Center for Strategic and International Studies

TRANSCRIPT

Event

"New Tools for Accelerating Progress in Ending Tuberculosis: The Lancet Commission on Tuberculosis Report, 2023"

DATE

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FEATURING

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J. Stephen Morrison: Welcome to this CSIS roundtable webinar "New Tools for Accelerating Progress in Ending Tuberculosis," Lancet Commission on Tuberculosis Report 2023.

I'm J. Stephen Morrison. I'm senior vice president here at CSIS where I direct the Global Health Policy Center. I'm substituting for my colleague, senior fellow and director Katherine Bliss, who cannot be with us today because of jury duty but otherwise would be but I'm delighted to play this role.

A few special thanks to folks who worked really, really assiduously to make this all happen. Special thanks to Carolina Andrada on our staff and Maclane Speer; Andrew Kim, who was part of the Lancet Commission report; Lorrie McHugh, very, very integral in helping us pull the pieces together and coordinate the participation.

On our production team Dhanesh Mahtani, Dwayne Gladden, Qi Yu, and Tori Blakeney all have made big contributions and we're very grateful to them.

Obviously, the greatest thanks, of course, go to the speakers that we have here today and we're going to hear with them in sequence. I'll introduce them individually in a moment and then we will have a roundtable discussion.

We welcome your thoughts. If you wish to submit a question or a remark you can do it at the bottom of the website. Under the video is a link to do that. Please keep your interventions very, very succinct and we'll do our very best to bring those on.

We're joined today by Eric Goosby and Tony Fauci, both of whom are members of the Lancet Commission. Eric was the chairman of it. And we're joined by Jacquie Cuen, an advocate and survivor of tuberculosis, and Nidhi Bouri from USAID, all – three of them long-standing good friends, Jacquie Cuen a new friend here with us. I will introduce each of them in order. I want to say a few remarks before we get to the opening. I'll be very, very brief.

This particular roundtable and the things that it's playing off of – the high level meeting on September 22nd and prior to that on September 14th the release of the Lancet Commission report on tuberculosis – the timing is great. This is a very, very important moment for pondering these questions of where are we in global tuberculosis and how do we characterize where we are, and I think you'll hear from our speakers today that it's a very mixed picture.

It's a sobering one but it's one that also gives very good reason for being optimistic and continuing to prioritize and give focus and continue to ask more of our leadership in this domain and the people that are here are the

ones that are really doing that very actively in their own respective ways in pushing for this topic, which is terribly important, complicated, and not going away by any means, that more be done, and the mapping of what exactly is to be done has been accomplished in a very significant way through the fruits of the work of all of the people that we'll be hearing from today.

We know that the progress in meeting the TB goals stalled and regressed significantly since the advent of the COVID-19 pandemic in early 2020. We know that the high level meeting that just happened was called to assess progress since the high-level meeting in 2019. So it's coming several years after that 2019 meeting to reinvigorate the commitments and take account of where we are. That's very important.

We know that that high-level meeting occurred at a U.N. General Assembly that was quite crowded. There were three high-level meetings this year – that's unprecedented – tuberculosis, pandemic preparedness response, and universal health coverage – and there were six other high-level processes along with what was going on in the Security Council and Ukraine and the review of a – sustainable development goals at the midway point towards 2030. It was very, very busy.

But I think that it was nonetheless a very, very important gathering. I want to single out for special praise Atul Gawande, assistant administrator at USAID, who spoke at that and made a very pointed and dramatic statement around the need for price reductions, for localization in production, for greater progress in building up manufacturing capacity and technical transfer in the Global South among high-level – among low- and middle-income countries that are carrying the highest burden there.

The Lancet Commission was released right on the eve of this, a week before on September 14th. It identifies very promising new tools for diagnosis and treatment and notes the need for adequate financing, building political will, and getting new tools out – the access issues, the equity issues, that have risen so significant since the pandemic as a normative change in global opinion around how global health is to be conducted.

We also are going to hear a lot about the alignment between the work on tuberculosis and the work that goes on around continuing to prepare for the next major pandemic. These are not separate entities. These are reinforcing and very integral efforts. That's another big change that's happened and we'll hear more about that.

I was very encouraged. I read an interview and a press piece by Jeremy Farrar, former head of the world – Wellcome Trust, now the chief scientist at the World Health Organization – making a very, very optimistic argument

that the development of the M72 vaccine offers enormous promise and we need to see it as such and we need to compare that moment with earlier moments on HIV and malaria, that we should be giving this the credit and getting the encouragement and hope that this should inspire. It's a long-term process. We'll hear more from Tony Fauci around this. But the fact that we're going into late stage trials with a lot of cash from the Wellcome Trust and the Gates Foundation, over 50 sites in Africa and Southeast Asia, that in itself is a cause for celebration.

So I'm going to turn now to Eric Goosby. He's a friend. He's a colleague. He's an advisor. He's a professor of medicine at the University of California in San Francisco. He was the founding director of the Ryan White CARE Act years back when that groundbreaking work in the United States on HIV care was introduced with, I should add, dramatic bipartisan support in Congress.

During the Obama administration he was ambassador-at-large and head of the President's Emergency Plan for AIDS Relief in a very important period in which the continuation, the sustainment, the adaptation of that program went through many tests, not the least of which was in South Africa as South Africa teetered out of the Mbeki period into a period of taking much greater ownership of this program, our largest partner.

He served as the U.N. Secretary General's envoy on tuberculosis during the earlier high-level meeting in 2019 and shepherded that progress forward. So he brings to this experience in this moment enormous depth of commitment and expertise in this.

Eric, thank you so much for being with us. Over to you. The floor is yours.

Anthony Fauci: You're muted, Eric.

Eric Goosby: I apologize. I wanted to thank you, Steve, for the introduction but also I wanted to thank CSIS in general for convening and hosting this discussion. I do think that we are in a moment of continuation where all of us need to come together.

It's commendable CSIS, with USAID's emphasis and focus on tuberculosis both in the prevention, treatment, and diagnostic arenas as well as the R&D, and the foundations that have come together to support both efforts along diagnostics, therapeutics, and preventative efforts, which we'll go ahead and discuss.

I think that the Lancet Commission was convened with 70 different researchers, experts, and advocates to look at and understand where tuberculosis was on the global level, the ability to diagnose and treat it, and the ability to identify, enter, and retain patients in care over time.

It came during the convening of a U.N. high-level meeting on September 22nd, as Steve has just outlined. This was follow-up from a meeting in 2019 that was a high-level meeting where the challenge was presented. This was an attempt to look five years after the event and assess whether or not there had been progress or if there needed to be a refocusing of effort.

The overall picture to me has been poor for the last five years and more, not just from the COVID convergence on services and causing a major disruption across the spectrum of really all of TB care. The increases in TB cases that we saw nearly two decades of 1.4 million cases per year went up during the COVID period to 1.6 million in 2021. None of the high burden countries have really moved significantly toward their targets that were identified in '18.

So we are disappointed and concerned that there has not been a sustained refocusing of the needs that tuberculosis has presented. It really is the first pandemic that has been unresponded to, I think it's fair to say.

Financing the cost of inactivity with tuberculosis is severe. We're looking at 27 million lives unresponded to lost and a hundred and thirteen million (dollars) in economic losses will be the result of no or, I should say, business as usual with our current efforts on TB. So a bleak picture, to say the least.

Donor funding is crucial in responding to TB, especially in low- and middle-income countries, and it's an imperative that this urgency be understood and responded to by the entire global community. It is going to take all of us to check and decrease the number of new infections.

From a disease process that we know how to diagnose we now have innovative changes in the treatment ability both for prevention for drug-sensitive treatment and for multidrug resistant tuberculosis, changing it from one month to four months for drug-sensitive and taking drug – multidrug-resistant TB and resistant tuberculosis down to a shorter six-month period.

I think that these advances really raise the question globally of how rapidly with this efficacy and safety profiles can we put these in guidelines to allow the science to inform the policy and for guidelines to translate it into protocols that allow delivery systems to start using these new advances.

So we have aggressively challenged countries at ministry of health levels with guideline preparation. WHO and other normative agents such as CDC and, to a large degree, because of orchestration from USAID have been able to keep a lean forward attitude toward guideline completion.

So investing in the prevention and public preparedness for pandemic preparedness in general as an area of activity for a ministry of health. It was clear to those of us in the TB community that many countries that are burdened by tuberculosis quickly turn to the infrastructure that they had on human resource levels as well as diagnostically that had been stood up with TB programming before, and it is our belief that that availability of case finding and contact tracing immediately on the front end of the COVID pandemic gave countries, municipalities, et cetera, the ability to – the tools to check and understand, monitor, the crescendo that COVID presented virtually everywhere.

The improvements to existing TB infrastructure and drug susceptibility testing, high-functioning laboratories, et cetera, were all infused during the COVID outbreak and complemented the TB infrastructure that was in place and allowed for some expansion of it.

But that partnership needs to be understood and taken full advantage of. Tuberculosis needs to be a surrogate marker of the maturity of delivery systems' ability to respond to a TB threat as well as to a pandemic threat that may present itself.

So the proposal of using our TB assessment of our TB response, where in the TB response we are as a surrogate marker of our PPR preparedness, you know, kind of a gestalt look at where we are with that country by country really does present an opportunity for us to kind of use both TB as well for pandemic preparedness expansion because of that clean overlap.

I think that the PEPFAR role in the TB response going back to, really, 2010 was a significant contribution to the HIV positive TB burden that's globally shared and I think that that ability was really one of the first times we were able to use TB – the resources that were coming from PEPFAR, a focus on HIV disease, because as the leading killer of HIV-infected people tuberculosis became a target in the PEPFAR programming and allowed for, really, the training of individuals to be cross trained to be capable of doing TB but then pushed back into HIV, and as we say with the COVID outbreak the pandemic response was really foundationally supported by that TB infrastructure that was in place.

Now, my friend, colleague, and mentor, Dr. Fauci, is going to go into a little detail around the advances in the prevention and treatment arenas as well as in looking at some of the new vaccines on the horizon.

So, Tony, I'll let you go ahead and move into that.

Dr. Fauci: Thank you so much, Eric. It's great to be here with you. And Steve, I want to echo what Eric said about thanking you for putting together this panel,

which I hope will essentially engender more discussions among the people who are tuned in.

So I was asked to talk a little bit about the issue of the research agenda – where we've been, where we are now, and where we want to go. I only have a few minutes so I'm just going to touch on some very, I think, fundamental highlights.

But just to put thing(s) in historical perspective about why we are still playing catch up with tuberculosis being, as Eric so well and accurately described, one of the great killers in the arena of global health and global disease, when I became director of NIAID literally 39 years ago and I looked at our portfolio I thought there was a typographical error because when I looked under tuberculosis there were, like, two and a half grants for a total of $600,000 at a time when tuberculosis was even worse than it is right now.

And so what we've done over the years – and I find this an interesting statistic. I looked it up. I decided that this was something we had to do something about but it took quite a while. So we went from less than a million (dollars) when I took over in 1984 up to 2.7 million (dollars) in 1990. That boost was due to the association in the United States of the breakout of TB among HIV-infected individuals in the '80s.

So it took that little bit of a push for people to realize it. And then as the years went by 49 million (dollars) in 2000 and the NIH total now for TB research is 634 million (dollars) of which 580 million (dollars) is NIAID. If you do the math that is a 1,000 percent increase. That doesn't mean it's so great because it's 1,000 (percent). It tells you how low it was to begin with.

But what has happened over the years – and I'm going to very briefly discuss these – is that the areas that have benefited the most but still have a long way to go the area of diagnostics, shorter safer therapeutics, the pipeline to new potential vaccines, and something that we don't usually associate with fundamental basic science and those are the social determinants that are so really, I think, profoundly related to how the research investments that we make get actually implemented.

So starting off with new diagnostics. I think whenever you have a disease as complicated as tuberculosis there is a profound need for simple, affordable, accessible diagnostics, and we've made some significant headway with Cepheid and others in that. But we really need to do much better. We need point of care, oral swabs, and LAM-based urine assays.

But Eric and I and many of our colleagues have been involved in the dual struggle with HIV and TB. When you have HIV you have assays that are readily available that can get you down to one copy of HIV RNA to monitor

the cost of treatment as well as diagnostic. We never had that with tuberculosis and we need it and we need to continue to make new investments.

You know, people often talk about the positive and negative aspects of AI. You know, when I was thinking about the positive aspects of a very complicated systems biology-related disease like tuberculosis I cannot imagine that TB may not be one of the most, I think, valuable arenas to look at the role of AI in how we handle this disease.

Next, safe and effective therapeutics, and, you know, during the discussion at the UNGASS meeting and in the publication from Lancet we know what the goals are, a one-month regimen or once weekly for TB prevention, four months for drug sensitive, six months for drug resistant, and to have a potential to have impact on adherence, drug resistance, and economic cost of TB.

The pipeline of vaccines, really very important. Steve alluded to that as did Eric. If you look at the advancements that have been made they are really quite, I believe, striking and I'm very optimistic about that. You know, the M72, which is a(n) adjuvanted subunit vaccine, has shown a close to 50 percent efficacy.

Now, many people in the vaccine field say, well, you know, 50 percent that's not really that great. However, if you look at the arena in which we're dealing with TB, the pure volume of cases, and the relatively high morbidity and mortality, even a 50 percent effective vaccine, you know, doing some modeling studies, if you look at that you could have literally millions of lives. You could prevent up to 76 million new TB cases, you could prevent 8.5 million deaths, and you could prevent the need for 42 million courses of antibiotic treatment, which comes to more than $40 billion in costs.

So as Steve mentioned and I really want to – kudos to the Wellcome Trust as well as the Bill and Melinda Gates Foundation putting about $550 million into Phase II/III trial for a TB vaccine, something that when I was at the NIH we never would have been able to do, you know, given all of the other constraints that we have. So it's a great example of a public-private partnership.

Now, finally, with the social determinants I just want to say in my seven or eight minutes and close with that. When you look at the RATIONS trial in India how better nutrition is related to a better response to TB, if you look at the incident cases that are due to undernourishment it's over 2 million, almost a million due to HIV, about 750,000 to alcohol, and about 630,000 to smoking and a little bit less to diabetes.

When you look about the equity and the access that are needed we do need research into looking at the social determinants. You know, Eric and I came full blown into that with HIV when we saw a disparity in both the underlying diseases as well as the access to interventions and we're seeing it with COVID.

I mean, a real example of what health disparities do for people who fall into certain groups have a greater likelihood not only of getting infected but having a serious outcome. So, in summary, there are those areas of research we've made major investments. We've come a long way. But we still have catchup to do.

So if there's any message as a researcher I'd like to leave is that let's make sure we put the investment, the interest, and the energy into that catch up.

So I'll hand it back to you, Steve.

Dr. Morrison: Thank you, Tony. I didn't properly introduce you and I want to just remind all of our viewers of your remarkable contributions.

You served as the head of the National Institute of Allergies and Infectious Diseases, NIAID, between 1984 and 2022. Seven presidents you served. Principal architect of the President's Emergency Plan on AIDS Relief, passionate advocate of tuberculosis, and really a singular voice in our nation through many different infectious disease and other crises in that period.

So we're very indebted to you and very grateful that you were on that commission – the Lancet Commission – and that you could be with us today.

Now that you're in your role as distinguished university professor at Georgetown we're hoping to see more of you here at, you know, these independent institutions around town. So thank you for being with us.

Nidhi Bouri is joining us from USAID – the U.S. Agency for International Development. Nidhi is a deputy assistant administrator in the Global Health Bureau at USAID where she has lead responsibilities in this area in global health. I had mentioned her boss, Atul Gawande, the assistant administrator. Participated in a high-level meeting. Made a major contribution there.

She served prior to this in a variety of different positions at the National Security Council and has a very, very long history prior to joining government in working in a number of key nongovernmental institutions involved in health and emergency response in fragile situations.

We've had the pleasure of working together on a number of different topics including sort of the recent developments last period in Afghanistan and in other things.

So Nidhi, thank you so much for being with us today. I'm so glad our government is functioning and you're with us.

Nidhi Bouri: Thanks, Steve, and always nice to see you and your team. Thanks for convening us on this.

We at USAID are really proud not to just lead the U.S. government's role for global tuberculosis but also to serve as the largest bilateral donor leading these efforts. We know that these investments are really critical in driving progress towards ending TB and at the agency since 2000 we have invested $4.7 billion to combating TB.

But I think, as my other co-panelists have said, we still have a long ways to go. The support that USAID invests in to end TB is generally categorized in three areas: first, strengthening local TB networks to achieve the national TB strategic plans to reach every person with TB, cure those in need of treatment, and prevent the spread of new infections and the progression of the disease; second, investing in the development, introduction, and scale up of new tools for finding, treating, and preventing TB, which we, of course, are talking about today; and third, strengthening primary health care systems that will improve access to TB services for all people as well as the overall service delivery platform.

We were really pleased that the UNGA high-level meeting's political declaration aligns well with our strategy and outlook for global TB here at the agency and our strategy is really centered across those three areas with this goal of reaching every person with the disease, curing them, and preventing infections.

So as we talk about scaling up innovations and fostering local ownership to sustain TB one thing that I will comment on as well is the inextricable link of how these investments have already shown through COVID and will continue to show us the way that they support health systems in promoting pandemic preparedness and being ready to meet population needs.

I believe that there's a slide up here that is summarizing our outlook and approach. But just to summarize, for USAID we have 24 priority countries for our work in tuberculosis for our strategy and our strategy aims to reduce TB incidents by 35 percent and TB mortality by 52 percent by 2030 with four main areas of work.

So 90 percent of individuals will TB diagnosed and initiated on treatment; 90 percent of individuals with drug-resistant TB diagnosis and initiated on treatment; 90 percent of individuals with drug-sensitive and drug-resistant TB successfully treated; and 30 million eligible individuals provided with TB-preventive treatment.

So now when we look at how to achieve these targets, we know that tools and innovations are essential and the U.S. government beyond USAID – so not just us but our colleagues at NIAID and at CDC – have invested extensively in TB research and development.

In 2021, just as a point of reference, 42 percent of the global allocation in this space had been funded and invested in by the U.S. government. Our joint efforts we know are contributing to tremendous progress. We continue to work with agencies and partners around the world.

We have reduced TB deaths by more than 40 percent and saved more than 75 million lives since our investments began in 2000. But we know that a lot of work remains. So in order to meet these newly-set UNGA high-level meeting targets we know we need to expand access to the emerging tools that we're talking about today and to the ones that are expected to come out in the next couple of years and make sure that they're at an affordable price and that they're accessible to all populations who need that, which is why one component of our strategy is to really look at how to integrate the use of tools at the primary health care level and in communities closest to those that are battling this disease.

If we can switch to the next slide, please. Steve had mentioned in his opener that Assistant Administrator Atul Gawande had laid out our package of announcements at the U.N. high-level meeting, which I want to just walk through a bit and pull to some of these thematic areas.

So as we look to support countries, we launched at UNGA something that we called Global Accelerator to End TB Plus. This is a package of interventions that we intended to be quite comprehensive and we believe will support the U.S. government's contribution to the global effort in achieving these targets.

And I do have to just take a minute to really thank my team here at USAID led by Cheri Vincent who have worked in kind of getting USAID in a position to do this next level of work and we're really excited about it.

This plain set of interventions is part of our fiscal year '23 budget for USAID. It's part of our planned investment of nearly $395 million and it illustrates our commitments across areas from prevention to treatment. So there are seven main components of this package. The first one, which we call SWIF-

TB – Support Widescale Interventions to Find Tuberculosis – is focused on new tools and other illness detection as related to last-mile delivery.

In this effort we will select up to two priority countries which will receive up to $15 million to roll out new innovations and we plan to select countries that really commit to co-financing with these innovations as well. The goal for this is for countries to implement innovative approaches and tools to increase TB case finding at the community and primary health care levels such as expand it to contact investigation and integrated screening of tuberculosis to also detect other tuberculosis co-morbidities such as lung disease and diabetes, malnutrition, or HIV. This adds to our support of, developing, implementing, and scaling up new tools and innovations as well as leveraging those commitments from other governments.

The second, which is focused on prevention, is focused on stopping infection and transmission especially through increased screening of those who are at risk, coupled with the introduction and scale up of shorter, effective preventive regimens – the prevention component of the 1-4-6 (sp) Initiative championed by the Lancet Commission.

To this end we're working with our partners to widely implement these regimens and we made some exciting prevention announcements as part of this package. This includes that USAID with our partners at PEPFAR – the President's Emergency Plan for AIDS Relief – in collaboration with the Stop TB Partnership's global drug facility has secured a 30 percent reduction for a shortened TB prevention regimen, which will procure $25 million in treatment to more than 2.5 million individuals who are at risk of developing TB.

As part of this joint effort USAID launched a $15 million donation program for the high burden TB priority countries where we work so that they can apply for these drugs. We will continue to focus on access and quality as we introduce new and existing tools and that's also why we initiated technology transfer of a more efficient way to produce active pharmaceutical ingredients for rifapentine (ph) and to a local manufacturer in Africa.

Third, I just want to talk briefly about BREACH-TB. So BREACH-TB, which was done in partnership with our consortium partners at SMART4TB at Johns Hopkins we launched BREACH-TB, which is a new foundational clinical trial on a TB preventive therapy program that will lay the foundation for a future study of a single-dose long-acting injectable medicine.

We need to rapidly develop new game-changing tools, endorse all new evidence from successful research, and ensure access to these tools for all people.

Our fourth and fifth components of this package are focused on price reduction. So we've worked with our partners in the public and private sector to help ensure greater access to new regimens, particularly for drug-resistant tuberculosis, most recently through market-shaping activities that decrease the price of Bedaquiline by more than 55 percent, going from $289 to $130 for a six-month regimen.

It's also critical that we continue to advance DRTB efforts knowing, of course, that that about a third of DRTB cases are linked to – (inaudible) – with AMR. We also announced a drug reduction effort with the Global Fund and Stop TB as well as with significant advocacy efforts from civil society stakeholders just before the high-level meeting where we announced a 20 percent reduction in the price of Cepheid Xpert's cartridge, which is a major step in accessing – increasing access to accurate diagnosis.

Next, just on localization so we really recognize that national TB programs are a center and will remain at the center of the fight against TB in high burden countries and that grassroots and local organizations are usually just the most frontline and the most critical partners in representing those who are affected by TB and really in addressing stigma as well as prevention and clinical services.

We continue to support and strengthen local TB networks in their work and as a demonstration of our ongoing and increased commitments to localization in line with the agency's particular focus on localization in this administration we announced that by 2027, the duration of the high-level meeting period, we commit at USAID to allocating 60 percent of our funding at the country level directed specifically to local partners.

We will strive to have at least 50 percent of the USAID TB resources in each country directly programmed to local partners by the end of that same period. And, lastly, just to talk a little bit about our work about addressing tuberculosis in fragile settings, we announced an increase in support, up to $8.5 million in our additional fiscal year '23 funds, for programs in Ukraine, Afghanistan, and Burma.

We know there is a catastrophic correlation between conflict and tuberculosis and that without intensified support for TB in these settings we would lose further gains. So we recognize, of course, the immense role that civil society and other donor organizations have in addition to governments and I just want to end by emphasizing three main points.

First, we will only make an impact if political will and public health practice both align to support the same targets. Funding is, of course, critical. We will continuously need these investments. But without political commitments

and sound scientifically-driven approaches and tools which receive the same political backing and the commitments we will fail.

We have been very proud for the U.S. government's efforts but we know we can't do it alone and we really commend the efforts of others that were announced during UNGA. But we really encourage our partners and stakeholders to continue to step up to do their part, too.

Second, reaching the targets to end TB is critical but how we do it also really matters. We collectively must look at how to translate the principle of equity into action both in terms of making services available but also how we structure and advance and strengthen our partnerships to do this.

And, third, we particularly look – as we particularly look at our role in supporting the global community's efforts to prepare for public health threats both new and current we must look at how to strategically invest in strengthening health systems at every level, a key component of which is the health workforce.

We're here today to talk about the promise of new tools but they will not go far if we don't invest in another critical tool, which is the people who are going to do the testing, the treatment, and supportment – and support to communities who are affected by TB.

So with that, Steve, thanks so much and I'll turn it back to you.

Dr. Morrison: Thanks so much, Nidhi, for a very thorough presentation.

Our next speaker is Jacqueline Cuen, who's a chemist. Was diagnosed with tuberculosis in 2019 and went through a regimen of treatment of 10 months. Has become a very active member of different advocacy survivor groups, We Are TB and the Coalition for a TB-Free California.

I just want to note, Jacquie, in the past we have convened here the TB – the state-based TB directors from California, Florida, New York, Texas, to talk – which are the four states within our country that have the greatest cases of imported tuberculosis or secondary cases from imported cases, and it was always very impressive to sort of hear from them and see the level of mobilization around this.

We also had the good fortune in those convenings to bring forward a number of people like yourself who had experienced tuberculosis, survived, and gone on to become very active, including some school-age kids, which was quite profound to hear from as well.

Thank you for being with us. Thank you for coming on on short notice. I hope you'll share a bit about your personal story. I hope you'll tell us a bit about what this means in trying to raise consciousness around a focused agenda, particularly here in the United States where the actual annual cases are very small but for those who do become infected it's terribly dangerous. Thank you.

Jaqueline Cuen: Thank you so much for having me.

Yeah, so I'll just tell you a little bit about my story and kind of tie that to how – you know, how important it is to involve civil society, particularly TB survivors, you know, to finally reach TB elimination.

So a little bit about me. I'm from the California-Mexico border area. So I was born in the U.S. but I grew up in Mexico – in Tijuana, Mexico, and so we go back and forth all the time, and so by the time I started feeling symptoms – actually, I'm – I have rheumatoid arthritis so I have a history of autoimmune diseases.

And so after 10 months of being heavily immunosuppressed, I started with symptoms – you know, cold like symptoms or flu like symptoms, and then after about a month I decided to finally seek care because I – you know, I have a family of doctor – I come from a family of doctors so I don't really – I don't really seek much care when I feel sick with, like, a cold. I see a lot of specialists but not really for that. And so, finally, I just had to seek care over here at urgent care, which I had never – you know, I had never heard of before.

And so after a date at urgent care I quickly became or I was quickly diagnosed with pneumonia. And so after that I seeked, you know, my second opinion from my godparents, who are doctors in Mexico, and, you know, one look at my x-ray and they're, like, maybe you should seek a second opinion.

But, you know, as you know, it's not easy to get a specialist to see you in short notice over here in the U.S. so I decided to go in through the ER to get a second opinion and I actually almost got turned away. And then after that I ended up spending, you know, about four days – two days in the ER, four days in the hospital overall. Went back home with a possible diagnosis of a fungal infection because my sputum tests were coming out negative.

And so I actually was told by another family member who's also a physician in Mexico to get what I now know is the – you know, the gene expert. But I didn't ask for it because I was – you know, I was kind of scared. You're very vulnerable and as a patient you don't want to step on anyone's toes, right? And so I didn't end up asking for that and, you know, later I realized that was never done.

But, anyway, so after I got sent home with this diagnosis I finished that treatment and then three weeks after the actual discharge from the hospital I got a bunch of phone calls during my lunch break at work and I got my diagnosis basically via voicemail, because my culture had come back positive.

And so after that I was offered a doctor's appointment for a week after that and so, again, my family members were, like, you need to seek care now. And so I finally went to the hospital and they finally – I finally got treatment and then after that I spent three weeks at the hospital and then two months in isolation in total and then, like you said, 10 months of treatment total.

And so the reason why I like to emphasize on all of these, like, hurdles is because, unfortunately, it's not particular to my case. It's a very common thing amongst TB patients. But also, yeah, so misdiagnosis can really lead to – you know, to taking medication for something that you shouldn't to, you know, a longer treatment overall. Like, my treatment probably would not have been, you know, a 10-month long treatment had it been diagnosed earlier, that kind of situation.

And so the third thing is that not everybody is as fortunate as I was to have someone to advocate for myself and, again, it's another common thing amongst my TB peers. We all kind of need that extra person to tell us that we're, you know, losing a lot of weight, we're looking pale, that you need to seek more care.

And so I do think that amongst patients it's really important to have someone to advocate for yourself and so after that I – you know, I became very involved in, like you said, in several organizations, one of them being We Are TB, which is a TB advocacy and support group where we now – you know, one of the good things that came with COVID is that now we get to meet weekly.

It's a national organization so we – sorry, not national organization but, like, nationwide and even worldwide. Some people are, you know, outside the country, too. And so we get to support each other and, you know, we always emphasize that we're not health care providers.

You know, there are members who happen to work in this field but, you know, we just try to triage our peers to, like, where we think they should be going, whether we think – you know, maybe ask your provider some more questions or maybe, you know, seek more help over here – this doesn't sound normal or, you know, whatever normal is in TB.

And so that's why we think it's very important not only for our physical health but for our mental health as well. And also I do think it really helps to reduce stigma and so in reducing stigma I think we can get more treatment adherence from other patients, which I do think, you know, can improve or this is how we can achieve TB elimination maybe a little bit quicker because I do – I did find reluctance. Even in my circle, you know, some people who when we're doing contact tracing maybe they don't want to get tested or they don't want to continue with latent TB treatment, that sort of thing.

And so I do think that having a support system like this one helps either to start treatment or seek – you know, seek a diagnosis, start treatment, or continue treatment because I do think stigma, even though maybe in the U.S. it's not as heard of, you know, in other countries it's very much an issue in order to start treatment.

And so, you know, and also I do like to point out all of these details to show that there's a little bit of a lack of education, you know, maybe a little bit in the U.S. or in areas where we're not a high burden or if it's not a high burden country there's not as much education, and I think because of that us as patients we have to advocate for ourselves.

And, like I said, you know, as vulnerable as we are and in general I don't think patients should ever, you know, have to advocate for themselves. And I'm not pointing any fingers here. I just think there should be a little more attention paid on tuberculosis.

Dr. Morrison: Thank you.

I want to ask Eric and Tony to respond to what you just said since they're both experienced in treating people and dealing with it. Eric, what – any thoughts on what Jacquie just said? You're on mute.

Dr. Goosby: : Jacquie, thank you for your candor and your willingness to just lay it out there. I think that our ability to identify, enter, and retain people in care with tuberculosis is critical for both the drug sensitive and especially for the multi-drug resistant and those, I think, levels of interaction result in more trust with the community, and I've never seen a program work well that did not actively and aggressively partner with community individuals who were already credible to the community. They knew them and trusted them and that allowed for a more aggressive rollout of a new treatment, new diagnostic, et cetera.

You really highlighted all of those, and I think that the idea that people who are not seeing the disease regularly don't diagnose it as quickly and don't think of the nuances in presentation right off the bat. But eventually TB should rise to their thought process. But we've all seen that slower in the

United States than in countries that, you know, have a high prevalence of disease.

But I think all of your points are critical, that the ability to retain individuals becomes the point where we lose people to follow up and the propagation of resistant organism is fostered.

So all the right reason to spend time really shoring up your primary care delivery system so that's your interface with the community and it's also your fallback when you lose patients. The more integrated and aware the community is of that individual the better able we're able to retain them.

So thanks, Jacquie.

Dr. Morrison: Tony, what – any thoughts on what you heard from Jacquie?

Dr. Fauci: Yeah. I was having secondary pain listening to her story – (laughter) – because it really – you know, what I could think of is that we have an issue in this country because of the health care delivery system.

I think I cannot imagine anybody on this panel here – I know it certainly happened to me and my family – where you go in and you do not get the attention in an emergency room after waiting five or six hours sometimes. At least here in the Washington, D.C., area that's the case. The physicians are overburdened and they, you know, often don't think of something that they should be thinking of.

So I think if there's any disease, notwithstanding tuberculosis, is going to suffer if it doesn't have a classical presentation, given the rushed nature of the accessibility of health care in our country. So if you were a person in South Africa, Jacquie, and you walked into a clinic with your symptoms it would take a microsecond for them to think about tuberculosis.

But in the situation where you are now I think tuberculosis in a developed nation in someone who doesn't have the demographic features where you have most of the tuberculosis you can really get caught in a string of delays and misdiagnosis or what have you.

So there are so many aspects, you know, of TB in a low- and middle-income country with a high degree of HIV and other diseases and poverty and poor socioeconomic, homelessness, or what have you. But you're a person, you know, from a background that the last thing in the world you would think of would be tuberculosis except if you were thinking about it and then everything falls into place.

So it's really a good but unfortunate story and I'm glad that you're here very healthy looking talking to us today.

Dr. Morrison: Nidhi, in the Lancet Commission report one of the – one of the key recommendations is to empower tuberculosis survivors and other people affected by tuberculosis to serve as leaders in defining and leading the global tuberculosis agenda, and I think that same recommendation you can find in the political declaration from the high-level meeting and I think you can find it in U.S. policy documents as well and you can probably find it in the documents in the coalition that Jacquie is working for – working with.

What is it – from USAID's standpoint what works in this regard in terms of building that – building – empowering that constituency? You're the biggest investor bilaterally. We can talk also about other partners. But for right now what is it – what is it that you think works the – works most effectively?

Ms. Bouri: Thanks, Steve, and thanks for this question.

I think there are a couple components that sound simple and are not in practice and I think that a lot of this comes down to approach. So if we look at countries that have high burden of TB most of those countries you can see that TB really is a disease of poverty, and we have a range of community organizations that are well networked in communities at higher risk and the reason that's important is not just for the service delivery component and, obviously, of course, the prevention side as well but in addressing a key point that Jacquie raised, which is stigma.

You know, some of the social determinants that impact populations, factors that impacts populations and their ability to actually access services and utilize services, and one thing that USAID has really put a lot of focus on, like many other key actors in this space, is I think reforming our approach to how we invest, which is to really make sure that our partners that are in those communities are at the table informing the way that we design and look at programs and I think that's why while I'm very proud of all of the investments and aspects of our program that we announce at UNGA the one I'm most proud of is our commitments on localization because I think this is where having – allowing organizations that have expertise to be well resourced, to have agency and kind of participating in processes that are in decision making will be the connection point between their ability to not just be connected to communities but to really help drive successful outcomes.

And we also, therefore, I think, have to look at supporting organizations to have strong governance and to look at political constructs in countries to make sure that organizations aren't just receiving funding, for example, from external sources, from the international community, but have that link and support with their political leadership and financing in countries and I think

that's where when we look at the global agenda, which the intention of the high-level meeting was to really set this global agenda, stringing together a very locally driven agenda and making sure that countries and regions and global partners are all aligned in supporting national plans and national outcomes is really critical and for some organizations that is a bit of a change of approach of how they have come down to and a component – a huge component of that is the integration into primary health care for all the reasons that we've talked about.

Dr. Morrison: Jacquie, let's come back to you for any thoughts. I wanted to try and have our other speakers reflect on what you said because it's so compelling and it's an interesting way to get deeper – more deeply into the conversation. Your thoughts?

Ms. Cuen: Well, I love what Nidhi pointed out and, obviously, we do appreciate all of the investments that have been made and all of the support for the tuberculosis community. But I do think, you know, something that I missed is, like, I think civil society's becoming a little less shy now and I think we are trying to get involved in that conversation and try to keep everyone accountable, ourselves included.

So amongst, you know, NGOs and – but also, like, there were a lot of promises made at UNGA and with good reason. But, you know, if the goal is 2030 and in my opinion there aren't, you know, ambitious enough goals for tuberculosis after this long but I do think that, you know, partnership with civil society as well is really important because we're less tied and, like, we're – I think we're less limited into what we can do or what we can say or how we can form partnerships and I do think it's really important for us to, you know, kind of be a larger part in this conversation and actually make sure that these promises are accomplished or all these investments are actually accomplished and, like Nidhi said, like, they're going to the right places and, you know, how they were – how they were initially laid out. And no further changes, hopefully, for – because that can take a turn for the worse, I think.

Dr. Morrison: : Yeah. You know, in California and in Texas where you do have significant case counts it's really a cross border issue in a very important way. You could say the same with New York and Florida with respect to some of the key countries where we – you know, China, India, the Philippines, that – where we have a lot of folks that are with – carrying tuberculosis coming to the United States.

Say a bit about how the issue is seen in California. Certainly, when we spoke with the – with the TB director for the state that was a very big part of the strategy was trying to get very strong cooperation with Mexican counterparts.

Ms. Cuen: Yeah, and that's something that I'm actually trying to start working on because so far I've really only been focusing on California. But I do think those partnerships are incredibly important and, you know, we like to say that TB anywhere is TB everywhere. So until TB is really tackled in neighboring countries – in this case, you know, Mexico – I don't – there's not going to be that much advancement, really.

But I mean, California, specifically talking of L.A., right, so and – or, like, New York there's really such a movement, like, from everywhere and right now with Ukrainian refugees as well and I think that's actually something. You know, screening has gone up, I think, a little bit and there have been I think newer – the screening has been, I think, updated to something more realistic because non-U.S. born is no longer, I don't think, something that we should be focusing on because there is so much interaction everywhere.

Dr. Morrison: Yeah. I just – there was reference – I think it was in Nidhi's remarks – reference to Burma, Afghanistan, Ukraine, which triggered one thought. Recently I was – I've been looking at in Ukraine the emergence of highly resistant organisms among the war wounded and in the string of facilities that are treating them including all the way out into the west and into neighboring countries where this has become a serious problem and one of the claims that's been made by the Ukrainian authorities who were charged with dealing with this very serious problem, which we also saw in Afghanistan, Iraq, Gaza, elsewhere – one of the claims has been that the control of tuberculosis has remained pretty strong inside Ukraine in this period.

There was a dip in capacity and that this is really a sign of several things but not the least of which the commitments made by the Global Fund and PEPFAR inside Ukraine over the years and the durability and resilience of the Ukrainian public health alliance and other partners in this period, and I found that – I found that quite surprising.

I want to shift the discussion a little bit to political will among the high burden countries and also money. So on the political will China didn't have a whole lot to say at the high-level meeting, as far as I could tell.

In years past there was high hopes that those countries that are the highest burden countries, which tend to be middle-income countries or some wealthy countries like China, would really carry the ball here on the global response – India, South Africa, China.

What's the state of play? Like, what's the state of play right now in terms of trying to engage the senior leadership in those countries around this issue that had such – where there's such a huge burden?

Eric, maybe you could kick this off since this has been on your plate for a while going back to the last high-level meeting and before that.

Dr. Goosby: Well, thanks, Steve. It's a difficult discussion but needed. No question that it's needed, and that our ability to engage with ministers of health really has been with PEPFAR and with donor kind of relationships coming in with a carrot of sort that, you know, for PEPFAR it was gene Xpert. We put 16 gene Xperts up in sub-Saharan Africa, Southeast Asia, that allowed the company to continue to attract investors in their instrument, which was at a critical moment but I think has given us a clean understanding of the need for private-public partnerships.

We're not going to be able to do it. I think USAID's epiphany and awareness of the role that they can play in infusing resources that look at both the R&D aspects that wants a new diagnostic or therapeutic as identified, takes it to a policy discussion, gets into a guideline process that allows that advance to actually be translated into and available to the people who need the products in their country.

That process is laborious but I think is a critical one to take. We are not going to get TB responded to without a global response and I believe the pandemic COVID showed us in no uncertain terms that that response can be strong or small but that our hope is that in our pandemic – awareness of our pandemic threats that we use an expansion of the TB platforms in countries that have tuberculosis as the kind of incubator of the more case finding contact tracing capability in the country.

So you benefit tuberculosis on the front end but you have a cadre of individuals ready to expand to a pandemic response if it presents itself, and to have that as a global approach to how we move a TB agenda further forward through that pandemic preparedness challenge.

Dr. Morrison: Yeah. I mean, at the high-level meeting and the commentary at the high-level meeting and in reading your commission report there wasn't a whole lot of discussion around the broader geopolitical situation.

I mean, we're in a pretty fraught situation with both Russia and China at the moment and that has some pretty significant implications when you start talking about a burden of things like tuberculosis and trying to find a way forward and trying to find higher cooperation resources and collaborations.

Tony, what's your thoughts?

Dr. Fauci: Yeah. Well, thanks, Steve. I was just thinking, as Eric very accurately described the situation, that when I was dealing with ministries of health in

different countries it's interesting that often the ministries of health don't have the finances. The ministries of finance have the finances, and you could have a very well-meaning ministries of health in countries that, you know, maybe will essentially resonate with what – the needs that you have but don't have the fundamental resources to give it.

The other thing that I think is really important, and we see this sometimes depending upon the degree of constraints and resources in our own country, when you have a government that has many other requirements, when you're dealing with the requirement of health, when you're dealing about all other things that they're required for, very often for reasons that we in the health field cannot fathom why that's the case but it really goes into the second and third and fourth place in the needs of a particular country, which is the reason why, getting back to something that Eric said, I really think that public-private partnerships have to be critical in this the same way that the $550 million Phase II and Phase III trial of the TB vaccine is done by Bill and Melinda Gates Foundation and the Wellcome Trust. You know, it's not done by any individual country.

So I think we have to face the fact that we have to keep putting pressure on different nations that this is to their ultimate benefit. But we also have to look at the fact that we have to rely a fair amount on public-private partnerships and philanthropy.

Dr. Morrison: Tony, on that – on that note, I think this – one of the points you made was that this pipeline of new vaccines and other related technologies is a bit inverted. In other words, there's not a very strong early pipeline out there on vaccines and there – historically, there's not been too many of the big global firms that have jumped into this. GSK has been – has carried the M72 up to the point it is. J&J has been involved in the past. What's the state of play in terms of getting big pharma biotech to take this up in a more serious way?

Dr. Fauci: Well, the state of play is that we're not very successful in that because they look at the history of tuberculosis vaccines, about how long it took us to get to the one that's leading the pack right now, and how much longer it would take in a Phase II and Phase III trial to definitively prove that it actually works. And all – you know, it's – I wouldn't say it's easy but, you know, you have a lot of Phase I preclinical studies on different candidates but there's not the enthusiasm to come in and put a lot of investment into really developing that.

We just don't have that, Steve, and I'm at a bit of a loss to figure out how we can do it because it takes a lot of investment in money, you know, with resources that many of us don't have. You know, that, perhaps could – I mean, I'm saying this only just to throw it out. I mean, you're talking about a

high risk high impact situations with research. You know, perhaps an ARPA-H type approach might be good for that.

I mean, that could be something. I mean, if you talk about high impact what higher impact than a disease that historically has been one of the biggest killers of civilizations and is still doing it to this day? Not a very adequate answer to your question because there isn't an adequate answer to your question.

Dr. Morrison: Yes. For our listeners, ARPA-H is advanced research –

Ms. Bouri: Health agency.

Dr. Morrison: Agency program.

Dr. Fauci: Yeah. It's the health version of DARPA.

Dr. Morrison: Health version of DARPA. And it's just begun giving out first rounds of grants and – with its startup funding.

Let me turn for a moment to financing. There's a couple of different – there's a proposal in your Lancet Commission report that the Global Fund increased its allocations from 18 (percent) of its base funding for tuberculosis to 33 percent. That's a pretty dramatic –proposed dramatic expansion.

There's also – consider there's been suggestions in your commission report and elsewhere that donors begin to do some cross conditionality in terms of investments in pandemic preparedness response or engagement with our partner countries – that there will be much more around. We want to see countries themselves step up their investments in tuberculosis tied with a broader relationship and the like. And there's been a suggestion that the pandemic fund, which is a promising entity but still in an early fledgling stage with somewhat limited resources, that perhaps it should take this up.

We know there's a vast financing gap. The political declaration calls for a quadrupling of funding in the next couple of years. Rather utopian claim but, certainly, warranted to reach those levels. But how are we going to get – and let me start with the proposal around Global Fund.

Eric, how are we going to get from 18 (percent) to 33 percent?

Dr. Goosby: Yeah. I think that is the recurring frustration in dealing with global health. You have problems that you can define, identify populations that are disproportionately burdened by it, but not have the readily available resources to stand up diagnostics and therapeutics that we already know how to do.

It's the frustration for health in general but I think TB is a poster child of aspirations held but not met. I really do think that a private-public partnership approach – an aggressive one – has always been needed and continues to be the case and I really feel that these new conversations with these new funding pots potential must include a TB focus in how they dispense it.

You know, I don't have any misconceptions about the Global Fund's inability to move those resources. But just looking at the burden of disease on the global population, to look at malaria, TB, and HIV you have a(n) underrepresentation of investment in TB for the burden it represents in the 1.6 million.

You know, so that's all that is. I don't pretend to think that Global Fund is going to be able to magically make it. But we all need to get on donors to the Global Fund and challenge them to give more, opening it up to the public-private partnership that it was originally conceived to be where the private sector would see the Global Fund as a repository for their investments in their concern around the three diseases and we have not seen that.

So I think this needs to be an area and I know it is a priority for Peter at the Global Fund to try to engage with private sector and increase funding. But I believe that coming out of the COVID pandemic people's sensitivity to the importance of this has risen and I think if we continue to present TB as something that was and continues to be the threat that COVID presented to the planet but has not been responded to that that catch up can be addressed.

So I think every sector sees this as an area that needs to be funded.

Dr. Morrison: Nidhi, do we – in our strategy at AID are we changing at all in terms of putting tuberculosis and commitments by our partner countries themselves into a different kind of diplomacy and engagement with our partner countries?

Ms. Bouri: Thanks, Steve. So I think there are a couple of things in your question. One is, you know, we, as I noted for a couple of the announcements we made, are looking at co-financing with host governments and there are, of course, some countries that I do think showed up pretty strong at the high-level meeting. Indonesia's minister of health made a pretty notable announcement around, which is, really, I think, a demonstration, again, of bringing components of governments together – ministries of finance, health, overall political leadership together to get behind.

The second thing that we haven't talked about so much in this conversation is the increasing importance roles of regional organizations, of regional health organizations in particular, where I think Africa CDC has been really a model, I think, for every region to look at in terms of how they have really used many of the strains on health systems in the continent, which were similar to what every continent had seen, but have really taken lessons learned to refresh their approach for how they engage with national governments and to refresh their agenda collectively for the region that is really centered around meeting the highest needs of populations, and has allowed us to have more of a drive for issues like tuberculosis as opposed to having those issues kind of be pulled apart a little during this increased focus on COVID and broader pandemic preparedness and response.

And the third thing I'd say is there is no question that there is a link in investments in TB to pandemic preparedness and response and broader health systems strengthening, you know, especially when we look at preparedness efforts for what is highly likely for a respiratory pathogen, the types of investments we make in TB become even more critical because they're not just about TB; it's the way that we would leverage those investments and the components of health infrastructure to be used the next time around.

But I do think it's important to keep the agenda for tuberculosis and the broader agenda for PPR, which has intentionally some vagueness and is a little more centered on systems, as separate but connected and the reason being is because I think if we pull TB solely into the PPR conversation we actually can lose some of the increased political focus that has been on focusing on TB specifically, given it has been a disease that candidly has been forgotten in the last few year, right, and now I think we're getting a little more political appetite to look at the moment of opportunity we're in to have much more focused investments – focused investments, of course, in these specific tools and then getting them out to populations that need them.

Dr. Morrison: Who are the – who are the two or three most powerful voices on tuberculosis today in the world that people are listening to most?

Dr. Fauci: Eric Goosby.

Dr. Morrison: OK. Other than Eric Goosby – (laughter) – Jacquie, who do you – I mean, are there figures that you've identified as particularly prominent and compelling or is this just a zone where there's – you know, there's lots of people who care about it and are in important positions to do things but we don't have that kind of global figure or regional figure that's really emerged on this matter that's pushing it really hard.

Ms. Cuen: Are we talking politically or just, like, in general? It's so funny, I can – I can –

Dr. Morrison: Just in any – in any category. I mean, people pick up these challenges on a personal level from any number of different walks.

Ms. Cuen: I always – I'm sorry. No, with UNGA now, I mean, I encountered so many – specifically, you know, a couple of writers who I'm, like – I understand why I'm in TB. You know, it affected me personally. But I always appreciate people who joined just because they were drawn to it for whatever reason.

So I'd say right now, I mean, I wish I had the answer politically because if I did, you know, I think would be – we'd have much more progress made. But in civil society I think nowadays, for example, the writer John Green he's been making a lot of noise and I think he's been really key to, you know, getting our voices heard. He's been, like, expanding.

Dr. Morrison: Is he a nonfiction journalist or a health writer? A fiction writer?

Ms. Cuen: He is – so I think his biggest or his most popular piece has been "The Fault in Our Stars." And so he's very active. I now know that he's very active on X or Twitter – I don't know what people are calling it now, but – and I think that's caused a lot of noise and that's been really – you know, that's been great for us because now tuberculosis has had that one celebrity. Because sometimes, honestly, I daydream that, you know, a celebrity gets – you know, or picks up TB and we all of a sudden get all this attention and all this money.

But I think he's been that celebrity who's kind of, like, brought it up to the public's attention and I think in general – I think in the tuberculosis community, at least, and I think worldwide the Stop TB Partnership director Lucica Ditiu she has had, you know, an enormous impact, I think, on the tuberculosis community and she's really good at just laying out what's necessary – you know, what can be done. You know, how – you know, if we had, I think, endless funds I think she could do wonders with that.

But yeah, I think, you know, and other more governmental institutions. I can't think of any names but –

Dr. Morrison: Thank you. Thank you.

Dr. Goosby: You know, I want to echo the role of Lucica and Stop TB and seeing the necessary urgency in connecting to communities and empowering communities to play the role, Jacquie, that you have taken for yourself and being the voice back to the delivery system that engaged you – abused you a little bit but finally came through for you.

So but I think the community is the key to keeping us on track and over time sustaining an honest commitment to the needs that TB patients present.

Delivery systems have to be reminded and held accountable and I think our ability to do that is very limited.

Dr. Fauci: Steve, you know, one of the things I was thinking of with regard to the question you were asked, and it's very frustrating, it has a little bit to do with my answer to one of your questions earlier when you have multiple competing interests. So you asked is there a political leader who would be interested in making this his or her issue.

Usually the countries in which TB is a real problem there are so many other issues in that country that the political leaders might feel if they really go out there and extend themselves about TB they're going to be, in some respects, diluting out efforts with so many of the other problems.

So that's one of the frustrating things and that's reason why it's got to – it's got to essentially come powerfully, as you mentioned, with the Stop TB program from people who have a very defined, almost unilateral interest in that to get it to be, you know, discussed in a serious manner.

Dr. Morrison: Thank you. We're getting towards the close here and I want to leave a few minutes for each of you to offer a few closing remarks. I think it would be useful if we close on a positive note. I'd like each of you to just – and we'll start with Nidhi and go to Jacquie, Eric, and Tony.

Tell us, like, what's giving you the greatest hope and optimism in this particular moment because this is a big moment for tuberculosis and that's why we're coming together right now, and we've talked about some of the positive things. We've talked about a number of the really tough issues that still are with us here.

So, Nidhi, where do you get the greatest hope and optimism?

Ms. Bouri: I mean, I do genuinely believe we're in a moment of opportunity. I think that when you look at stakeholders in global health that are – it's not limited to people who work in health specifically, right, and political leaders included.

I think there is not one part of the world that has not seen a backsliding in progress across the board in health and so when you look then at countries that have hybrid and tuberculosis, you know, we have, unfortunately, concrete data to look at. We've seen where trends have reversed.

But I think it has also resulted in a reenergizing of, well, what are we going to do about it, and I think that there is more of a focus now on thinking comprehensively front to finish, prevention through treatment, and looking at the real interface with communities as opposed to having a more

bifurcated approach of just looking at one aspect of the R&D pipeline and last-mile delivery.

And, you know, no part of that pipeline is a silver bullet. You need the whole continuum to really make a difference in helping save lives and to ensure that people are healthier and that we alleviate a TB burden, and I think that while we have a little ways more to go in political commitment I think we have more political commitment than we had before.

The challenge is going to be sustaining it. It's going to be pushing for accountability and kind of holding feet to the fire for all of us who are taking a role in contributing to efforts. Civil society has a unique role in that but I think a lot of our conversation on public-private partnership has also been very central because the private sector and philanthropic organizations have a level of flexibility and risk taking that they can take that is a bit harder for those of us who are in government, even when we think big and creatively, and I think that part of our opportunity is to relook at how we're thinking of partnership and what we all bring to the table so that we're moving to a very, you know, distinct set of targets, which the high-level meeting has laid out for us.

Dr. Morrison: Thank you, Nidhi.

Jacquie, your thoughts?

Ms. Cuen: I think for me, I mean, just to really echo that, I think the high-level meeting, you know, watching it, watching the noise from the advocates, watching the political will and, like you said, the commitment that was made and also the commitment from private organizations, I think, really, right now that the funding really is where it lies now.

Dr. Morrison: Thank you, and thanks for joining us.

Eric Goosby?

Dr. Goosby: I would just say that we have – I am optimistic for tuberculosis at this moment. We have diagnostic tests that we've had for years but have not moved them to scale with the populations that need them.

We have new ability to treat – prevent, treat, and both drug sensitive and multi drug-resistant TB. This is an innovation that we have been waiting for forever that needs to be rolled out so countries with high burdens can actually have them through guidelines available at what I would say, again, emphasizing the USAID emphasis on primary care.

We need to put this disease in the primary care delivery system so when it's seen the providers do not need to be referred to a subspecialty clinic. It will increase the number of people diagnosed and treated and the monitoring and guideline process needs to support that intimately.

But I believe we should be optimistic like we never have. The advent of a new vaccine, even with 40 (percent) to 50 percent efficacy, is going to drop numbers precipitously, and continuing to argue that this is something that still even without a 70 (percent) or 80 percent efficacy rate is a contributor and needs to be funded and rolled out as well. That's going to be the next argument.

But thank you for this, Steve.

Dr. Morrison: Thanks, Eric.

Tony, you get the last word here today.

Dr. Fauci: Well, thank you, Steve. I am actually someone who usually is very cautious about optimism. I am optimistic and I really reflect what was said by our co-panelists. I think science has brought us a long way. There's nothing here that I think that we cannot overcome from a scientific standpoint and once you do that it becomes implementation and that's what Eric and Nidhi and Jacquie were talking about, that the science can contribute and will continue to contribute more.

We got to get things to scale and TB treatment, diagnostic, prevention, and vaccine has got to be part of normal health care throughout the world and I think we can get there.

So it just requires a sustained commitment with an underlining three times under sustained, not when we do better we then say let's go on to the next problem. Sustained means essentially elimination of the problem and I think we can do that.

Dr. Morrison: Thank you, and thanks to all of you for really a wonderful and rich and very timely conversation.

Eric and I will be recording a short podcast under the CSIS podcast series, "The CommonHealth" later today. That will be posted next week. We did a podcast that was posted last week with Kate Dodson from the U.N. Foundation and Nellie Bristol, who's a senior associate with us, on the high-level meetings – the three health high-level meetings in New York.

So please take a look at that, too. Give that a listen. That's on "The CommonHealth" podcast. And special thanks again to my colleagues here at

CSIS for all the great work that they've done to make this production a success.

So we're adjourned and thank you all.

(END.)