the CDC, but to go places where other people cannot go and to do what (inaudible) which basically is comprised by infrastructure so that people can do surveillance and they can set up clinical trials.

Our first efforts in surveillance and treatment trials are at (inaudible) in Brazil, where we've been testing convalescent plasma. We're also promoting sequencing at the University of Bamako in Mali and the Indonesian and Research Partnership on Infectious Diseases in Jakarta. And if you're interested in learning more about these efforts, please be in touch with me either through the organizers or through the Mailman School of Public Health. And with that, I think I'll close and move over to George.

MR. LAN: Thank you very much, Professor Lipkin. Thanks very much for your insight and also your very interesting proposal to have a global FDA. Now let me invite Dr. George Gao to make his remarks. Dr. Gao.

MR. GAO: Good evening. Good morning everybody, especially my friend Ian and Tom. I saw a lot of friends there. I think today our topic will be focusing on the fast track to recovery, especially addressing the collaboration of the US-China on prevention and control of the COVID-19. Let me start with the challenge of the chance of this collaboration. So I kept telling people we have to follow the 4C for the U.S. relations. We need a collaboration. Of course, we also need a friendly competition. Without the competition, I don't think we can promote a society and economy. So that much is a friendly competition. And to do the collaboration and competition, we need communication like this, Brookings and Tsinghua University. I'm very pleased to be here to chat with everybody to discuss how we can collaborate, how we can friendly compete to promote the science to get the disease under control. Of course, we also need a coordination. So there are 4C principles.

So this overview while we are talking about the COVID-19, everybody's alert. We also have Ebola. Ebola is here in DRC, so we are facing COVID-19, meanwhile the Ebola is still here. And think about what we have done for any viruses without a vaccine. So NPI, nonpharmacologic interventions are very important. China, by using the NPIs, we did a good job over last year. From the lockdown in Wuhan to the suppression of the whole country and now in my opinion, we might be like Dr.

Zhong nanshan has said, we are approaching to a process or certainty mitigation. Of course, we need a vaccine. More importantly, we also need an antivirus. We need the collaboration, we need the competition to develop small molecules, micro-antibodies, or antibiologicals for an antivirus.

I'll give you an example. Here we go. For the whole world, when you're talking about the vaccine, because the virus was first discovered in China, we had a live virus, so we put forward for a vaccine. We did coronavirus and deactivated them and then we developed the deactivated vaccine. For those including the US, because you do have the virus, very quickly we shared the data, you have the secrets. This is a 21st century technique. So many vaccines are under development, here you go, Moderna, BioNTek and Oxford is and also for A variety based vaccines, of course you could (inaudible) Sputnik in Russia. And to think about in China, as I said, we have three of the (inaudible) vaccines already out CMA. We also have another one approaching the (inaudible) vaccine. It's an EUA soon, so we have five in China. I think in this state, all over the world, in the U.S. and in China, we are developing a vaccine based on the conditions we have. So this is where we are at the moment. More importantly, for the public health emergency, we need three steps, science-based. So this is why China-U.S., we need to share the science part.

And more importantly, we need public understanding of the environment and compartment. Also we need authority, informed authority decision making. That's very important to look at. In my opinion, those three steps, we've used for U.S.-China, the rest will work, but in the different countries we use a different, you know, why you should use a different strategy at different times. So in China, we call it three pigs. I think in U.S. you call three W's, wearing, watching, and washing. So remember, at the end of March I was interviewed by the Science Journal. So I called for you know, the mask wearing, but even with that, we still have problems for the world. The public compartment is totally different from country to country. So this is what we have learned, we learned a lesson. So now, Ian also mentioned, we collaborate with Ian and so many scientists together for the virus investigation and for the animal origin or the any kind of virus equal to the bats, but we -- this time, rely on more of the common sense and the knowledge. We thought there might be a reservoir host by one year hardworking. We

haven't found any you know, reservoir host, and also no find of any intermediate host. So this is why I think we are coming to the science of origin of the virus.

Now, the science part, for that, China-U.S., we need to work together. We need to PCOT the so-called global viral protect to work together by science. What we have done, Dr. Nanshan also mentioned to you, in my opinion, China, we only go through three strategies. I propose for the last one, we haven't done that yet, lockdown or elimination that's in Wuhan, a lot of peak settings. Surprisingly, whenever you have an outbreak, local transmission, we try to suppress it. Now, we need to keep the society active economically strong. We need mitigation, i.e. we want to leave some small local outbreak there and keep the society and the economy active. This is my opinion about last week and what we can do.

Lastly, I'm calling here to the COVAX. It's very important, the United States and China, we should work together to promote the COVAX. We should also work together for the United Nations 17 SDG, sorry, I'm still missing the S, and also equity, very important. In China we call it, we are in a state to educate and embellished environment. It's a big problem in China at the moment. We've also had our, you know, meeting recently and I think Dr. Xue Lan was there. So we need to work together to keep the equity for the vaccine, equity and try to solve the problem for the poverty. Poverty and equity are the common duties or the common enemy of both U.S. and China and the whole world. Let's work together. Let's start here. Thank you.

MR. LAN: Thank you so much, George. I think this is -- you know, you three have made wonderful marks and now we have about 10 to 15 minutes until the discussion time. I think you know, we'd like to have more questions, but of course I think we try to, if possible, you can make your answers and try to be brief. Let me start with a question that is probably lingering in many people's mind. You of course, you probably are all tired of answering but still, I want to ask this question. How are we doing in controlling COVID-19 and particularly, when can we return to normal in social life? We know it's not, you know, the passing over, but it's the new normal, but when?

MR. GAO: I think that's a very good point. I think everybody might have a different

opinion. I think Ian and Dr. Zhong Nanshan might give a different answer, but it doesn't matter because a new virus, who knows what they are. But what we see, after the three pigs or three W's, either US and Europe, you presently locked down European major cities and of course, very clearly in China. I think we have a very sharp decline of the COVID-19 in the whole world at the moment. So in this case, in my opinion, a lot of factors there, at least most importantly is the key point or the key population were vaccination. Either U.S., you know, someone working in the hospitals, nurses, doctors, and also working in the public health sectors, they were vaccinated. I call those people our key population. So this is the first time for the whole world. Whenever you see the key population were vaccinated, you might get their vulnerabilities. Of course you know, maybe people would say well, that's not a major factor in my opinion. In my opinion, that's a major factor. And also another factor is the virus might be either in a decline (inaudible). So, a lot of factors there. Now, when we can get you to a normal? In my opinion, we will never get a so-called normal, as normal as before. But we will get approximate normal maybe by the summer of next year. Thank you.

MR. NASHAN: Yes, I would have thought, I mean, I agree with George, what George mentioned about that. I think now, the key point in the world is receiving the vaccine as soon as possible. So the longer you receive the vaccine, the more virus, the more patients have the virus. So that's a big problem so I think it would speed up the production and the (inaudible) and also prepare some new type of the vaccine that is sensitive for variant viruses. So this is very important for us to collaborate from each other. So because the containments cannot, as though, lasting too long, because we really need to reopen, to return to normal. But as far as I understand, so perhaps whether the COVID-19 will become like the flu, so every year or every other year it will happen, so nobody knows. Whether they were like the flu, so also possible. So once we have the vaccine and then have some shift of the coronavirus, we need to have some new trends of allergen to make some vaccine, everybody okay. Because up to now, I think there's some studies showing that some antibodies of SARS antibodies still exist in about 3% to 5% of the patients in the blood bank. So that's -- they exist although it happened 18 years ago. So actually, still exist from time to time, but it doesn't cause some outbreak or some other things. So that's what I think.

So you can never eradicate COVID-19, in particular, this kind of coronavirus. It actually happened three times in just this century. So I should think maybe -- but the big problem is I would like to ask Ian, so the -- you had mentioned about the screen or surveillance. I have a particular interest on that. So although we don't know the host, we really need to know the reservoir, the immediate animate. What is that? So because, as far as my experience is concerned, so 18 years ago we had found (inaudible) is one of the key animals. Okay, when we stop this transmission role, it's okay. I don't know whether it's by chance, but I do believe because based on several studies, it shows that it is at work, it is the case. So what I really want to know, whether you have some new -- developed some technique and the perhaps some corroboration in terms of the surveillance of virus animals and other things and by using the technique or something like that. Thank you.

MR. LAN: Thank you. Mr. Lipkin, do you have any comments?

MR. LIPKIN: Yes, thank you. So first, the question was about the future. Like the physicist Neils Bohr said, it's very difficult to make predictions particularly about the future and I think that's true here and you've heard that from George and from Nanshan. But I think that there are different ways of looking at it.

Until the entire world is vaccinated, the situation is bleak and that's why George was referring to COVAX and the importance of investment in the developing world as well. Even after this pandemic recedes, there will be people who will be ill as a result of having had COVID, and I will tell you that as someone who had it, I'm still not back to 100%. So there are many people who will have residual effects that will be important as we move forward.

In terms of what is likely to happen with this virus, my experience with coronavirus is that they are very difficult to eradicate, and I would predict that this is going to continue to be with us for a very, very long time to come, but like flu, we're going to see less and less severer disease, and as long as we keep up with this with respect to vaccines as Professor Zhong Nanshan said, every other year perhaps, I think we will be in good shape. Now, I'm going to come back to one of the points that I made earlier about international collaboration. I have a program at Sun Yet-sen University with Professor Lu,

focused on zoonotic diseases.

About two months ago using a commercialized kit, we began looking for antibodies in people exposed to wild animals and butcheries and places like this. And we had some signal that was very interesting. When I went to then send micro rays that could be used to differentiate between different coronaviruses including SARS-CoV1, I ran into a problem of an export license. You could export these peptide rays to China. So the whole project came to a stop. So again, with this new administration in place, I'm confident that we're going to be better positioned to work together as we have in the past. Thank you.

MR. LAN: Yes, okay, thanks so much. I think now given the time limit, I think we probably have just time for one final question, I think very proper with a very brief answer. Let me you know, ask you guys, if you were to meet with you know, the leaders of the two countries, what would be your, you know, the one single most important proposal you would make to the leaders? Anybody can -- George?

MR. NANSHAN: I think that's a quite difficult question. In my mind, I think maybe more of the policy decision maker or the policy maker, so all the policy working out to base on signs and evidence rather than what is politicization. So that's one key point for me. The ones we can base on the signs, we can come create a goal to the common role, the same role, and cooperate from each other. That's what I think in my mind.

MR. LAN: Excellent. That's a great point. George and --

MR. GAO: My suggestion to the leaders, because at the moment, U.S. and China, we have some difficulties in a lot of areas. So leave the divergence, try to find the easy project, easy way to collaborate. For example, poverty, health, vaccine. Thank you.

MR. LAN: Great. Okay, Professor Lipkin:

MR. LIPKIN: I think they've covered it beautifully.

MR. LAN: Okay, wonderful. Thank you so much. You three are just a wonderful panel. Thank you so much for this wonderful panel.

Now let me turn the floor now to my dear colleague, Professor Cheng Li.

MR. LI: Well thank you, Xue Lan and thank you to all participants in our keynote conversation, when historically illuminating in the forward working discussion. Now, I'm pleased to introduce our second panel of four distinguished medical doctors, which I anticipate will be just as enlightening as the first.

The goal of this expert panel is to present concrete ideas for greater bilateral and even national collaboration to fight and stop the spread of COVID-19 in three key areas, namely medical and research collaboration, vaccine development and distribution, and international protocol for global travel and trade. We are joined by two panelists from each country, each of whom will offer five minutes introductory because we are behind the schedule. Please make sure, five minutes, which will be followed by a discussion and a Q&A. We have a really large amount of questions from the audience.

Now, on the U.S. side, we are honored to host two distinguished public servants, former CDC Director Tom Frieden, and the former FDA Commissioner Jane Henney. Dr. Frieden currently serves as the president and CEO of Resolve to Save Lives working with the countries to prevent 100 million deaths, especially those resulting from the epidemic. He is also senior panel for Global Health at the Council on Foreign Relations. Dr. Henney, who was the first woman to serve as FDA commissioner and an oncologist by training, is a member of both the National Academy of Medicine and the National Academy of Scientists. She has served on many corporate and nonprofit boards in the past including the China Medical Board. On the Chinese side, I'm equally honored to introduce Dr. Wu Zunyou and Dr. Zhang Wenhong. Dr. Wu serves as chief medical officer and director of the Division of Health Education and the Prevention of the China CDC. Having been involved in HIV/AIDS research, the SARS response, and the other public health programs for over 30 years, Dr. Wu has worked to control the COVID-19 pandemic including as a member of the WHO-China joint mission soon after the outbreak of the beginning of 2020. Dr. Zhang Wenhong, a household name doctor in China, is the director of the Development of Infectious Disease at Huashan Hospital. Dr. Zhang has served as head of the Shanghai Anti-COVID-19 Clinical Expert Team of 60 medical specialists. He has been recognized for his role in

candidly and frequently disseminating useful information and scientific knowledge. Now with that, I would like to first turn to our American colleagues, Dr. Frieden and Dr. Henney for their opening remarks. Dr. Frieden, the floor is yours.

MR. FRIEDEN: Thank you very much, and it's a great honor to be with this group. Thank you for the organization of this and for the wonderful remarks that we've heard so far. I'll go very quickly through some slides, which may help us stay on the same page. I think collaboration is so important, as has been said already. We know that vaccines are safe and effective and hold the prospect for an eventual end to the pandemic, but that roll out has been slow and demand will out ship supplies for months and unless there is more manufacturing, for years. We need to address inequities both health and economic in the vaccine program, and we have to be very open about the things we don't know. We don't know how long immunity will last. We don't know whether there are rare adverse effects. So far very, very few. We don't know how and whether we will accelerate manufacturing and we don't know whether people will trust the vaccine.

Global collaboration and cooperation is essential. We've talked about a 717 goal surveillance, real time surveillance that would detect every outbreak within seven days of its emergence. Response, so there is investigation and reporting within one day, 24 hours. And establishing an entire effective response capacity within 7 days. That 717 approach in every country in the world would make the world much safer and perhaps it's something that the U.S. and China can collaborate on to strengthen systems around the world. Laboratory, we need national laboratory systems, not just the high level laboratories, but every step of the laboratory network, and we need workforce of highly trained experienced staff able to analyze emerging threats and implement control solutions.

Resolve to Save Lives is honored to be registered in China, in Shandong province. Globally, we work as mentioned on cardiovascular disease and also on epidemic preparedness. Over the past year, we've pivoted to be working on COVID as well as epidemic prevention, primarily in Africa, on health workers safety, where not only training but we must do much better keeping health workers in every country in the world safe. And on cardiovascular health, where we have advocated with the World

Health Organization for the global elimination of artificial trans-fat, which is a toxic chemical in our food supply, and supported partners to reduce sodium consumption, which kills millions of people a year, and improve hypertension control, something for which good primary care will be essential.

Sodium reduction is something that is often overlooked and neglected, but actually it can save millions of lives and in fact, can be done with government policy as well as community engagement. I would say that primary care is the most needed and most neglected aspect of our healthcare system, and to improve hypertension treatment will both require and facilitate the establishment of sensitive primary care. We talk about universal health coverage, but unfortunately in most countries of the world, including the U.S., this is a slogan because we don't have good primary care systems. And because of this, we aren't well situated to find diseases fast, prevent them, and treat them effectively. We really believe that controlling high blood pressure should be a key priority for global action. It kills more people than all infectious diseases combined, 10 million people every year, and yet it's easily treatable with inexpensive safe medication. But that requires using a simple protocol, quality assured drugs, team-based care, patient-centered services so that the patient has no barriers neither cost, no travel, no pay, no attitude, and a systematic accurate real time monitoring so that programs can see and improve their quality. I think we must strengthen primary care. This is perhaps a key lesson from the COVID pandemic. We know that noncommunicable diseases such as hypertension, which I was very pleased to hear it discussed earlier, will continue to be the leading global causes of death. They also cause disability and decreased productivity. In addition to saving lives, today stronger public health and primary care will increase productivity, prolong disability free life, and promote community and individual resilience against COVID and future health threats.

Final slide, health threats can either unite or divide the world. The choice is ours. In the past, as has been mentioned, health has been a bridge for peace, whether it's smallpox eradication, childhood vaccination, lead gasoline elimination, or more. And vaccine nationalism will backfire. Only global collaboration against the virus can lead to global recovery. Global commitment is crucially important and can save millions of lives and literally trillions of dollars. I believe it is now or never. This is

the world's moment to work together and the U.S. and China have a unique role to play so that never again as my friend Tony Fauci said, never again will be as unprepared as a world for something as catastrophic as what we're going through now. Thank you very much.

MR. LI: Thank you, Dr. Frieden. Congratulations for your really impressive work on the front line and also and particularly enlightened by your talk about the public health in general with improvement around the world. Thank you. Now, Dr. Henney, you're up.

MS. HENNEY: Thank you very much, and I too am just delighted and feel very privileged to be part of this group and this very important discussion that we're having this morning. I think as I present, I'm going to be primarily focused on the FDA and in the U.S. and how it works. But being a part and leading a regulatory agency such as the FDA, was an extraordinary experience in my career because it really brings four major elements to bear their so important, I believe.

First, it's grounded in the law as it relates to those matters that are important to the public. From that emirates regulation and policy and then it uses science, both to be its bedrock of decision making and certainly protecting and promoting the public health. That fourth function is really the agency's north star. And I think it's such a privilege to be able to pull on all of those elements as one thinks about COVID and how FDA has played a role in that.

The pandemic has been simply remarkable, and you all have spoken about its impact not only on both of our countries, but the world, and down to the individual impact that some of us have experienced. It was also remarkable I think to hear of the vaccines that have been approved in China so quickly and certainly the three vaccines being approved here in the United States within a year of really learning about this virus is remarkable to say the least. And two of these were based on the new RNA technology, but that new technology, I think we have to all acknowledge, was built on literally a decade or more experience in our basic science labs, both at NIH and universities around the world. So we can't think that we just woke up and invented all of this in a year. It really takes that investment of basic sciences at all of our institutions to have at their ready, knowledge and experience to bring some of these things to the floor.

Each of the vaccines that the U.S. has approved, they've done it under the Emergency EUA Act. That has a different evidentiary standard in the U.S. than those biologics that come through the normal, what I would say the normal BLA process that has to have full safety and effectiveness evaluation. The EUA evidentiary standard is different in that it has to have -- if offers temporary approval until a full approval of all data can subsequently be submitted, but it -- the standard is that it's reasonable to believe that it may be effective and in this situation, the guidance that FDA gave was that its effectiveness needed to be at the 50% level, which is the same as is influenza.

Happily, each of these three were much more efficacious. Now effectiveness will be a totally different matter. Effectiveness is measured by, do you get the vaccine in people's arms? Do you have an effective program? I also would point out that the process within the United States is different than in other nations or other countries. Each uses their own process of evaluation. In the U.S., the scientists who work at the FDA receive all data from the companies, do independent analysis on that data, and then it is all presented to an open -- a committee that is -- and this was remarkable this year, all made available on different webcasts. So people could actually see what the committee was evaluating, and that advisory committee is made up of individuals from multiple scientific disciplines. It has people from industry on it, it has people from different aspects of government, as well as on occasion, patients. So a wide array of people to advise and hear what FDA is recommending, to hear from the particular industry their own presentation, to hear the concerns of people that might want to question or have different points to raise to the committee.

The committee then makes recommendations to the agency as whether an EUA ought to be granted, and then the agency takes that all into consideration and gives its approval or not. In these three cases, approval was reached. That is then transmitted to our own CDC. Tom Frieden knows this process well. It happens every year with the flu and then CDC working with other agencies makes the recommendation that the -- in this case, the vaccine can be used in programs. We've most recently seen that approval given to the J&J product, which is the one shot product and now the vaccine can be dispensed more widely.

I think it is interesting to note that there are challenges both in the distribution of this product across the country. The Pfizer product requires ultra-freezing conditions, which aren't available in most doctors' offices or sometimes even hospitals, so that has been a challenge. Both the Moderna product and the Pfizer product require two shots. That doesn't sound so difficult, except just the practical considerations that if a person gets a reaction on the first time, they may not want to, desire, or come back for that second shot, which would be important. And then I think those two elements are a bit of a challenge in terms of distribution. The J&J product may not be as efficacious. The efficacy data wasn't as strong; however, it should be noted that no patient in those clinical trials who were in the treated group required hospitalization. So one might get a milder form of COVID, but the advantage of having a one shot program now available is terrific.

Manufacturing is going to be an issue, but it's interesting to note at least to date that there are a lot of companies that typically compete head to head, toe to toe with one another, are offering their facilities for manufacturing, offering their facilities for overfill of the different vials. This is an ongoing process and I will just close with this, that this whole COVID experience is something that we have to make decisions, important decisions based on what we know, but we have to keep learning from research that comes along so that we can make this an even more effective program. And I'll stop there.

MR. LI: Dr. Henney, thank you so much and you know, early speakers talked about the importance of vaccine and also the size of the next innovation. It is assuring to hear from you as a former FDA administrator talk about the process, you know, that the U.S. went through. I think that's really very helpful.

Now we turn to Chinese doctors. First, Dr. Wu Zunyou.

MR. ZUNYOU: It's been an honor to join this dialogue. Thank the moderator for your introduction. First, I want to begin with the question Professor Xue Lan asked, and also it is the most common question people ask. When can we get back to the time before the pandemic? If we look at a global epidemic, the peak pandemic already passed, so the epidemic started to decline since middle January. Now each day, still about 300,000 to 470,000 cases were reported globally. The thing to

direction of epidemic move depends on a combination of three factors: Comprehensive measures taken by the country, by the community, the coverage of vaccination, the third factor is how long will the vaccine provide protection? So this three factor very important to determine the future direction. At least we can based on the signs, we can make a reasonable estimation for the short-term future of epidemic.

It will be very difficult to make this prediction for long-term. It will be almost impossible to eliminate epidemic in short time. So my second remark also related to the question Professor Xue Lan asked, if we will at this point today have opportunity to meet top leaders in the two countries, what can we do? So I propose can we promote as U.S.-China as top priority for free travel in the two countries? China is the safest country in the world in terms of COVID-19. In the community, there is no single cases in the community, so no people carry the virus, they travel to anywhere, cannot bring the virus in the United States. Look at the vaccination rate. Now it's already reaching over 20%. Hopefully, it can reach over 80% by June, so by August it could have reached 90% to reach a herd immunity. So if that's the case, if we could remove all the political barrier just based on the sign, two countries could possibly as first of the two countries to move all the barriers for free travel. So we can try our best, no matter what's the result. We could do our best. So that's my remarks, thank you.

MR. LI: Great. Thank you and you're more spontaneous with Dr. Xue Lan question. It's very, very helpful. I thought we would have a follow up question later on. Now, Dr. Zhang Wenghong, your turn. Dr. Zhang? Dr. Zhang? Dr. Zhang, we cannot hear you. Yes. For some reason we cannot hear you. While we're waiting, probably let me ask a question for the previous speakers. We try to figure out, Dr. Zhang -- okay, this is a question for when you talk about the collaboration, talk about both countries. Now, also this is also to Americans. Whereas we know the transparency and the data sharing remains imperative to fighting emerging variants and also becoming efficacy and the safety for vaccine candidates. My question is, what can we do about this data? What can we do and if the administration (inaudible), what can we do in this area for cooperation, data sharing, and etc.? Now, Dr. Zhang, are you back? Can you unmute? Can you see? We're still having problems. Dr. Zhang, we'll go back to the question later on. You need to unmute.

MR. ZHANG: Can you hear me?

MR. LI: Yes.

MR. ZHANG: Okay, I'm very glad to attend this meeting. Just like the speakers mentioned before, now is a good time for the whole world to get the global epidemic has begun to turn a corner. In the long run, epidemic damage control actually cannot be sustained as to nonpharmaceutical interventions without global vaccinations. Even today, we know that China, we control the epidemic very well. We by the nonpharmaceutical interventions and also United States controlled their epidemic very well. Also, they combined the pharmaceutical together with the vaccinations. So the development of the COVID-19 vaccine has made record history of the development of the new vaccine. Within one year, the whole process from the development of the vaccine, monitoring of the vaccine has been complete. So as of the present, we know that the global vaccination is now to date very quickly in the United States and (inaudible). It's back to like Professor Zunyou mentioned that that in the second quarter or third quarter they will arrive at a level of the herd immunities.

So at the present, just in China we have seven COVID-19 vaccines have entered the first screen in the trial in China and surely have been a protocol conditional markings. Although the current vaccination pace in China now to date is very low due to the outbreak of control in the early stages, and the vaccine capacity; however, is very high and equivalent to 2.1 billion doses by the end of 2021.

In December 2020, China proposed a three-step strategy for vaccinating key groups including the high-risk groups and other general populations. Given the timing of the opening and subsequent vaccination in China and the rest of the world must be accelerated. So I think it's up to date. The United States and New York is very quickly on their vaccination schedules. So in terms of global vaccination to date, by mid-February 2021, so in the United States and United Kingdom, the immunity rate now is at much as almost 30% and the United Kingdom higher than that. However, the global vaccination is currently very imbalanced in terms of the vaccine's supply capacity, Full vaccine coverage can only be achieved in the United States, Europe, and a few countries such as China and Russia that has seen production capacity by 2021.

Historically, a global epidemic has required a global collaboration that transcends the politics, just as we mentioned, if we can meet the leaders of our two countries, or we will take the strategies. Because vaccinations do not happen overnight. The protection it provides does not last forever. Vaccination and the public health measures must be carried out in attendant with the complete control of smallpox and as a global prevention as a control, the influenza. So today, strict public health measures often -- is very often your own country, but I think it's not sustainable. In this case, how to maximize and more normalize the global challenge?

The global challenge exists in a variety of vaccines, duration of efficacy, and the virus mutations. So the vaccination and a new testing may be the main tools to help the world restart in the near future. But it is still important to reach a consensus. So it's very difficult to make a consensus around the world. The scenario today where you can experience that, the vaccination in a (inaudible)testing, reports must be the passport of the world travel, whereas global vaccination, which offers long-term protection and no breakthrough caused by viral mutations if it is possible, will eventually be completely open.

These scenarios are complex and China and the United States, the two countries yet have the most contact and there's a close relationship sure to set an example for the world in terms of vaccination and mutual recognitions. So this is what I want to deliver the message. Thank you.

MR. LI: Thank you so much, Dr. Zhang. We only have you know, five to ten minutes left. So let me combine the audience questions, probably direct to each and every one of you for one question and welcome comments. First of all, Dr. Wu Zunyou, this is just a mention that the transparency in data sharing remain encouraging for fighting against the coronavirus. So what -- if China can do more in this area, particularly with you with the variants and other challenges? Now, the second one is for Tom Frieden, this is a question raised by (inaudible), a fellow at Harvard. He asked how U.S.-China collaboration epidemic prevention will be helpful for the rest of the world, especially for developing countries? And also Reuters reporter asked that in your view, or anyone else, when will likely the high world, especially developing countries will have this type of immunity in your estimate?

Now the question for Dr. Henney, is do you see, this is on the treatment side, not the vaccine, do you see that we will develop a kind of like a cocktail, this treatment like the HIV/AIDS to treat the way to deal with the COVID-19 patient?

And finally, with Zhang Wenhong, as we know that Dr. Zhong Nanshan earlier mentioned that China by the end of June will have 40% of the people have the vaccines. So the question is that now, first of all that you shared somewhere that China needs to be concerned about their kind of immunity gap because given that the population, Chinese population has not been exposed to the virus at a rate comparable to other countries, so again, we concur that you should be 70% or 80% or 90%. Now, and also there's a question about China's production capacity. Is that necessary for China to still import vaccines from foreign countries?

Now, these are questions. So who wants to go first? We probably have five minutes exchanging. Yes.

MR. ZHANG: Let me respond to your question about the transparency of data information. Actually, China did the best, I think, it's miscommunication connection does not believe that. If we look at the early epidemic, even when we did not know the virus, so we shared information with the U.S. CDC with the European CDC, once we isolated the virus and particularly, why this is in sequence, we upload to the WHO, shared with the world. That's apparent. Also, if you look at the (inaudible), as the press conference, and that's almost every day. Every day they have a press conference to release information about COVID-19 to the public. And when every outbreak occurred in China, the first time we reported in the media. So that's transparency. Also in terms of vaccine for the vaccine trial, particularly for the first three, it's a public register, all the information is shared with the world. So I believe in China, we did our best to be transparent, to share all information we had.

MR. LI: Dr. Wu?

MR. WU: Certainly, international medical communities acknowledge China worked very quickly to find the gene sequence of the virus and to share with the WHO community. Now, Dr. Frieden, there's a question that you had earlier. This is really about the multilateral initiative, how does it link to

you know, bilateral effort on China, do you see as attention, or China and other states can complement each other to contribute to the community with the vaccine development and distribution?

MR. FRIEDEN: Thank you. Thank you for this opportunity for this interchange which is so important. And I think it's not either or. It is all of the above. We need to strengthen global institutions including the World Health Organization, which is a critical anchor to our effort. We also need to think about other global institutions which can plan an important role such as the Global Fund, which is good at financing health programs around the world. But also U.S. and China can have important bilateral work for example, to better understand the epidemiology of COVID, because there's still a lot we need to learn, whether it's about the variants or about asymptomatic spread.

There is still a lot in just one year that we've been learning about this virus, and it still has a lot to teach us, and the more we collaborate, the quicker and the more completely and accurately we will learn. There's also a great value to our working together in other parts of the world such as Africa, to strengthen early warning and rapid response systems. And I think also to think of how we can expand vaccination globally. And that's going to mean ramping up manufacturing. That may mean sharing intellectual property and technical -- sharing of technical information so that manufacturers in other parts of the world can benefit from what is really should be a public good. We're all in this together. The only enemy here is the virus, and the more we are united, the more effectively we will be able to fight that virus.

And to the Reuters question about early immunity and vaccination, I think as with so much with this pandemic, a lot depends on us and what we do. The more we collaborate, the more we scale up manufacturing, the sooner the world can get to a much safer place because uncontrolled spread of this virus anywhere in the world is a threat everywhere in the world because of the emergency of more dangerous variants. So it's an all of our interest to work together and improve access, not just to vaccination, but also to protective control measures to reduce uncontrolled spread. So thank you very much and again, it's been an honor to be part of this conversation.

MR. LI: Thank you. So well said. Dr. Henney, do you have any comment on treatment?

MS. HENNEY: Well, I could make a comment on treatment, which I will, but I would like to come back to this whole notion of working together. Certainly, the FDA has for many years been working this whole issue of harmonization of applications that come before it. So that when companies bring forward an application to a regulatory agency, they can essentially submit it around the world; that is the idea. And then each regulatory agency using its own statutory and evidentiary space can make their decisions on that. That certainly would expedite things. It all starts with an MOU or memorandum of understanding between countries and it certainly comes from a lot of communication and knowing the individuals on the other side of the table, albeit China, be it the U.K., be it our counterparts in Africa. And those help smooth the doors, like anything, knowing who you're working with, knowing the constraints they're under, knowing the vastness of how different countries do things, can make the whole process better.

But I think as we think about COVID, it's so critically important that what we know needs to be depend on what's true. What has it -- what can we track that to having a true scientific basis? And I see the most -- one of the most dangerous things that has come to the floor in this pandemic has been forces where we have tried to say what we know, and it's based on conjecture or kind of conspiracy theories. We need to define what we know based on the science of what we know at the time, realizing that we can always know more. And I think that comes in with what we're doing this morning, to try to learn from each other, to share information so that we can really combat what Tom has just said, is the real enemy here, and that's the virus. But working together on this can only strengthen our relationship to working on a wider variety of things as well. I do think that getting back to the therapeutics where you wanted me to start, there have been a few that have been given emergency use approval by the agency. They have their challenges. Many of the so-called cocktails if you will, have to be administered when somebody is in the more mild or moderate stages of the disease and it has to be given in infusion centers and people are reluctant about brining patients in-house to do those kinds of things, and also people that administer them working on these infusions have to be specially trained.

So like everything that has promise, it also has -- they also have challenges, but I would

say we're in early days here, many companies are working on this, many people at universities are working on new approaches, and I do think that they will -- there will be promise here at some point.

MR. LI: Well, thank you so much and an excellent point. And to look back, the 40 years of the US-China collaboration, to fight the epidemic, actually the COVID-19 has been exceptionally larger than normal, so unfortunately it's become a lack of government cooperation, but in medical professions they still work together like the wonderful case that Dr. Zhong and Ian Lipkin mentioned.

Now, the last question for Dr. Wenhong, that in a number of patients, as far as you I think of others especially Dr. Tom Frieden mentioned that we need to be critical about the vaccine, nationalism -- a so-called vaccine nationalism. So, also that the writings, you comment constantly and talk about international collaboration. But also there's a concern within China, as I mentioned earlier, immunity gap. So between now and the end of June, the most optimistic view is 40% of the Chinese population, so still less than half than with others. Are you concerned? So what can China do in this area?

DR. WENHONG: Yes, I mean, actually we have a great concern about that. At the present time in China, now today just a total of almost 41 million doses. This data is from February 9, that have been delivered in China. So current vaccination pace is very low due to the outbreak control is so good in China, in the early stages. So the vaccine -- however, I think the capacity itself is really it's enough. According to our expectation to the end of 2021, as I mentioned, the capacity it will be increased to 2.1 billion doses. So I think if we do not worry about the capacity in China; however, I address greater concerns about the speed of the vaccination. If there were 10 million doses every day, I mean, 10 million doses every day in China, it will take up to seven months to vaccinate almost 70% of the overall population. So you mentioned 40% before June, I think is really a great job for us to do that.

If we just take 5 million doses per day, I think we can complete the task before June. So you can know that it's really a great concern for me. So, now the question about how about the world epidemic? If the world fails to control the epidemic effectively, I think China, we will have the gap. As you know before, we vaccinated the whole country, the whole population. We will continue to be challenged by the important epidemic. So China's current strategy is to promote the establishment of global immune

barrierand international coordinated framework just like by COVAX or WHO. So meanwhile, we will ensure that our own vaccination strategies is gradually improved. So, to summarize, I will say that both China and the United States, we as a major vaccine producer in the world, we have the responsibility to implement our own strategies to advancing the mass immunizations in the world while we just not only take into account the vaccination by ourselves. We should take into account the vaccination of less developed countries. So this is why we take this kind of strategy in China. Thank you.

MR. LI: Thank you so much, and it has been always very enlightening to listen to our intended assessment. It's extremely helpful for both China and international communities. Now unfortunately, the time has come to bring this conversation to a close. I'm sorry that I could not accommodate all the good questions. This has been a fascinating discussion. I have learned a great deal from both panels. As we close out today's discussion, I would like to offer my deepest appreciation to our distinguished participants on both panels for spending their available time with us and sharing their expert insight of this perplexing and yet also very hopeful time.

Now on behalf of my colleagues at the Brookings, I'd like to reiterate President John Allen's thanks to Tsinghua University for your collaboration, joint effort today by our two institutions across the Pacific where we send, as we hope, inspiring signals to people in both countries and around the world about the imperative of international cooperation to save lives. Finally, I want to thank our audience for joining us and for supporting common effort to stop the spread of COVID-19 and realize a fast track to recovery, be safe and be well. Thank you.

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CERTIFICATE OF NOTARY PUBLIC

I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

Carleton J. Anderson, III

(Signature and Seal on File)

Notary Public in and for the Commonwealth of Virginia

Commission No. 351998

Expires: November 30, 2024