

**TIME Global Health Summit
What We Know About HIV/AIDS Now:
An update on the battle against HIV/AIDS
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At the TIME Global Health Summit, held in New York Nov. 1-3, TIME magazine convened leaders in medicine, government, business, public policy and the arts to develop actions and solutions to the world's health crises.

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Dr. Seth Berkley: Good afternoon everybody. I am Seth Berkley, the president of the International AIDS Vaccine Initiative. And we are here today to have a discussion about HIV and AIDS.

What the format is going to be is I am going to make some brief introductory remarks, and then I am going to introduce our two panelists - very distinguished panelists. I am going to ask them each a question. They are going to respond. We will have a short discussion up here and then we are going to open it up to the audience.

So what I would like you to do as we are talking is to write down or think about the provocative questions you want answered about HIV and AIDS, this incredibly important topic.

And if I think about why we are here, the leaders in global health have really an unprecedented opportunity to not only think about

the issues of today, but the long-term issues to address these incredible challenges that you all received in your little bag of goodie, the many disease we are talking about.

Nothing is more important obviously than HIV/AIDS, probably the worst infectious disease plague since the 14th century. We have seen so far more than 70 million infections and it is interesting, I have been in this field long enough to remember when we said that it was 15 million and it was 20 million and it was 30 million, now it is 70 million and rising. Something like 14 thousand new infections a day.

But what the numbers really hide is the disproportionate effect on marginalized populations on the poor, particularly on women. Women are more infected than men now. That has been a shift of the epidemic. We are obviously seeing an enormous amount of affect in children. And if one looks at the millennium development goals as our best measure of kind of where we want to be, not only is HIV one of those millennium development goals, but HIV is having an effect on all of the other millennium development goals, some direct and some indirect,

through shifts in financing. And that is something I hope we will talk about.

As we think about HIV/AIDS, I think it is important to think about today, which is how we do everything we can to prevent infections, treat those who are infected and mitigate the societal consequences of HIV. But at the same time, we also have to think about the long-term - how we create better tools, both to treat, diagnose and ultimately end this epidemic. And I can't emphasize that enough. I think the discussion has shifted to one of how we deal with AIDS as a chronic disease, and our goal at the end should be to end this epidemic. And I think people in this room will probably agree with me on that. And obviously, from my perspective, the development of microbicides, of vaccines, are critical tools, better diagnostics, better treatments, and I hope that we will discuss that.

Where are we today? There is a long history of stigma, denial, ignoring the needs of the poor and disenfranchised, but we are recently seeing a new level of interest, attention and action. And it is interesting, Jeff Sachs said that in terms of

the developing world, we now moved from the "M" word to the "B" word - that is billions. We have seen new efforts in place, the global fund for AIDS, TB and malaria, PEPFAR, the Clinton initiative; we've seen new technologies, organizations spring up, [inaudible] Zeda Rosenberg from IPM is in the room. We have seen an unprecedented growth in resources. But also political support.

And at the Glen Eagle Summit, the political leaders agreed on universal access to prevention and treatment by 2010. We will come back to that, but unprecedented agreement. All three of us sitting on the diose here have a long history of advocacy in working on this epidemic. Yet, I must say, despite all of this political support and the additional money, many people are increasingly skeptical.

Despite this commitment for universal access by 2010, the first international target by WHO on treatment - that is three million people on treatment by 2005 - we will end this year well below target. Others argue that even with an increase in resources and an acceleration of the effort, this goal of universal access of treatment for life is not affordable, or even justified, given all of the

important and other cost-effective global health needs that are going unanswered right now.

Others argue that the world is not really serious about HIV, that the politics of AIDS continues, that prevention science is now questioned or even ignored - and I hope we are going to talk about that.

If I can introduce our speakers. To my right is Stephen Lewis, who is the Secretary General Special Envoy for HIV/AIDS in Africa. He has held this post since 2001. He has a long distinguished history working for the UN, including senior post at UNICEF, numerous commissions at WHO and chairing the first international conference on climate change, who drew up the first comprehensive policy on global warming. He holds 22 honorary degrees from Canadian universities, an honorary fellow of the Royal College of Physicians and surgeons, and was appointed a companion of the Order of Canada, which is Canada's highest honor for lifetime achievement in 2003. In April of 2005, TIME Magazine listed Stephen as one of the hundred most influential people in the world.

On my left is Dr. David Ho, who is the

founding scientific director and CEO of the Aaron Diamond AIDS Research Center, which is a world renowned biomedical institution housed at the Rockefeller University. David was educated at the California Institute of Technology and Harvard. He did his training afterward at UCLA and Massachusetts General Hospital. He has been involved in AIDS research for over 20 years and has published over 250 papers. And besides the important work he did on the dynamics of the infections and combinational chemotherapy, he is active now, working with IAVY [ph] on developing AIDS vaccines for use in China. He is also heading a consortium of Chinese and American organizations to address the crisis of HIV/AIDS in China. He also has received numerous honors and award, six honorary doctorates, and is a member of many honorary societies, both in this country and in China. He also has a connection to TIME, as he was named TIME Magazine's man of the year in 1996 and was a recipient of a Presidential medal in 2001.

I am going to start with David. We've learned more about this organism than probably any organism in history in such a short period of time.

Where are we on the science? Do we currently have the tools we need to deal with this epidemic?

Dr. David Ho: Thank you Seth. And thank you all for the opportunity to participate this afternoon. That is a big question and probably would require hours to address in detail. But let me give you a flavor of where we are.

I think, as Seth mentioned, HIV/AIDS is arguably the worst plague in human history. And the epidemic rages on. And yet, not everything is gloom and doom with this epidemic. Certainly on the scientific front, much progress has been made. We understand HIV better than we do for most viruses. And this virus continues to amaze us, who are trying to study it.

All of you know that it is through the understanding of the HIV lifecycle that beneficial medications have been developed and licensed, and the use of these drugs in combination has produced dramatic results since the mid-1990s. And yet the scientists continue to learn that many things about the HIV lifecycle - and I will just throw a couple of examples. HIV, as it carries out its various

steps infecting a single cell, it actually is traversing a very hostile environment. There are many cellular forces that bear on HIV's ability to replicate.

Just in the past couple of years, we learned that there are cellular factors that would latch onto the viral components and would prevent it from unraveling or uncoating. And HIV in fact has come up with very clever tricks to deal with that. And similarly, within ourselves, there are actually proteins or enzymes that would cause HIV to mutate at a very fast rate. And in fact, mutate to death. And yet HIV then comes up with another protein to deal with that, to counteract such a hyper mutation activity of the cell. And as we learn more and more about these intricacies, we actually could come up with newer strategies and come up with drugs.

Of course, this understanding of the machineries of the virus has resulted in I think 21 drugs that are licensed in the US, and the combination therapy, since implementation in 1996, has certainly changed the complexion of this disease in developed countries. We know, for example, AIDS mortality is decreased approximately sixfold. And

with time, the treatment regimens have continued to improve. They have certainly become simpler and it is now possible to take the drugs one time per night and be done with it.

And the side effect issues have also been somewhat alleviated. So the therapeutic regimens continue to improve and in fact now, in development, there are three new classes of drugs, aside from attacking the traditional targets, called reverse transcriptase and protease. We actually have drugs in development that target viral entry, target a step in the lifecycle, called integration and a single example of a drug that blocks the assembly of the virus particle. And so these are likely to emerge over the coming years and be additions to our therapeutic arsenal.

These drugs, unfortunately, are going to be quite important because drug resistance is on the rise in developed countries. As we look at newly infected individuals in New York City or in San Francisco, drug resistance could, in treatment of naïve individuals, could be as high as 15-20 percent and that is going to effect our treatment options in the developed countries in the coming years rather

dramatically.

Thinking about this particular issue, I will make one observation. That is, there is no question the pharmaceutical industry is still actively engaged in drug development. However, most of us would agree there is a decrease in new drug discovery efforts. And that is somewhat worrisome. It is understandable in that there are already many drugs available, yet this virus will continue to evolve and become more and more resistant to current agents. And therefore, we need somehow to engage the pharmaceutical industry to ensure that they continue to play a vital role in this. And this will, I am sure, be addressed as part of this panel discussion in terms of balancing access and balancing the interest of the pharmaceutical companies.

I would say that it is important for us to bear in mind that therapeutic advances have resulted in almost no difference in the spread of HIV throughout the world. If you look at the curves in Africa and Asia, they are increasing exponentially unperturbed by the therapeutic advances that have been made. And therefore, prevention has come to

the floor and along that line, unfortunately we are still some years away from a protective vaccine. It is something that Seth and I are quite interested in.

And why is it? Why is it that twenty-some years after the discovery of HIV, we don't have a vaccine? And yet, you can say only two years after the SARS epidemic, there are a number of highly protective vaccines in animal systems? Same technology, same type of scientists engage in the endeavor and yet, one is a reasonable success and one is so far seeking such success. The fundamental problem lies with HIV. It is a tough faux. I think we should have known for a long time that for vaccine protection against this virus is going to be difficult.

If you look at natural infection, 99.9 percent of the time, the virus wins the immune system or we lose. And therefore, that should have told us this endeavor is most difficult. And so, years of research have supported that notion. The other thing is the traditional vaccine strategies—strategies that we all use for our children, for example, are based on what is called co-virus

vaccines, or attenuated virus vaccines or subunit vaccines?

And these strategies have either not worked or are infeasible from the regulatory perspective. So we are left with pursuing HIV vaccine with new strategies, and new strategies, almost by definition, would require a long time. And the other problem is the fact that the virus is very well shielded by various components on the surface. It is as if there is a force external to the virus that is protecting it from the immune system and that makes it very difficult for the antibodies in our immune system to access HIV and to inactivate the virus.

And so, consequently the field has been forced to use certain techniques that are new and we are working largely without the help of antibodies in our immune system. And so, that is a huge problem for those scientists engaged in this activity. And now it is crucial that we continue to push on with that, but also return to the basics to see if we could come up with a way of coming up with the antibodies that could penetrate that shield and neutralize HIV.

But the vaccine is some years away and therefore, I'd like to end by emphasizing that we still have to pursue actively other approaches to prevention, including of course, behavioral modification, harm reduction and microbicides - I am sure Ambassador Lewis will discuss that to some extent - and then the very recent observation coming from a joint French-South African study that suggests male circumcision in fact could have a highly protective role in cutting down HIV transmission. I will just end there and look forward to an interesting discussion.

Dr. Seth Berkley: Thank you David. Can I just remind people, I forgot at the beginning to make sure you have your cell phones off. We had some people chatting in the back of the room there. We would appreciate that.

Stephen, we've heard now all the advances of science and you know about them. Is the world doing what it needs to do on AIDS? Are we getting these advances out there? Will we get to the 2010 goal, and if not, what is standing in our way?

Stephen Lewis: I love these generic questions. They open every conceivable avenue.

Dr. Seth Berkley: We can talk about science if you want.

Stephen Lewis: I will defer. May I make two initial comments? Number one, I am going to draw examples, if I do, from Africa, which is the domain I understand best. Number two, I am feeling profoundly self-conscious because sitting here in the second row is Dr. Agnes Binagwaho, who runs HIV and AIDS for Rwanda and knows more about this subject than I shall ever approximate. But I am going to take a stab at it anyway.

No, we are not moving as we should be moving. I want to go back to the millennium development goals overture with which Seth opened the discussion. I remind you that the millennium development goals by 2015 were meant, A) to cut extreme poverty and hunger by half; B) to dramatically reduce infant mortality rates; C) to dramatically reduce maternal mortality rates; D) to put all primary school-aged children who were

eligible into school; E) to approximate some kind of gender in equality; and F) to deal with the communicable pandemics of AIDS, tuberculosis and malaria.

What we have learned in the course of the last five years, when more energy than is the norm has been devoted to the subject, is that all of these millennium development goals, certainly in Africa and beyond, are being sabotaged by the virus. And all of the hopes and expectations we might have had to achieve the goals by 2015 are compromised by the ferocity of the virus. Ending the pandemic depends naturally on the discovery of a vaccine, which does seem to be a number of years off, accompanied by, along the way one hopes, the extraordinary efforts to discover a microbicide.

And therefore, yesterday's announcement by the International Partnership of Microbicides in conjunction with Merck and Bristol-Meyers Squibb of a new kind of gel that might be developed by the year 2010 is an elixir to the prospect of making a breakthrough.

I was fascinated by what David said about the drugs because the first-line intervention drugs

- the generic antiretroviral three-dose combinations from India primarily, while they are doing a superb job where they are applied, I think David is quite right and knows vastly more about this than do I, that the resistance begins to develop. In Brazil, I learned, to my astonishment recently, the first-line interventions tend to last somewhere in the vicinity of four years. If that is the case, and you then require a significant shift in drug compliment, there is obviously a great deal of difficulty and prospect.

On the other hand, I believe, to my very soul, that the 3x5 initiative launched by WHO primarily, was a visionary breakthrough of a kind we have not experienced in the pandemic for the last several years. And even though we will not reach the three million by the end of this year, probably more like one and a half to two million, country after country is moving heaven and earth to get its people into treatment, and it has given a very large quotient of hope where hope did not reside before, and it has encouraged enormously voluntary counseling and testing, so that more and more people know their status, get treated if they are positive,

and you have this inseparable, inextricable connection now between prevention and treatment.

One of the problems that flows strongly from all of this is the need for sustainable resources. And this presents the world with an enormous dilemma. I am not one of those people who was infatuated with Glen Eagles. I thought Glen Eagles was an exercise in hyperactive rhetoric and those who were traduced by it, I beg you to look at it again.

But let's take a look at the figures for a moment. It is said that internationally, we will spend 8.3 billion dollars dealing with HIV/AIDS in all its aspects this year. UNAIDS in a first rate, but conservative study - it admits to the conservatives - says that we will need 15 billion in 2006, 18 billion in 2007, 22 billion in 2008, and if you extrapolate even marginally, 30 billion by 2010.

Dr. Seth Berkley: And this is ex-OECD. I just want to make that clear. This does not include the amount of money that is being spent to hospitalize people in the United States and Europe and the treat [interposing].

Stephen Lewis: I'm sorry. You are quite right, ex-OECD was a phrase with which I am not intimately familiar, but I am always glad to grab a new acronym. [Laughter]

The point that I think should be made is that if you are aiming for 30 billion dollars for HIV and AIDS by 2010, and the G8 summit said they are going to aim for 50 billion by 2010 in total, and most of the 30 billion is required for Africa, we are not going to have the dollars. And no one should kid themselves that we are going to get to the 50 billion for Africa overall by 2010 because there are two partners for whom the shortfall will be dramatic, and that is the United States and Japan.

And we are engaged in some illusory arithmetic hocus-pocus if we think we will get there. I say that only because it is important to note the potential impact if we haven't got that kind of money to sustain year after year, the treatment.

The first test - let me say this because I think it is instructive - the first test of Glen

Eagles occurred exactly two months later, September 5th and 6th, at the replenishment conference for the Global Fund on AIDS, Tuberculosis and Malaria. And the Global Fund said we need 7.1 billion dollars by the end of 2007 in order to do what we need to do. And everybody assumed that the momentum carrying from Glen Eagles would exceed the 7.1 billion that was asked for, indeed the replenishment conference was chaired by Kofi Annan. They raised 3.7 billion. They fell 3.4 billion dollars short in the first test of Glen Eagles. That is not an auspicious start.

However, let me make the auxiliary point - no one need be overly depressed by this problem around resources, because if we can get the world to embrace the 0.7 percent target - the 0.7 percent of Gross National Product - with which all nations originally agreed in 1969, then we will have the money necessary to break the back of the pandemic and to meet the other millennium development goals, certainly for Africa. And no one need think otherwise.

And therefore, along with debt and trade, the focus on generating that kind of perfectly

legitimate income, which Jeff Sachs has argued unanswerably over and over again, is entirely possible to generate.

If then we are able to turn back the pandemic financially, I will mention in passing and then end quickly so we can engage in a vigorous question and answer comment, there are three areas, which seem to me absolutely fundamental to turning everything around. Number one, the situation for women on the ground remains so appalling that there are no words sufficient to describe it. And the phenomenon of gender inequality, driving this pandemic, is a phenomenon that the world has to face, both within countries and externally in the empowerment and other initiatives that are taken to support what African women activists want to achieve. And it is the heart of the pandemic and we are taking the soul out of the continent's women. And the disproportionate vulnerability is heart breaking everywhere.

Number two, as the rollout continues, and as we get more and more familiar with the consequences of the pandemic and high prevalence rates, we are realizing that the loss of capacity in

every area is crippling. No doctors, no nurses, no pharmacists, community health workers, teachers, farmers, the loss of capacity is everywhere crippling and requires a tremendous focus.

And finally - and I think this has to be said because it is so often overlooked - the extraordinary profusion of orphans, coming almost by surprise in these countries, 14 or 15 million orphans now; 18 million or better expected by 2010. More than a million orphans in many individual countries, it is absolutely overcoming the country's capacity to respond. It isn't exactly treatment, it isn't exactly preventive technology, it is not capacity, but it is a social phenomenon of such force as to compromise everything else.

And you will note UNICEF's initiative on October 25 last week, to take the lead around children internationally in a way that has not been done before and I think everyone has to be engaged in that because these children - quite apart from the children who are infected and at risk - these children who are orphans are living, in many instances, lies of desperation, which simply decimate the principle of childhood. Thanks.

Dr. Seth Berkley: Thank you Stephen. I guess the answer is we are not going to make it to 2010. I don't think so. Let me turn to a slightly different question, and build on something that David said on the vaccine question, which is about the difficulty of the science, which of course I fully agree, but the resources matter on vaccines as well. Ten years ago, the world was spending about 150 million dollars a year globally, public-private sector. That has now increased. We are spending about 600 million. Compare that to what is being spent on the development of pharmaceuticals and other things and we understand why we don't have the tools we need. The same thing goes with microbicide, diagnostics and others.

But let me turn to another very important tool. It is said now that there is a crisis of condom availability in Uganda. And we've heard from others that in fact the science of condoms suggest that in fact perhaps they don't work. Where are we on the science of condoms? Is there any question of their usefulness in preventing HIV and why might there be a crisis in condom availability in Uganda

and perhaps more globally in the world?

Dr. David Ho: I am not sure I could speak with any expertise about latex. But I think the bulk of what I know, what I've read, is that condom is highly protective. It obviously isn't 100 percent and there are certain STIs that are certainly still at risk, despite the use of condoms. But I think it is overwhelming evidence that it is a vital tool in our fight against this epidemic.

Dr. Seth Berkley: And yet, we know that the provision of condoms, there has been a handful perhaps, per man on the continent of Africa provided and Uganda now has a crisis. Why is that?

Stephen Lewis: I am not sure Uganda has a crisis because laterally, more and more condoms have been pouring into the country on an emergency basis, or so it is said.

I think that there was some suggestion - I was one of those who suggested it, so I don't want to play games - that the disproportionate emphasis on abstinence flowing from the PEPFAR policy and the

funding of countries, might discourage the focus on condoms.

And most people I think believe that the ABC principle remains in place - abstinence, be faithful and condoms - and that all three are necessary in response to the pandemic, although obviously abstinence has its limits. If you are married, abstinence tends to have its limits. And if you are sexually active young people, abstinence tends to have its limits. So there is a desire to put some considerable emphasis on condoms, which the United Nations states, categorically and unequivocally, is perhaps the best preventive commodity that we have. And therefore there is no excuse for diminishing condoms.

By the way, Seth, it has always been believed that Uganda lowered its prevalence rate dramatically from 20 percent to 7 percent, where it is now, based on the ABC formula. But it is necessary I think for people to stop and think, and remember that the phrase with which was [inaudible] mobilized the country, was "No grazing." And the "No grazing" phrase was...

Dr. Seth Berkley: "Zero grazing."

Stephen Lewis: "Zero grazing," I am sorry, "Zero grazing." And the phrase was applied to the men of Uganda. And the principle of removing multiple partners could be said to have had as dramatic an impact on reducing the prevalence rate as the ABC.

I think there is a tendency to get taken in by the absolutism of the ABC formula. There are other things which impinge on reduction and prevalence, including "Zero grazing" and tremendous prevention campaigns and dealing with stigma and discrimination, all of the things come together.

Dr. Seth Berkley: It is my understanding also that there is good data, certainly studies from Australia, the US, Europe, have shown that a needle exchange is an effective strategy to reduce infection in IV drug users, a very important group in many parts of the world. Bleach is useful, methadone treatment. Again, is there any questions on the science on that as far as you are concerned?

Dr. David Ho: Not in my mind. I think it has been

a long time now since some of the studies emerged firstly out in Europe to demonstrate needle exchange as a very useful way of protecting drug users from catching HIV. And experience in other places subsequently only confirm that. So again, the moral questions aside, scientifically, there is no issue there that they are useful.

Dr. Seth Berkley: I think one of the questions and the reason it is so important to say, is that these strategies, which we have talked about with condoms and availability of risk reduction strategies for drug use have not been uniformly applied across the world. And so when one thinks about this epidemic, we've spent a lot of time earlier talking about the access and availability to treatment, but obviously the best way to try to control an epidemic is through prevention. And one of the issues is why are we not doing everything we can to try to prevent every infection that's possible?

Stephen Lewis: And with that comes the question of the female condom and its general unavailability across the continent of Africa, although the male

condom is more and more available through a variety of sources. You know, Seth, I don't know the answer to that question.

The need to generate consistent and powerful political leadership in all of these areas is often the crux. And for many countries, the period of denial and silence existed until 2000-2001. I think there is still a lot of denial, passivity, distance in the developed world towards what is happening, certainly on the continent I know best, the continent of Africa.

I think people are trying vigorously to provide prevention campaigns, which have an impact on men certainly, as well as women. The cadre of 15 to 24 year olds who use all of the cultural apparatus of the country - music, drumming, song, dance, drama, poetry, moving from community to community, school to school, preaching or conveying messages of prevention, which are so explicit about sexuality as to take one's breath away, and yet obviously making a connection. I think that these are very important vehicles that are building on the continent.

But I think the conjunction of treatment

and prevention together makes the greatest impact from what I've been able to see.

Dr. Seth Berkley: I think those are important points. And when I think about political leadership, I think about the issue of new technology, new development and the issue that in that, we are talking about a marathon and not a sprint, as we are in this ply of finances for purchasing drugs and continuing to move this epidemic before, and I think that is really going to be the challenge, which is why better breakthroughs in science and technology are critical.

You mentioned the issue of male circumcision. For all that don't know it, a recent study has confirmed the finding that has existed for more than a decade, that men that are circumcised have a lower risk of acquiring HIV. The actual effects of this on the population are not clear and again, there hasn't been a lot of excitement about this in the field, how it is going to implement it and what it is going to do. I think we all have to ask the question of what that is going to be?

Stephen Lewis: My impression is this is what completely bewilders me, I must say, from time to time. My impression is that there is now enough authoritative science on circumcision to suggest that you might be able to proceed, or how many studies do we need? How many years need go by?

Dr. David Ho: Perhaps I could just elaborate on that point. I think it has been well over a decade since the observation has been made that in areas where circumcision is common, the HIV prevalence rates seem to be lower, and vice versa. But the recent study is, the first prospective interventional study, looking at approximately 3,200 folks, young male, in an urban area outside of Johannesburg. And they found that they were randomizing to circumcision now and circumcision later. And 49 in the defer group got infected and 20 in the circumcised group got infected.

So giving about approximately a 60 percent protection, which for those of us working on vaccine - we would love to have by the way - and yet there are two other studies that are ongoing involving perhaps 8,000 people. So those results will surely

emerge. I think the issue is going to be definitively settled very, very soon. And strategies could then be devised based on all of the results.

Dr. Seth Berkley: If I can just comment. David is absolutely right and most of these were cross-sectional studies, and retrospective studies. The problem with that is nothing is perhaps more culturally connected to ways of life and other issues, as one's circumcision practice. So it's connected with one's religion, it is connected with one's perhaps upbringing, behavior, and so the real issue has been how do you tease those apart?

And so it is interesting, with the publication of the article, also came an editorial by the person who headed the ethical review board around the study, asking the question of what are the ethics of this type of work? And again, this just goes back to show the issues around HIV. We have to push forward on the science. It is critical if we are going to get our handle on it. But this does push the envelope of what people are necessarily comfortable with.

I am going to let Stephen respond and then we are going to open it for questions.

Stephen Lewis: Just a question to you, and then I have one small point I would like to try to make. Didn't that study end early because the findings were so decisive?

Dr. Seth Berkley: That is correct.

Stephen Lewis: I mean it seems to me that that says something as well, both about the ethics of not wanting to put people through a study when the findings were pretty obvious, but also the sense in relaying the information, that they have learned that the circumcision meant something.

I wanted to raise the constant - I am looking at Allan Rosenfield in the back of the room here and it comes into my mind - the prevention of mother-to-child transmission plus, which Columbia is so deeply involved in, where the plus represents the treatment of the mother and the partner and the family.

But I wanted to raise one of the other

conundrums, which I think has to be dealt with as all of this rolls out. For the most part now, in PMTCT, the Prevention of Mother to Child Transmission, we use single-dose nevirapine in the various settings. And the reduction in transmission from mother to child is around 50 percent. In the West, we use full HAART. We use full combination therapy for the mother in a given number of weeks. Is it 24 weeks or thereabout, at the end of pregnancy? And the transmission rate is less than one percent.

So I ask the question, why in Africa are we using single-dose nevirapine and permitting 50 percent of the children born, infants born, to be HIV positive? And in the rest of the world, we use full HAART combination therapy and we remove almost entirely the possibility of a child emerging HIV positive?

For me, it represents, again, the completely unacceptable disparity of the way this world is working around the virus. Admittedly, it might cost a little more, and admittedly, it isn't as easy to do as giving a mother a tablet during the birthing process and the child the liquid equivalent

in the first 48 or 72 hours of birth, but darn it all, we are now at the point in rolling out treatment where surely we could remove the potential for hundreds of thousands, possibly millions of children being infected simply by doing what we do everywhere in the Western world.

Dr. Seth Berkley: I believe that 50 percent is in people that are untreated, but do you want to comment? Or I don't know if Allan wants to?

Dr. David Ho: Let me just express my total agreement with your sentiment, that we know that single-dose nevirapine with such drugs administered to a woman is surely going to generate drug-resistant virus. And the therapeutic option for that woman will be narrow in the ensuing time period. So the mother's therapeutic option is damaging in the interest of protecting the baby.

Now, in terms of the transmission rate, if there is no intervention, it is about 30 percent, 33 percent. But with the single-dose nevirapine, you could be gotten down to somewhere between four and eight percent. It is depending on whose data you

read, but certainly with a good therapy of the MTCT plus - and actually we have two pilot programs in China where we are doing exactly what you advocated - the numbers suggest, as you say, it could be lower than one to two percent. So that is where we ought to aim for, but I think it has to do with what is feasible to do first.

Stephen Lewis: I am tired of feasible.

Male Speaker: Allan?

Dr. Allan Rosenfield: When you are talking about abstinence, I do have an answer for the abstinence issue. And that is simply that abstinence is fine, as long as you use it in moderation. [Laughter]

On the issue that you raised - it is a very important point - David, I think that the reduction from 25 to 35 is roughly 50 percent, with just single-dose nevirapine. So it takes it down to perhaps 8 or 10 - 10 to 15. But there is no question that with multidose therapy, we can reduce it to one or two percent, which is what is the case in the West. In fairness to when nevirapine

started, it was before there were drugs being made available. It was before the year 2000, when the low cost of nevirapine seemed the practical way to start.

But since we now have funds available to buy and purchase drugs in Africa, I agree with you that we should be moving as rapidly as possible to replace single-dose nevirapine with multidose drug so we can indeed decrease the transmission rates.

I also am proposing that we drop the terminology PMTCT and MTCT plus and simply talk about family-center approach to HIV care and treatment prevention care and treatment. We want to deal with mothers, their children and their partners. We want to deal with them all. And the use of the initials PMTCT, which is unknown to everybody except maybe the people in this room, we need to do away with and talk about something that's family centered approach to AIDS care and treatment.

And I completely agree we need to, as rapidly as possible, advance to full-blown therapy for the mothers to prevent transmission and to begin treatment against opportunistic infections and when appropriate, treatment with antiretrovirals when the

CD4 counts so indicate.

Dr. Seth Berkley: We are going to turn to the gentleman in the back of the room here. But just to be a little provocative, most deliveries in Africa are still not done in health centers and many are not attended at all. So I think one of the challenges that we have in front of us is one of human capacity and healthcare delivery capacity. And I think this is true for all that we are talking about, the idea that we might move on circumcision. Who, how, where is a huge issue.

The fact that we are now talking about providing treatment across many countries, we already know that that many of the healthcare providers are now being drained. We saw an article in the Times from a study a couple of week's ago that is showing that in fact healthcare workers are leaving in mass numbers in many of these countries.

Dr. Allan Rosenfield: Seth, just a quick comment on that because I think it is a very important concept. There is no question if we are going to move AIDS care and treatment out of the urban area and into

rural areas that we need to train other levels of personnel than physician to provide that type of care.

We do a lot of work in maternal mortality in Mozambique and Tanzania and other countries. We have train non-physicians to provide cesarian sections. If we can train non-physicians to safely provide cesarian sections, we can certainly train non-physicians to provide AIDS care and treatment programs. We need to do that if we are going to move these programs effectively out. There are no doctors in the district levels in many countries.

Dr. Seth Berkley: Partially because they are here. All the way in the back. Please introduce yourself.

Chung To: Chung To from Chi Heng Foundation in China. Just another follow up, China has a 431 [ph] care project and one of the care is [inaudible] and it is also a single dosage. The problem with that instead of doing a full HAART in addition to cost and all that, is because of the medical workers. There aren't enough medical workers to carry out the full HAART project. So it is not just

a matter of cost, it is a matter of capacity building as well.

Also, two more comments - one to follow up on Stephen's comments on how unacceptable it is when we know there is HAART for [inaudible]. In China, there are many children living with HIV, and currently there is no treatment, no ARV for children in China. Until earlier this year, when Bill Clinton came to China and announced that he would donate [inaudible] portions of the ARV to children. Our group was lucky enough to get 100 of it and providing the care for it. But can you imagine a country with 1.3 billion people, when the government officially announced that there are over a million people infected living in China and [inaudible]. And until this summer, only [inaudible].

Dr. Seth Berkley: Thank you. Do you want to comment?

Stephen Lewis: Just very briefly. According to the most recent UN AIDS material and the update will be provided on November 20th or 21st for 2005, there are two million two hundred thousand children

infected in the world and half a million die every year. And there is no reason in the world to believe that those half million could have their lives prolonged, as we are prolonging the lives of adults.

And the comment was completely right for those who don't know, there were no pediatric preparations, no pediatric formulations that were usable in a confident way, up until this fall. And it was initially the Clinton Foundation that negotiated a particular pediatric preparation with Sipla [ph] in India, the generic drug company. And now there are other companies looking at these pediatric formulations. And I think it was part of UNICEF's announcement last week to start treating large numbers of these children. But we have literally gone since 1996 with adult preparations and nothing for children until the fall of 2005.

Ann Starrs: Hi, I am Ann Starrs with Family Care International, based here in New York. I want to follow up on some of the gender issues, the gender theme that Stephen has brought up. One is, I wanted to ask about the circumcision study that you talked

about the protective effect of circumcision for men. Has there been any analysis or any examination of whether circumcision reduces the transmission to women?

Another gender issue I wanted to raise has to do with the issue of prevention of mother to child transmission. I have heard that when a woman gives birth to an HIV-negative child, but then she is HIV-positive and does not have treatment and then dies usually fairly rapidly in a situation where she doesn't have access to treatment, that the mortality rate for those infants are in fact much, much, much higher.

So I am querying that from both an equity perspective as well as a cost-effectiveness perspective. If you are spending a lot of money on prevention of mother to child transmission, the mother gives birth to an HIV-negative child, but then she dies and a significant portion of the time, the infant is going to die anyway, does it really make a lot of sense? Thank you.

Dr. David Ho: Let me answer the first part of that. The study that was published just this month does

not address what you ask. It only answers the question in terms of the man catching HIV. Two subsequent studies, one sponsored by the NIH and one by the Gates Foundation will address the question you asked, we think. At least that was built into the study and that will add additional value.

But given that it will impact on male acquisition of HIV in that epidemic situation, obviously that will have benefit for women as well.

Male Speaker: It is also known that other sexual transmitted infections, it does change the transmission rate and so one would expect it to do it, but again, it hasn't been confirmed.

Dr. Seth Berkley: Did you want to comment on the second part?

Stephen Lewis: The point you are making seems to me to be unanswerable. The whole premise of doing prevention of mother to child transmission plus is the obvious premise that if you want to reduce or stabilize your orphan population, then you keep the parents alive and if you want to reduce the tendency

to even more premature death amongst children once the mother is gone, and that is sort of the umbilical equation where the mother goes, the child is left so helpless in many respects, that the child tends to die at an earlier age. There are some studies, which have been done, which show that.

But I think this principle more and more accepted that you can't simply do prevention of mother to child transmission and keep the child alive and then let the mother die. You've got to treat the mother, treat the partner, treat the child, if that's what is required and that is beginning to take hold everywhere.

The reason you don't want to use PMTCT, Prevention of Mother to Child Transmission, is that we again, isn't it wonderful, this male world? We again stigmatize the woman. I mean who gave the mother the infection? Thank you very much. But we use prevention of mother to child transmission as though there were no other factor present. And that's why people like Allan want to change the language.

Dr. Seth Berkley: In front here. Right here in the

front. This gentleman here.

Phil Hilts: I am Phil Hilts. Author of this book, [inaudible] for survival. My question was about the broader point you made on the 0.7 goal and the two countries that are lagging behind. What are the prospects and is there some concentrated effort to lobby these governments to get them up to that?

Stephen Lewis: Let me be a little uncharacteristically romantic about the prospects. The fact of the matter is that the United Kingdom has now accepted the .7 by 2013. France has accepted the .7 by 2012. Germany and Italy, at least in principle, have accepted the .7 by 2015. My country of Canada has accepted the .7, but refuses to lay out a timetable for its achievements, something which astonishes increasing numbers of Canadians and the Canadian government is feeling some considerable pressure from the make poverty history groups and others who are lobbying.

The two countries that are way, way down relative to the .7 - Japan is at .18, the United States is at .16 - have studiously avoided accepting

this target. On the other hand, President Bush did put in place the millennium challenge account in Monterey, Mexico, hoping to generate another five million dollars over time. Congress hasn't so far allowed him to do that, but he had wanted to.

And I think that the incessant drum roll of having to achieve those figures so that you release roughly 175 or 200 billion a year, as foreign aid from the Western family, in order to address all of the factors of the millennium development goals, I think if we keep at it, we will get there. I noticed that Prime Minister Koizumi just yesterday shuffled his cabinet and he has put a couple of people into positions of prominence in Japan in the finance post and the foreign minister's post, which suggests not only that one of them may be his successor, but they both embrace a higher standard of contribution.

So my feeling about these things always is that you've got to be unrelenting, indefatigable, tenacious, just never stop, don't give the beggars a moment peace. And one day, unexpectedly, you break through.

Dr. Seth Berkley: Characteristics that clearly you don't have Stephen. [Laughter] I believe this gentleman back here. For all of you, I will make an advertisement, since Stephen is probably too polite to do it. But if you are interested in the words that he is speaking, he has just come out with a book, *The Race Against Time*, which collects some of his talking points on this and speaks with the passion he so talks about.

Mark Holloway: Thanks I am Mark Holloway [ph] with the Global Business Coalition on HIV/AIDS. And it seems one of the things that we talk about 70 million and lots of other grave numbers. But one of the gravest is that 90 percent of the people who have had the infection don't know it, at least that is what we think.

So I wanted to just kind of raise the question of testing and in particular, in Africa, I think there are some countries who are embracing sort of the idea of doing opt-out testing rather than voluntary counseling and testing and that sort of thing. So what is the latest or what do we know on testing and what has worked and what is really

not working? And how do we really find out if that 70 million is a true number? We have a lot of businesses in our coalition who are doing testing themselves and getting 90 percent sometimes of their employees to be in the testing program. If you could just kind of give us the word on testing.

Stephen Lewis: The shift from voluntary counseling and testing to routine testing, has taken hold in a number of African countries, and that means essentially that everyone who presents with some kind of medical condition at a facility, the doctor or nurse or whomever, suggests that that person get tested.

And if you listen to Festus Mogae, the President of Botswana, he will tell you that they were having real trouble getting enough people tested to fit the very huge prevalence rates and treatment, which they had, and they introduced routine testing and lo and behold, more and more and more people came to be tested and they are now getting sufficient numbers tested that they can supply the treatment ETHOS [ph].

In one of the rooms across the way, the

room dealing with the issue of faith-based organizations, the Minister of Health in Kenya, Charity Ngilu, has started to press the question of routine testing, as I understand it, in Kenya, supported by CDC. And more and more, the testing has picked up. So this idea of routine testing when you present yourself.

Now, something very interesting that has happened in the last very few weeks, Jim Kim, Dr. Jim Kim, who has been WHO's overseer for AIDS went to Losutu [ph] and suggested to the minister of health and the Prime Minister of Losutu, that on December 1, they announced a national testing day equivalent to what UNICEF has done in the national immunization days. And it looks as though the government is buying it and that they are now in the process of training people and they will try over a period of one or two days to go door-to-door right across the country and offer a test to absolutely everybody. And that is Jim Kim's creative model of what will be needed to get the numbers tested.

But of course, testing requires dollars. And therefore, you will agree with me that the Global Business Coalition should not only encourage

its multinational partners to treat its own workers, but that it should make significant financial contributions in addition to the global fund on tuberculosis and malaria, and I want to suggest that the members of the Global Business Coalition all give 0.7 percent of their pre-tax profit to the global fund for AIDS, tuberculosis and malaria. And you could phase it in until 2015, [laughter] like everyone else is phasing it in.

Dr. Seth Berkley: David, did you want to say anything about the technology related to testing and then we will go...

Dr. David Ho: Well certainly I think most people here knows that there has been great improvement in our diagnostic methods, including point of care, rapid testing, which is making I think a sizable difference in many of the prevention programs, whether it is mother to child transmission or needle exchange or other settings.

And these tests are remarkably reliable and simple. Sometimes a drop of blood or a saliva put onto, what looks like a filter paper and 15 minutes

later, you have a test result. That in many ways, at least in developing countries, in many ways, is more reliable than diagnostic laboratories back at the local health bureau. And this, I think, should be applied much more. And this type of testing is not necessarily any more expensive. So it should be part of our prevention strategy.

Male Speaker: [Inaudible] I am a student of [inaudible] School of Public Health. I have two questions, one for David. I was just curious, if the geography of HIV/AIDS was a little different, would that have made any difference in the advances in vaccine? [Inaudible] and the advances made in SARS vaccine within two years.

And the second question to Stephen, the 1.5 million to two million people who expect to be on treatment on HIV/AIDS by the end of this year. How many of them are in Africa?

Dr. David Ho: As someone who has been in the field since the very beginning and saw the exciting days in 1983-84, when the pathogen HIV was discovered, I know that myself, many of my colleagues and others

in the field, jumped on a number of important topics - therapeutics of course, the vaccine research was worked on by many groups in academia and industry. I don't think there is a lack of effort. Could more have been done? Certainly. Bear in mind, throughout that period, we know about AIDS in Africa, but it was not so prominent as AIDS in the United States.

So even if one were completely self-centered, the US and European scientists were hard at work. And the strategies initially employed were all the known strategies of inactivated virus, the subunit protein and they simply did not work. In the laboratory experiments and for some of them, they went as far as doing experiments in monkeys or chimpanzees and they suggest that they weren't going to work.

I am not sure we could attribute the lack of a vaccine to date with a lack of effort. That is sort of a general way of answering your question.

Dr. Seth Berkley: I hate to slightly disagree with one of the panelists, but I think the issue is he is absolutely right that we followed the traditional

mechanisms and ways of looking at it. But could there have been more effort? Absolutely. And I think when we started the drug area, there was also very little precedent for drugs. There was a lot of money. There was a lot of effort directed at it. There was a lot of corporate interest and there hasn't been as much in vaccines now.

You've asked the question geographically - the actual fact is that vaccines have not been as strong a business as drugs. The market is much smaller. Prevention technologies are not as popular and don't get as much attention. So do I believe we could have done more? Absolutely. Would it have ended up with a solution? That is the unanswered question, but I must say now the world is doing more and hopefully we will get there. Stephen?

Stephen Lewis: You will get the definitive numbers in February from the World Health Organization. I suspect, just counting in my mind the numbers I know are in treatment in South Africa, it is about 78,000 in the public sector and 60,000 or 70,000 in the private sector, so you almost got about 10 percent of the one and a half million there.

And when you look at the numbers in Uganda, Rwanda, Botswana, where the treatment has really been rolled out energetically, I suspect you will find by the time we get the figures, it will be somewhere around 15 or 20 percent of those who are in treatment are in Africa. The numbers in Africa are increasing because there is so much energy, but they still - I would be surprised if it is more than a fifth of the total.

Dr. Seth Berkley: Front here. Gary?

Gary Cohen: Thank you. Gary Cohen, president of BD Medical. I am going to ask the panelists to maybe put their looking-forward hats on and answer the question, let's put ourselves 10 year's out, 2015. Short of a major scientific or technical breakthrough, which would certainly change the course of the pandemic, what do you think the situation will be, assuming we remain on the present course, which has a lot of things going on, but perhaps not sufficient, I think we would all agree? And in view of that - in view of what you think the situation will be 10 year's from now - what

interventions can we do now, other than increase funding, which is another thing I think we would all agree on, can have the most impact on changing that scenario?

Dr. David Ho: We as scientists hate to try to project the future. I would say that on the therapy front, we will have many more drugs and the regimens will be even simpler than they are. And so I see continued success for the patients in the richer countries. I think the access to therapy issue will continue to be a huge challenge for us. It is not an area that I am actively working on, but I just see, despite all the good will and all the good effort, huge challenges with that.

On the vaccine side, that is about 10 years from now, I think most people are projecting that we would have some sort of partially effective vaccines, certainly animal experiments suggest that is feasible. Partial protection means maybe we can't control infection, but we can control disease progression and that would still have substantial impact on the epidemic.

I am thinking that given what we know about

the possibility of microbicides, the timeline for that should be shorter. I am hoping for lots of success on that front. And so maybe perhaps that, combined with a partially effective vaccine and perhaps male circumcision, would have a tremendous global impact.

Stephen Lewis: Accepting all of the propositions which David has set out, I think looking at it historically, I don't think you can continue to take the productive heart out of a country year after year after year for so long before treatment, vaccines, microbicides, whatever, come into place without jeopardizing the geographic integrity of the country down the road.

I genuinely believe that I think everything has moved so slowly and so painfully incrementally, that we are indeed compromising the very nature of some of these states. And if I were predicting, I would say that by 2015-2020, three or four countries - I will not name them because I am not given to self-immolation - but three or four countries will be struggling for survival and they may lose. They may lose. They may be swallowed up by surrounding

countries. That is how difficult it is when you lose everything.

Just think of it, if you will, we now have a country like Zambia where the life expectancy is close to 30. And the drop from the 50s to 30 has occurred in a period of 10-15 years and you've got many other African countries with a life-expectancy of somewhere now between 38-45, a drop of 10, 15, 20 years in a period of 10 or 15 years. I don't think you can continue that kind of assault on a country year after year without jeopardizing its integrity. And I fear that is what we will be dealing with down the road.

Dr. Seth Berkley: I think we've got time for one or two more questions. [Inaudible] In the front here.

Dr. Agnes Binagwaho: Thank you very much. I am Dr. Agnes Binagwaho from Rwanda. And I am dealing with AIDS on a daily basis. And to agree with Stephen, the [inaudible] of life, it is more than that. In my country, it is 38. And I guess that in all Sub-Saharan African countries it is like that.

And I am a little bit nervous with this

type of meeting. I am so sorry. Because we are here to think about how giving health to everybody a [inaudible] with access to health to everybody, that is the reason why I made the trip. And we are here sitting after a good lunch, good coffee, thinking about scientific [inaudible] decision. You are citizens. You do projection because all the work you do in research is for communities. And we are here talking about the feasibility. It is a scandal. Feasibility of what?

I remember in my country in 2001, the study of feasibility, the first time they bring AZT was to do what? Just to see if a woman was HIV-positive would agree to save her baby if we give her AZT. Can you imagine that? That was the first study of feasibility. Just see if a stupid African lady, HIV-positive, would agree to save the baby. Now what we are doing, feasibility of [inaudible] therapy, we all know that [inaudible] therapy is absolutely necessary to a good prevention of [inaudible]. And you are going to do a feasibility study? When we want to do that, they all say "No." In Rwanda, we have no money to do that. We did it. It is very difficult [inaudible].

Dr. Seth Berkley: Did you have a question?

Dr. Agnes Binagwaho: I have no question, but I have to bring here my thoughts. So feasibility circumcision. We know that for more than four years, why do we study those things, spend money on that in place of [inaudible] spend money of treatment? This is an ethical question. We should work for that every single [inaudible] HIV brings something [inaudible], who doesn't please people who want to make money because the question there was true. The first of the disease will be different if it was here the problem. If you raise the fact that on treatment, there was a lot of progress because it is money behind. That's true. Vaccine, no. Because there is no money behind it, it will be, again, for those ladies.

So I just want to say [inaudible] that in the comment that we have to think about communities, about [inaudible] because this is the case. A big part of Africa will be empty in 10 years from now. And we should be afraid of this type of thing. That is what I wanted to say. And condoms, they are very

effective. Don't think about that. And if in some country, there is [inaudible] start to be using more than we have procured them. Thank you. Think about communities and people who are dying.

Dr. Seth Berkley: One last comment here from this gentleman.

Dr. Stephen Nicholas: I am Dr. Steve Nicholas. I am a pediatric HIV specialist. I have been working in Harlem since 1983 and now director of the International Family AIDS program at Columbia University.

Stephen, in your recent book, you talked about South Africa lagging behind. And one of the factors that I think we've got to confront going forward is the fact that there is a small group of activists who believe that HIV does not cause AIDS. They have certainly been influential in South Africa.

I was wondering if both of you might just say a quick word about your perception of how we might respond to these activists and overcome some of the influence, which is holding behind treatment.

Stephen Lewis: My impression, for what it is worth, is that that is confined to South Africa. It is not where do you see it? Sorry, sorry. I don't think of the United States as a country. [Laughter] I lose perspective on occasion. I think of it as an addendum to Canada. [Laughter]

Dr. Seth Berkley: The United States of Canada.

Stephen Lewis: The denialists [ph] in this country obviously and they are the people who end up in South Africa, so often being invited to the medical councils to make their claims. And now South Africa is dealing with this man, Roth [ph] who is attempting to persuade everybody that certain vitamins will counteract infection as effectively as antiretroviral drugs. And there is enough ambiguity in the government's response to seem to give him and his work legitimacy and the denialists are invited to the medical councils of the country to make their presentations. It is very depressing. I meant that I haven't seen that elsewhere in Africa. I've seen that largely in the context of South Africa.

What do you do in the United States? I genuinely don't know. I think closing some of the universities in California would help. [Laughter] But beyond that, I don't know what to suggest. [Laughter]

Dr. Seth Berkley: David?

Dr. David Ho: I think there is no question, there is a small group of these denialists active in this country, but they are more annoyance than changing policy at the national level.

I for one participated in some of the debate early on, but I quickly realized it was a useless exercise. I had thought that once antiretroviral therapy came along and you treat HIV and you get dramatic result, that should be enough proof for just about any reasonable person. But the argument goes on. It is more like a discussion on religion than on medicine.

Dr. Seth Berkley: What I would like to do is wrap up now. I am going to let the speakers say one more word. But I want to summarize an important point

because Gary of course got to my question before I did. And I think the important point we've heard here, most of the people in this room I think are people who understand the importance of HIV and believe there ought to be more resources and believe that we ought to care and believe that countries will fail and believe that we've already proven that we have interventions that work.

The challenge though - and my greatest work, because I didn't answer your question - is that another great global challenges. We are going to hear about them here. We have a world now that is concerned about influenza, we've got other infectious diseases that are going to occur, we have other chronic diseases that are spreading across the world, we have lots of changes that are going on. And the real question for me is, can we sustain the effort, and in particular, obviously, take the interventions that we know how to get them out and then also create the new interventions we are going to need to end this epidemic.

And I think that is the real challenge. And one of the conversations that we all have to have is HIV within the global system and not just

HIV on its own because I think we all in this room and out there believe that there are things that can be done and the money can be raised, but we've also got to worry, are we getting our immunizations out there? Are we getting our contraceptives out there? Are we doing all the other things that we need to do? So any last comments? Maybe I will turn to David first.

Dr. David Ho: I firmly believe that we will continue as a field to make scientific progress and whether it is development of drugs or vaccine or microbicides, I think we will make advances. But unfortunately, this epidemic is spreading at such a pace that it is going to get much worse before it gets better. And so I think we are looking at HIV/AIDS being around for a number of generations unfortunately.

Dr. Seth Berkley: Stephen?

Stephen Lewis: It is hard to imagine, except in the case of children, where so many people are dying unnecessarily in such mass numbers. And that is

what is most painful about the progress on the pandemic, that whatever progress there is, it is so incredibly incremental that the numbers who die in their thousands every day and need not die is the unconscionable dimension of the pandemic.

And therefore, the element of emergency and not a minute to waste on the part of absolutely everyone, the international community, bilateral governments, United Nations family, everyone that has to be the mantra. And central to all of that, forgive my knocking this nail through the wall, but I feel it more deeply than anything else I have learned about the pandemic, if there isn't a focus on gender equality, we will never break the back of this pandemic. If women are not seen as the centerpiece of the response, we will not break the back, I don't care if we talk until doomsday. And what you need here is a really tough feminist critique because that is the way the breakthrough will one day come.

Dr. Seth Berkley: I want to thank all of you for joining us here today. Obviously, we've got two and a half days of other activities and HIV is going to



be on the agenda again, and we will have more time
to discuss these things. Thank you. [Applause]

[END RECORDING]