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**XVII International AIDS Conference
The Lancet Series on HIV Prevention
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RICHARD HORTON: Assembled is a superb team of scientists to review the evidence and to design a prototypical framework for combination prevention. It is their work published in the reports; I hope all of you have this week, is that you are going to hear about now.

Before we start let me introduce my Co-Chair properly. You all know Helene Gayle, President of CARE, formerly, although she did not want me to say this but you all know it, of CDC and the Bill and Melinda Gates Foundation. Helene.

HELENE GAYLE: Thank you and my not wanting him to say that has nothing to do with what I think about former organizations. I just did not want to take up a lot of time. Anyway, I will not take up a lot of time because I think we have an incredible group of people assembled here. I know you want to hear from them. I would just like to add my words of congratulations to the work that Richard and Pam have put together in this special Lancet Series. I think it does highlight the issues, the challenges but also the successes that we have had with prevention. I, along with Richard, hope that this is the kind of work that helps us to galvanize the kind of response that we need to really reinvigorate and invigorate our prevention efforts globally.

So, without further adieu, I am going to hand it back to Richard to start the introductions of the Panelists.

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RICHARD HORTON: We are going to go one by one and then we are going to have I hope some discussion at the end. They have all been told to speak for no more than 10 minutes so we can have some debate at the end of session.

We are going to start with Jeff O'Malley. Jeff is currently Director of the HIV/AIDS Group at UNDP. Jeff is going to talk about the history and challenge of HIV prevention. Jeff.

JEFFREY O'MALLEY: Good afternoon everybody, as Richard just said, I am talking about the history and challenges of HIV prevention. It is based on the first article in the special issue written by Mike Merce and David Surwata, Noy Ioposok [misspelled?] who is with us today and me.

Of course, everybody in the room, each of us who has been involved in HIV prevention over the last 10, 20 years, we all have our own version of the history of HIV prevention. Even amongst the co-authors, we each started our work in HIV in different ways. We each learned our lessons in different ways.

David Surwata was a young physician in Kampala in 1985 when he started to notice chaos amongst young people rather than the older people that were normally affected. He came across more and more cases of intractable diarrhea. All of those patients seemed to come from the same place in Southern Uganda, a district called Rakai.

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He sent a blood sample to England to be tested for HTLV4 which of course is what HIV was known as at the time and it came back positive. It was the first proof that the same virus that was infecting gay men in San Francisco and L.A. was infecting African heterosexual women in Uganda.

He and colleagues set up a cohort of 17,000 people in Rikai two years later and as you all know the rest is history especially with that cohort.

Around the same time David was in Kampala, Noy was in Bangkok working with sex workers in the Pat pong area. She was not working on health, let alone HIV. She was working on sex worker organization of the rights of sex workers, for education, for worker's rights, for EMPOWERMENT. Only a year after EMPOWER was established in 1986, Thailand found its first case of HIV, a Thai man who had been infected by a gay tourist.

Quickly, EMPOWER moved into this new challenge. It created the first HIV prevention materials for sex workers in the country perhaps the first in Asia. It combined its sex worker organizing work with HIV prevention and once again the rest is history.

Like David and Noy, I got involved around the same time in the mid '80s. My partner and I both went for HIV tests when VCT first became available. We assumed that I would probably be positive and we assumed since he had only had three partners in his life that he would be negative.

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The results came back the other way around. We discovered things like discordant couples and positive prevention before those terms were even invented. It was not long of course before I took those personal challenges into my professional life.

Our lead author, Mike Merca came a little later but still long ago to HIV prevention. Many of you know that Jonathan Mann led WHO's global program on AIDS. In the spring of 1990 in a dispute with the Director General of WHO, Jonathan resigned.

Mike was an established public health professional and had already directed two of WHO's disease control programs. He was asked to step in and led GPA until the transition to UNAIDS five years later.

So, like all of you we all have our own skills and training, our own values and politics, our own understandings about sexuality, our own creativity. But we also have our own blind spots we brought into our work in HIV prevention. Looking back, certainly David, Mike, Noy and I all know we made mistakes. Fortunately we all got some things right as well and we certainly learned a lot along the way.

So, the history and analysis that I have to briefly share now is outlined in more detail in the article, is necessarily partial and biased. Our perspectives are still skewed by our values, by our training, by our ongoing

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engagements. Nevertheless, despite how different Mike, David, Noy and I all are from each other, we all agree on the key messages in the article. I think that is very powerful.

First, politics matter as much as programs. We have learned that successful national HIV prevention efforts are possible but they are consistently associated with both government leadership and community involvement and activism. We need the same combination to renew, improve and sustain our efforts in the future.

Second, whatever mix of abstinence, condom use, partner reduction, STI treatment, male circumcision, work in different context. These outcomes are always most effectively achieved through combination prevention. A mix of behavioral, structural, and bio-medical approaches derived from evidence, yes; but also informed by the creativity, wisdom and ownership of communities and people affected.

And third, successful prevention approaches have always linked HIV to other issues that matter in people's lives. Whether that is strengthening local health care services overall, enhancing the status of women or empowering marginalized populations to participate in politics.

Our article reduces 25 years of history and I am going to reduce it even more right now. We described three main phases of the response to AIDS, the early years a decade or so starting in the early '80s. The 1990's where HIV science made

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great strides but politics, programs and responses lost far too much ground. And then the massive mobilization and scaling up of response that began with a series of events around the turn of the millennium.

To speak of HIV in the '80s is to speak of fear, ignorance, denial and intense stigma. But it was also an era of tremendous courage and creativity. The earliest responses to AIDS were largely driven by and invented by people with AIDS themselves, their loved ones and their caregivers.

In 1982 gay men and drag queens invented safe sex. They still have not been given the Nobel Prize. [Laughter] [Applause] Only a year later in 1983, the PWA movement was born on the fringes of a conference in Denver, Colorado. The demands were PWA involvement, leadership and respect in both care and prevention. It was not long before PWA's and their friends were creating new responses and new strategies. New community groups around formed around the world, in Brazil, Uganda, Senegal, the Philippines, France and of course in the United States and elsewhere.

Nurses, doctors, scientists, public health officials were not irrelevant to all of this. It was the epidemiologist from CDC who documented the spread of AIDS in the USA and pointed to sexual transmission. It was nurses and doctors in Southern Zambia and Chidakwa who invented home care. It was a virologist in France who identified HIV.

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But through all these years and all of these people working so passionately, what was lacking was high level political leadership from health ministry's from WHO and from heads of government. It was not until 1987 that WHO established the global program on AIDS, the same year that ACT UP was created to demand action from the US government.

Communities were tremendously energetic and creative. But even the inventions of safe sex, the PWA movement, AIDS activism, home care and the buddy system it was not enough to slow the spread of the epidemic. Health workers and scientists did their things but with little funding or political support.

It is no accident that the few countries which actually demonstrated political leadership in those years, Thailand, Senegal and Uganda and the developing world, places like the UK and Australia in the rich world; those were the places that saw early success. Those became our success stories.

The mid to late 1990's it is a different story. It was the HIV prevention movement's great lost opportunity. While there were some scientific disappointments as Richard says around vaccines and micro biocides, there is no question that science did its job well in that decade. Most dramatic of course is combination antiretroviral therapy. But we also of course learned about PMTCT, we gathered evidence of the links between male circumcision and HIV transmission, the role of STI control serves an epidemic context.

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But what about the programs, what about the response? The donor policy and program environment did not keep pace with the science. WHO's GPA was shut down and UNAIDS was established for a number of reasons. But whatever the rationale of creating UNAIDS, UNAIDS was created at a challenging time. Hollywood's red ribbon moment was over.

UNAIDS inherited a shrunken and largely demoralized staff team from WHO GPA; a much more ambitious mandate, a complex governed in-structure and much less money to manage it all. The effects at country level in the developing world were immediate and disastrous. GPA had provided just under 30 million dollars to national programs in '94 and '95 but UNAIDS was unable to continue the support because of how small its budget was.

Large numbers of WHO staff who provided onsite technical support in developing countries lost their pulse so advice and advocacy disappeared along with the money. Overall of course, development assistance for all causes was steady or in decline through much of the 1990s. Added to all of this was the advent of combination antiretroviral therapy. However exciting it was and however many challenges, activists challenged this notion. It began to create the possibility that the north could respond in its own way and the south could be left behind.

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Did any of this actually matter? It did. A handful of countries, again Brazil and Thailand with their own resources, Uganda and Senegal with bilateral support, kept up the fight and kept up the success. But overall as the money and technical cooperation slipped away and so did action on AIDS. Those were the years when HIV spread most rapidly and most extensively around the world.

Fortunately my friend Peter Piot did an amazing job overcoming those obstacles, defining and building up UNAIDS. He revitalized the response to the epidemic despite these many challenges and those efforts began to bear fruit around the turn of the millennium.

I will not go into details of those actions, what happened around the year 2000 is more recent history and you know it well; UNAIDS overcoming those obstacles, the launch of the World Bank's intensified support; the recognition of the hyper-endemic epidemic in Southern Africa. The debates about AIDS as a security issue, the UN General Assembly Special Session on AIDS. Three by five, the global fund, Gates, PEPFAR and now in the last year or two, glimmers of hope of return on this enormous investment of money and energy. Stabilizing prevalence around the world, declining infections among young women in many key hyper-endemic settings. Delayed sexual debut and increased condom use by young people with multiple partners. These are grounds for hope but we all know from the

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UNAIDS report issued last week and from our own experiences, that we are nowhere near declaring victory and retiring comfortably into a post condom world.

The new UNAIDS report cites promising service coverage figures, as does our paper in the Lancet. But even with improving coverage, fewer than half of the men who have sex with men and injection drug users are reported to have access to prevention services. And these data are based on only the small minority of countries that actually reported. Only 27 countries reported on MSM coverage and less than half of the MSM were being reached. While declining HIV prevalence amongst young women is heartening, as you see in the Lancet article, the eight countries in the world with the highest incidence of new infections are all in Southern Africa.

And finally as you all know, for every two people who go on treatment today, five new people get infected. As Kevin Decock said in Toronto, we will not treat our way out of this epidemic. I started my remarks with some reminiscing about how each of my co-authors and I first got involved in HIV prevention work. We come from different countries, from different continents. David and Mike started their careers as physicians and Noy and I started as community activists. Thank goodness Noy still is. But despite our very different backgrounds and our different experiences we all agree on these there main messages.

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Politics matter as much programs. We need sustained government leadership and sustained community empowerment. The activist and politicians do not have to agree all the time. Indeed, we have seen that tensions can be healthy ensuring the accountability and driving creativity, but we need leadership from both levels and similarly, donor action makes a difference. Funding needs to be significant and predictable. Now is not the time for donors to repeat the mistakes of the mid 1990's. Now is the time for them to focus on the prize.

Second, we have learned that combination prevention offers our best hope for success. The history of HIV is a history of failed attempts at single solutions and magic bullets. Whether it is condoms, social marketing, treatment of STIs, abstinence only programs, needle exchange divorced from broader harm reduction efforts were today's calls for circumcision. HIV prevention is not so complicated that we need to be paralyzed but we need choices amongst multiple risk reduction options for different people and at different stages of people's lives.

Similarly there have been many attempts to find a single easy delivery strategy. Whether it is dependence on community mobilization or a big government program or dependence on private sector expertise, we are not going to market our way out of the epidemic. Just as we need to achieve a mix of behavioral outcomes and medical services that reduce

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risk we need multiple strategies for promoting and delivering these services and behaviors.

And finally, an exceptional response to an exceptional epidemic does not mean that HIV prevention work should be done in isolation. An exceptional response means the opposite. We need a strong linking of a renewed HIV prevention movement to broader issues, health systems strengthening development and of course human rights. We know a lot about the immediate cause of risk and methods of risk reduction. But we know less about how to affect the context of risk and vulnerability and we need to learn because we do know what matters. Reflecting on the history and challenge of HIV prevention we also remember how much HIV has continued to surprise us. We seem to be making some real progress these days in the quality of our evidence, in the design and coverage of our programs, in the level of investment available and in the results being achieved. Now is not the time to over simplify, now is not the time to turn away and focus on different challenges. Now is the time to build on what we have learned to truly halt and reverse the spread of the epidemic. Thank you. [Applause]

RICHARD HORTON: Let us move straight to our second speaker, Dr. Nancy is the Executive Director of the Women's Global Health Imperative and she is a faculty member of the School of Public Health at the University of California,

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Berkley. Nancy is going to talk a bout Biomedical Interventions. Nancy.

NANCY PADIAN: Richard, perhaps a little less colorful. Going straight to what I hope to accomplish in this talk, a little bit about what we know works and briefly what are some things ongoing. Then I am going to spend the bulk of the talk looking back and how we know we know, and what we do not know. Results from trials, progress, some challenges, how we interpret data, the level of evidence and finally a way forward.

What works. I am sure I do not need to tell you this it has been at this conference and everywhere, there is no HIV vaccine or topical prophylaxis, you will see why I use that term as opposed to microbicides, will be available in to foreseeable future. For now, male condoms, male circumcision and the prophylactic use of anti-retroviral to reduce mother to child transmission or contraception also for mother to child transmission to prevent unwanted pregnancies are our strategies.

Treatment of sexually transmitted infections is a strong public intervention in its own right but it has had some mixed results. An interesting phenomenon is that the potential for reducing infectiousness in someone infected with and STI maybe more effective than acquisition.

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I am going to talk a little bit more about ARVs, microbicides and circumcision as they are the big ones. Briefly, what do we know about male circumcision reduces female to male transmission by about 60 percent. A challenge however is in the reduction of male to female transmission to ensure that there is sufficient time for wound healing before resumption of sexual activity. There is little evidence of risks compensation or behavioral disinhibition in randomized control trials but that will be very essential to continue to consider for scale up.

Prophylactic use of the ARVs. I think there has been a zillion sessions in this Conference about prep and pep. What we mean by a new lexicon for prevention is that if you think about the prophylactic use of ARVs it is a unifying theme for the microbicides, pre-exposure prophylaxis post-exposure prophylaxis and mother to child transmission. There is oral vaginal prep it is really microbicides. With thinking about this in a unifying theme, as Ward said, maybe we will have fewer meetings to attend.

That said, research should focus on reducing infectiousness as in secondary transmission. We can think about method of delivery, a pill, a ring, a patch, single versus combination package dosing and timing pre or post. That said, resistance and distribution have to be considered both for trials and more importantly for scale up.

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What about microbicides? I said I was going to call them topical prophylaxis or vaginal prep but I do think a word about their evolution is important. That is they have evolved from non-specific products to now ARV containing products. Which hold more promise, as I said we call that vaginal prep. An important issue is to think about them as way for secondary transmission to reduce infectiousness. But an important phenomenon which has to do with the history is this represents shift. We have our original concept was low tech low cost product and now it has become more complicated and the ability of achieving it in more distant future. There are maybe challenges with resistance and issues with use during pregnancy. Another important phenomenon is that these products most likely will not be effective on other STIs and they are not a contraceptive.

The numbers of trials for which we are still waiting for results, most of them have to do with oral prep. We are also looking at topical prep a/k/a microbicides. These results are yet to be out. There are also partners in suppression looking at a cycle there-in reducing infectiousness in the person with HSV. Still waiting for results of two topical antimicrobials. We keep switching our terminology, vaginal prep, topical methods looking at buffer gel and Pro2000 and HPTN035. We are also looking at Pro2000 in another topical

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microbicidal product and one still waiting for the results of one vaccine.

I want to jump to an evaluation of how we know what we know and looking back to understand where we are here. This is the score card that was originated by Judy Wasserheight [misspelled?]. She has a paper out now with Helen Wiese looking at that. And she and I are working on another paper about this. But again as Richard said, they are looking at randomized control trials. But if you look at the biological randomized controlled trials, if you just tally them up there is 24 trials that we accounted for. Four of them have had positive results, three are circumcision, one is bacterial STIs. Some have had negative results but the far majority is flat results. There is no association either negative or positive and are difficult to interpret. What does that mean? Why so many flat results?

In addition to our article there is also a fantastic institute of Medicine Reports on this. One issue is there is just less than expected incidence. In many of these studies where you have gone in the incidence drops and it is just difficult to detect an effect. Another issue is there are no surrogate markers for HIV insofar as we do not have an interim biological measure. We have no choice really but to go right to Phase Three trials with perhaps knowing less about a product

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than we might like. So, that leaves more opportunity for either failures or flat results.

I am going to talk more about challenges in assessing multi-component interventions. How we have gone about studying these. And a little bit more about sub-optimal adherence but again, most of this is in our article.

A big issue, and I will just talk about my own study, multi component interventions. What do I mean by that? In my study we looked at a diaphragm plus STI treatment and prevention plus behavior change, voluntary counseling and testing. There are many components. I have to say though our focus was on the diaphragm and less on the behavioral aspect but nevertheless that was part of the package. This is the case with almost all biomedical prevention trials.

The other issue is we hypothesized in to having a modest level of effect about a 33 percent reduction in infection. What are some challenges? Our ability to detect the effect of diaphragms over and above this really extensive prevention package, it is challenging.

The other issue is the nature of the control group. This extensive prevention package minus diaphragms is what we are doing in the control group. That is not standard of care in the communities where we did this. So, we are ratcheting up the control group in a way that may not be sustainable after

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the trial is over. By doing gold standards and by doing the best ethical research we made it difficult to detect an effect.

And then of course, the other issue which has been talked about repeatedly is separating out the effect from adherence which might be modifiable from the efficacy of the intervention. Just briefly, adherence as you know and efficacy are inextricably bound. You need good adherence to detect an effect on the other hand, if you have if you have an efficacious product people are going to use it.

What can you do about adherence? One thing is we need to measure it better but we concluded there is two kinds of themes. One is to optimize it. What are some ways that you can make adherence better, make it easier? Have coitally independent methods, daily regimens directly observed, perhaps prevention? And also one time only.

Also if we have more potent methods that are enduring and resilient. Methods that require less where you are not penalized for lack of adherence, and slow releasing, that might be another way to deal with adherence.

Moving on to level of evidence, and I am going to show you more about this is another slide. An important point I think is as we said, male condoms are the method and male circumcision and MTCT. But the level of evidence by which we have concluded that really difference and I really think some of it has to do with the history of the epidemic in the way

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that Jeff just said. One issue is, all that aside, when we scale up this is going to become much more complicated. Our whole way of thinking about evidence will differ.

But let me focus on how think about evidence now. This is a table that actually Ward is largely responsible for that is in the article itself. The way that we thought about it is thinking about adherence as a decision. Because one might say well, do you adhere to male circumcision or is it uptake? So, that is one shot. This level of evidence is done by the prevention task force level of effectiveness. We also tried to think about whether a method was female controlled or not. Because I think we have to widen our horizons about what we think about female controlled methods.

So, what you see is male circumcision, one decision point quite effective, not female controlled. Vaccines, there maybe a booster you might have several decisions right now with no effect, possibly harm. It is however female controlled. The daily decision methods that are STI suppression and based on Level One evidence, we do not know. Oral antiretroviral, topical anti-retroviral have no effect and no level of evidence that this might work.

Coitally related decisions, male condoms, now we are saying that these are effective but based on Level two evidence, that is cohort. Richard said something about not being slave to randomized controls trials. It is interesting

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that all of these biomedical methods are being tested with randomized control trial and held to that gold standard. But that is not the case for male condoms. The diaphragms, based on Level one evidence, are not effective over and above the extensive prevention package. Topical microbicides not including ARVs perhaps at this point are ineffective. Both of these are female controlled and obviously male condom is not.

So, what is the way forward? This is what Jeff said, and I think you are going to hear this from all of us. Not only that I have already heard many times at this Conference. There will be no single magic bullet, we have to look at combination packages. The irony is that although we all have our separate papers and talks I am thinking that the next time *Lansa* [misspelled?] does an issue will be more mixed up and not siloed in the way we currently are.

Ways to think about it are a biological method plus behavior to maintain adherence to avoid disinhibition or risk compensation. Plus structural interventions we are going to hear about that which will be essential. As I said the level of evidence will switch when we go widespread scale up. They will be essential for addressing mechanisms that are necessary for scale up to optimize the effect. What do you need to change in the context in order to have it and be effective? And also combination biological packages where you have more than one biological method for example, male circumcision plus

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condoms, cervical barriers plus vaginal micro antimicrobials or anti retroviral gel.

So, we are all going to end on that punch line. And that is, there is not going one way to effect prevention and we need to think deeply about ways to combine them.

Thank you. [Applause]

RICHARD HORTON: Let me now introduce Tom Coates. Tom is professor of Global AIDS Research within the division of Infectious Diseases at UCLA where he also leads the Programming Global Health. Tom is going to speak about behavioral strategies to reduce HIV transmission. Tom.

THOMAS COATES, PH.D.: Thank you. Thank you and it is a pleasure to be here today. Let me especially thank Peter Piot and the professional staff of UNAIDS for focusing on prevention especially at this Conference. Let me also thank Richard Horton and Pamela Dass from The Lancet for joining with you UNAIDS for put this special issue together. And for gently nudging us forward beyond our comfort zones.

I would also like to thank those who supported my work, principally the Ford Foundation, the National Institutes of Health and the Diana Princess of Wales Memorial Fund. Finally, I would like to thank my, my co-authors, Linda Richter and Carlos Casserez.

Now, Helene Gayle hosted a meeting the other night of the HIV Prevention Working Group. Which has been so

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instrumental in keeping prevention on the table. The premise of the meeting was if I were King what would I do? [From audience: "or Queen?"] Or Queen, [laughter] that was I and my and co-authors starting premise. What if we were King, Queen or Crown Prince?

Now the principle difficulty we had is we argued over who got to be what. [Laughter] So, we decided on a daily rotation. But, we started from this premise. What would responsible leaders do? What can they learn from the past? Do they know enough to engage in vigorous action? What do they do now to prevent infections in the absence of clear evidence and to further develop the scientific foundations for HIV prevention?. What do they need to do to prepare for the long-term? That is a second subtext and theme of this Conference, we are moving into to the long-term.

What we said is progress is possible. And that we think that there is great reason to be very optimistic. But it is not simple, it is not simplistic, there is no magic bullet, change has happened. It has not happened in the randomized controlled trials but as Mike Cohen said it has happened in practice. We have an idea of what can make it happen. We know what to do to develop the scientific base and we know how to document effectiveness.

Now one of the premises, one of our starting point and one of the major premises from which we started was this. And

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that is, we come to Conferences like this and we talk about sexual activity about as an antiseptic act. And we talk about it YRAI and UROI and we use these acronyms. But in reality, sexuality is much more complicated than that. And people engage in sexual behavior for a lot of different reasons. For procreation. Now, the U.S. Government would like us to stop there. [Laughter] [Applause] But some people actually do it for fun. [Laughter] Some people do it for money. Some people do not have a choice.

And then there is substance use. It is a well know fact that the economies of many countries are dependent on substantial intakes of various substances. Whether it be in the normalized economy or in the underground economy. What do we do about that as a major driver of the epidemic?

So, we need to talk about these realities in a much more complicated way. HIV prevention. Lesson number one requires radical not subtle behavioral change. And we have enough case studies now, to know what goes into that formula. It is political support, institutional participation, good laboratory surveillance, VCT information and education. It is behavioral options, delay intercourse, reduce partner number, use condoms, reduce needles, syringe sharing, access VDT, male circumcision, PMTCT and treatment.

People like choice. We cannot reduce it one or other. As Peter Piot said the other night, if we do that we are

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playing with fire. But it also requires mobilization and community buy-in, inspirational leaders, community growing strategies, support for persons with HIV and access to technological advances. We have seen that in Uganda. We have seen that in Tanzania. We have seen that in other counties where HIV prevalence has dropped. We are seeing it in Nabibia [misspelled?]. We are beginning to see it in Botswana for HIV prevention.

HIV prevention, we have talked about combination as being essential. And we have talked about the elements of combination prevention. Behavioral change, biomedical strategies, treatment for people with HIV and attention to social justice and human rights.

The third key point. We know that prevention programs can do better. We know that we can do better. Now, one of the acronyms and it has served its purpose but Chris Collins and Jim Curran and I say let us bury it. Let us bury the ABCs. [Applause] And the problem does not get solved by squaring C or cubing C or adding other letters of the alphabet. It is time to scrap the ABCs and elevate the discussion. Small scale, isolated HIV prevention programs will not bring the AIDS epidemic under control. ABC infantilizes prevention. It oversimplifies what should be an ongoing strategic approach to reducing incidence. Let us not use that terminology any more.

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Everybody who agrees to that, put your hand up. [Laughter]

Thank you.

The fourth key point. Prevention science needs to do better. There is a major misalignment between the behavioral science that is done and the behavioral science that needs to be done. And here I am speaking primarily to the United States and to the National Institutes of Health and to the Centers for Disease Control and Prevention.

We have become slaves to the randomized control design and the result of that is that the design determines the intervention and not the other way around. And what we need to do is to design evaluations. [Applause] And studies that match the need.

The fifth key point is that we need to get the simple things right. We are not even doing the simple things right. So, there has been a lot of discussion at this Conference about concentrated epidemics. Injection drug users, men who have sex with men, those are the ones with the happy face and [laughter] and, sorry, [laughter] commercial sex workers.

As was pointed out by Jeff O'Malley, in the UNAIDS indicator project, first of all it is difficult to get countries to report on what they are doing with these populations. Remember there are 187 member countries. Even among those who are reporting, those who are saying they are reaching sex workers are 60 percent. Those that say they are

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reaching injection drug users are 46 percent. Those who say they are reaching men who have sex with men, 40 percent. So, this among those who are reporting. If we made the denominator the entire number of countries, you probably would not be able to see the bars on the graph. We have got to get the simple things right. We have got to do now what we know can work.

This is the other thing. So, the 2010 goal was that over 90 percent of young men and women would get all the answers correct on simple test of HIV knowledge. We are at 40 percent and missed the 2005 goal and it is not clear that we are going to get to the 2010 goal.

So, HIV prevention in summary, is possible. We have seen that. It is not simple, it is not simplistic, but it is hampered by unparalleled impediments. It is not being implemented, it cannot be reduced to formulas and as we have seen time and time again, it requires radical commitment.

Now, one of the lynch pins of the Ford Global HIV AIDS Initiative under Jacob Gayle is leadership. I think the next best thing that we can do in the HIV epidemic is to support inspirational people. Because every good thing we have seen common HIV prevention, comes from somebody with inspiration and charisma. I think that is the next place we need to go with HIV prevention.

Thank you.

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HELENE GAYLE: Thank you, Tom. Our next speaker is Dr. Jessica Ogden. Dr. Ogden is the Director of Ogden Health and Development Connections, a long-term Consultant for the International Center For Research on Women. She also worked directly with ICRW for several years as a Senior Technical Specialist in HIV AIDS and Development. She is going to talk about the article that she co-authored on Structural Approaches to HIV Preemption.

JESSICA OGDEN, M.D.: Thanks. Good Afternoon. I just want to briefly thank The Lancet and UNAIDS for creating this opportunity for all of us. I would also of course like to thank my co-author, on his behalf I am speaking today, [inaudible] Justin Parkhurst, Peter Agleton, and Jay Mahall.

I am not going to review the paper in any detail. I only have 10 minutes and you all have the paper. I just wanted to highlight what I think are the most important contributions to the field that the paper makes. And what I feel are the most important areas for further development.

I am going to start with a story. Like some of my other colleagues here. Back in the mid to late 1990's, I was teaching Medical Anthropology at the London School of Hygiene and Tropical Medicine to Public Health Master Students there. I saw it as part of my responsibility to inspire them. Some of the most bright and promising doctors, nurses and public health specialists in the world to shift the response away from solely

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focusing on individual behavior change programs to HIV prevention to a more complex approach. And as one of the few anthropologists they were to come across during their studies I hoped to help them see that these individual approaches alone do not and cannot equip people with the tools that they need to change their behaviors that put them at risk for HIV.

Over the course of the terms and the years that we were together, we discussed how and why human behavior is not only or even mostly a product of physical derive or rational choice as Tom pointed out. But it is a shaped and constrained and enabled by a range of factors in the social political, economic and physical environment. These factors determine the extent to which people can, the extent to which people want to adhere to our admonitions to use condoms or stick to one partner or to use clean needles and injection equipment. As well as to the extent that it makes sense to them to do so in the context of their every day lives.

I proposed to them that AIDS is not the only thing that people have to worry about in their lives or even the most important thing that they have to worry about. And if they learn nothing else from me by the end of the term understand that changing human behavior requires understanding, and acting upon the context in which that behavior takes place.

I would put up a slide that said quite simply, context matters. And then I would look out at a sea of faces more or

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less like I am doing today, and see a lot of blank eyes staring numbly back at me. So, if my former students are in the audience you are of course the exception to that rule.

[Laughter] Among the brightest.

So, many of you will not even remember those days and not even know about them when it was so well understood as it is now or accepted that context matters. That those key dimensions of the social, political, and economic context that we now refer to as structural factors are so important in shaping HIV and other health outcomes.

So, the happy fact is that by and large the field now gets it. It is of course down to my great teaching. As the AIDS community has shifted slowly away from an emergency effort to a long-term response, there has been increasing consensus that structural factors play a critical role in shaping HIV epidemics.

It is now fairly well understood and is a recurrent theme certainly among this Lancet Series that addressing these factors should constitute an important part of a long-term response to AIDS. A response that needs to cast its net wide and deploy a combination of approaches that, as we have heard time and again. It should not be in a talk down deterministic way but in real partnership with its intended beneficiaries. Based on a solid understanding of the contextual factors of concern.

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And this is what we refer to in the paper as taking a structural approach.

So, structural approaches aim to change the conditions in which people live and act and act health behaviors. They can be implemented as single policies or programs or multiple structural actions implemented simultaneously. Or they can be community processes that catalyze social and political change or all of these in some combination.

In the paper, we offer examples of structural approaches to HIV prevention that have been effective in creating positive out comes in a range of different populations. I hope that some of you will have taken time out this week to listen to some papers presenting some results from these studies.

At least three critical roadblocks remain in the way of progress. The paper attempts to articulate these challenges and propose some concrete tools for addressing them. I will highlight them briefly here. Firstly, because the range of factors influencing AIDS related behaviors is so broad it can be difficult to determine where responsibilities lies for addressing them. After all, structural factors operate at different levels and different distances from risk and vulnerability.

Structural factors linked to risk and vulnerability in different ways according to context and the wider interpersonal

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relationships and so forth. The relationship between structural factor and a HIV outcome can be quite complex. Some structural factors are quite far upstream from the behavior of concern or the outcome that they want to achieve. These factors can sometimes be referred to distal factors. They include features of the policy and macro-economic context that while influencing risk and vulnerability, do so at some distance from that risk and often originate well outside of the health sector.

A good example of a structural approach that operates at a distance from the behavior of concern would be a needle and syringe exchange program. Many people do not think of these as being structural approaches because you are providing an individual service to clients. But in fact, they also require important shifts in policy and attitude of policy makers very often. Sometimes you have to shift an entire program focus from a concentration on prohibition and cure to a focus on harm mitigation and minimization.

So, we consider such programs to be structural also because they target drivers of risk among drug users and opposed to providing education messages to use clean needles. This does little to affect the context in which the needles are used and the ability of people to get clean needles. So, in this example the relationship between the structural factor, policy facilitating needle exchange and the behavior, needle

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sharing is fairly straight forward. The relationship is straight forward if not effecting that change.

This is not always the case. For example, by what means, does or can gender inequality, another frequently evoked structural factor, influence the epidemic influence HIV vulnerability. In order to understand how structural factors such as these affect risk and vulnerability. Particularly when these structural factors you need to act upon, operate at some distance from the behavior of concern. It is sometimes necessarily to map out the causal pathways between them.

Now, let me see if I can do this. I am not sure exactly how this is going to work. So, here you have gender inequality on one side, sorry they are kind of small and unprotected sex the outcome you want to change on the other. In one community you might have a causal pathway that looks something like this. You see male physical and economic and social dominance over women leading to violence against women. This can lead to the inability to negotiate condom use due to the fear of violence and of course that has the outcome of unprotected sex.

In another community, your causal pathway might look something like this. You have a dominance of male control over economic resources leading to women's economic dependence on men. This can lead to again the ability to negotiate condom use for fear of abandonment or perhaps to leading to

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transactional sex and so forth. You have HIV outcomes that you do not want to see.

So, this brings me to second troubling roadblock we address in the paper. What we are as community increasingly convinced of the importance of structural factors we are struggling still to understand how to address them.

In the paper we suggest while there is no one way to approach this. There is not a simple definitive menu of structural approaches, much to the demise of some of my colleagues here. There are a few rules of thumb that can be applied.

An essential first step in adopting a structural approach is to take charge and know your epidemic and identify your causal pathways. Context analysis of this kind identifies which structures are creating the problem. It can reveal the nature of the causal pathways and your context. It can even indicate where, at what level and who, which sector or set of actors should act and/or or be engaged in the process of developing change.

Some factors may operate distally while some may be proximate to the behavior of concern. So, understanding this process is why causal pathway mapping is useful. Now, the tools and methodologies for conducting this sort to analysis do exist. It can look something like fairly orthodox public health planning process. It can be a needs assessment and also

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social scientists have a range of tools in which to support people to carry these exercises out.

Secondly it is important to recognize that there is no single blueprint of a structural approach that will work everywhere in the same way. Strategies need to be relevant to the specific population being served and the specific constellations of structural factors involved. We provide some examples in the paper that clearly illustrate this point. A really useful one is to think about micro-credit programming. Some of you may know that micro-credit programs have been shown to have positive outcomes in some contexts. They have led to the economic empowerment of women and their ability to negotiate condoms. This can reduce their reliance on transactional sex.

They have also been applied in other context where they have had negative outcomes. They have increased the risks of young women who have had to have transactional sex in order to acquire the money to repay their loans.

So, you cannot take just once structural intervention and apply it fully into another without thinking about and taking account of context. But the good news is that although the activities themselves are not necessarily easily generalized it is often possible for the tools and project principals to be applied in number of different settings. As

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long as care and time is taken to adapt them to the new setting.

Let me give some examples of this including program H which has been implemented in a range of different settings. My time is nearly up, I am talking too slow.

So, the third stumbling block and it a tricky one is that there is not a lot of evidence that structural approaches work. Our evaluation methodologies and our standards of evidence are not designed to take account of or to measure the effects of structural approaches. Therefore assessment of their effectiveness has and continues to be a challenge and we may be able to talk about that a little while later. Although most of the studies seek to apply principles of controlled field trials, attributions in a case of structural approaches can be quite difficult. There is some important exceptions to that including the image study. So, I am going to cruise through here.

In the paper we highlight three challenges in the assessment of structural approaches. I am just going to highlight two here since I am very nearly out of time.

Many structural approaches seek to address factors that are quite far upstream from the risk behavior vulnerability of concern. The further removed the factor is, the more potential causal pathways there can be. This can make it more difficult

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to control for that complexity and understand attribution in any clear cut way.

A second challenge is that many structural approaches including image and sonagchi, [misspelled?] is that they often invite social and political mobilization of groups. They can have all kinds of spin off activities that you did not account for at base line. So, what do we do about evolution? There are a few reasonably good metrologies out there which we highlight in the paper. There are probably others out there that we do not but more must be done. We need to be more creative. We need to be actively thinking about addressing and developing new methodologies. We need to move away from the gold standard that everyone is already discussing some of the issues with. We need to invest more and soon in developing these new mehtodigis. We need to create new partnerships across discipline sectors and communities to help us understand how best to address the impact of these complex responses to AIDS.

We are at a crossroads in the AIDS response at the moment. We are poised on the brink of an important paradigm shift from an emergency response to a long-term development approach. As we seek to understand how to live over the long haul with AIDS it is natural and appropriate that the gauge should turn. It should turn toward making the critical and necessary changes to our social, political and economic

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structures. It can then eliminate the conditions of vulnerability and risk and to finally facilitate a process of creating the conditions in which people can be healthy.

[Applause]

HELENE GAYLE: Thanks, Jessica. The next speaker is Dr. Stefano Bertozzi who is the Executive Director of the Center for Evaluation Research and Surveys at the National Institute of Public Health in Cuernavaca, Mexico. He will be speaking today on making HIV prevention programs work.

STEFANO BERTOZZI, PH.D.: Thank you, Helene. I would like to start by thanking Richard and Pam Doss to invite me to co-edit this special issue with Peter Piot and Pernina Monai [misspelled?]. And then all of them for inviting me to write this paper because it really has been an exceptionally fun and sometimes frustrating but rewarding experience. I also want to thank and acknowledge my co-authors, Marie Loga, and Silvero Baptista and Alex Cartime who are all here at the meeting for follow-up discussions.

We have just heard four inspirational, motivating talks. I have been asked to depress all of you. [Laughter] What I mean by that is that we have heard a number of times at this conference about the successes we are starting to see in some parts of the world in prevention. I would like to focus on the half empty part of the glass. So, you will forgive me,

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I acknowledge those successes but I am not going to talk about them.

What I am going to talk about is the fact that we have had 25 years of prevention efforts for what really is a easily preventable disease. We have spent billions of dollars doing it. Yet, we still have last year, 2.7 million new infections. By any possible criteria that is not a success, at least not enough of a success.

So, my question is what went wrong? And how is it possible that appears on my screen but not on your screen?

[Laughter] [Spanish language] [Laughter]

Well, I think there are three very obvious options. [Laughter] Well, it is better than Durban when the had to wrong presentation. So, what are these three obvious options? The first is that the available interventions that we have are not sufficiently effective. They do not work well enough. The second is that we are doing a bad job at implanting the ones that we do have. And the third is that we are not doing enough. And the answer is yes. All of them are true.

So, I would like to talk a little bit about each of them but most about the second. The first is the available interventions are not sufficiently effective. We do not have the tools that we would like to have and you have already heard about that so I am going to jump very quickly.

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We have got to continue research efforts that Nancy talked about, we have got to expand the research efforts that both Tom and Jessica talked about. But I would like to skip to the second one.

Why are we not doing a good job at implementing the interventions that we have available? I think the first problem is that we are not implementing the right interventions in the right places. The combinations that we are selecting today are not appropriately matched to the local epidemic and the incidences that we expect in each of those places.

I remember when I went around visiting countries as part as the PEPFAR evaluation. They were supposed to prevent seven million infections in the first five years of PEPFAR. When I got to the countries, I would ask, they would have an idea of many infections they were supposed to prevent in that country. My question would be, where are those infections going to occur that you are going to prevent? Because if you do not know where you expect them to occur it is very unlikely that your prevention programs are going to get to the people who would have been infected and in fact prevent those infection.

So, here is a little map of the world, in which it shows how extraordinarily different even at the regional level the epidemics are by region. Inside of each region, it is equally heterogeneous and inside each country it is equally

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heterogeneous. We should see extraordinarily different combinations of interventions in different places around the world. Although they are somewhat different they are not nearly different enough. Where they are different, as this slide will show you, from a number of different countries in Africa, it does not seem to make sense relative to the changes that you see or the differences that you see in the type of epidemic. So, if we cannot see some obvious correlation between the package of intervention being implemented, and the characteristics of the epidemic, it would strongly suggest to me that we are not picking the right packages for the right for right epidemics and that that could be greatly improved.

Secondly, let me just mention, what is the knowledge gap? Obviously, there is an action gap but there is also a knowledge gap. Even though we talk about the fact that we have seen places where prevention is working we do not know nearly enough about the effectiveness of different interventions in different settings.

We have ramped up huge prevention programs thanks to the money that has come on line over the last few years and we have systematically not included prospective evaluation of impact in those scaleups. So, we have done, without learning by doing. That was extremely irresponsible. We have to stop doing that and as we continue to scale up interventions now learn by doing. In other words not expecting that all the

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learning comes, as Tom mentioned, from randomized trials but learn from the actual implementation that we are conducting.

Next, who and where? Even if we are implementing the right package we are not ensuring that that package gets to the people who are most likely to become infected. Epidemics are heterogeneous with respect to who becomes infected everywhere. Even in the most hyper-endemic countries in Southern Africa, the probability of infection is not constant by age. If you are five years old, or 20 years old or 60 years old the likelihood of you becoming infected is not constant. Nor is it constant if you are a man or a woman. Nor is it constant in different parts of the country. We have to do a much better job of figuring out where you expect the infections and responding to that expectation.

We have a knowledge gap. We do not know enough about where we expect infections to occur. Now that is a combination of the fact that we should be doing better epidemiology with the tools that we have. And the better tools that we need to better identify incident infections.

And thirdly, and for me the one that we have been most grossly ignoring up until now and that is the question of the fact that even if we implanting the right interventions for the right people we are not delivering them properly. The costs are high the quality is low and the coverage is low. I know that very few of you were in the satellite session that Ava

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Haun organized on Sunday morning because I mean how could you get here Sunday morning? Right? It was extraordinary, that satellite because Ava Haun has not invented new prevention interventions. But they have invented new ways of managing the implementation of interventions at very large scale.

At the end of the session, one of the AVA Haun staff offered me the possibility of helping to facilitate learning by others from what they have been doing.

They manage the way the private sector manages. You cannot imagine McDonalds not knowing how many hamburgers it sells in each of its franchises. But how many programs do we know where we do not have the foggiest idea how many clients a VCT clinic has seen. What we have been doing up until now in prevention is typically asking people to submit for proposals and fanning out money. Rather than deciding with the communities, with the NGOs what needs to be implemented and then franchising that out and monitoring and making sure we actually deliver it. The private sector has a huge amount to teach us on how you actually manage the delivery of interventions at scale. We are not paying attention to that.

Here is an example. With colleagues in five countries, led by the team at the University of California in San Francisco, we looked at the costs per intervention delivered in five different countries. Mexico, Uganda, Russia, India and South Africa. And you can see here, that there is a general

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downward trend where the cost per, in this case, VCT clients served trends down with the number of clients of that client serves in a year.

But that is not the message of this slide. The message of this slide is that both of these graphs are log graphs. So, what you are looking at here is that the lowest cost clinics are serving clients for less than \$10.00 per client served. And the most expensive ones are almost costing almost a \$1,000.00 per client served. You say to me that is impossible. I say no it is not. If you fund me to set up a VCT clinic and I spend all the money to set it up and I see three clients a month I can easily spend a \$1,000.00 per client.

But look within that pattern, here is India. If you looked at, that is the trend line, but if you looked at the most efficient clinics, at each scale you will see that even the least efficient clinics at each scale do not look to be very far from what the best ones look like. But this is Russia. That is extraordinarily heterogeneous and Mexico looks almost as bad.

So, I think we would find if we looked more at this and I have to ask myself how is it possible we do not know this information all over the world? Because how could you possible manage efficiently the delivery of these interventions if you do not know what it is costing you per client. If you do not know by definition you cannot possibly be managing efficiently.

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Imagine if volkswagon did not know what a car cost or McDonald's did not know what a hamburger cost.

So, that suggests a data gap. That we need provider level cost quality and coverage information and that is where Ava Haun has been extraordinary innovation. Not because they invented it but because they took lessons from the private sector and applied it to the rollout of these interventions.

And finally, there is a capacity gap which is critical to all of the above because we are not born knowing how to do any of these things. The point for me though is that just because you do not have the capacity does not mean it is too expensive to develop it. By not paying attention to these issues we spent far more money because we waste money than we would if we did them properly. Even with the existing interventions we have available.

And the last point, number three, is that we are not spending enough on prevention. The question is how much should a country spend on prevention and I am not going to go into it. I am just going to leave you a pretty graph and suggest you read the paper. [Laughter] [Applause]

So, to close, I want to leave you with some recommendations. We obviously need to continue to invest in what Nancy called for. We need to develop new technologies. Better ones to measure incidence and software and tools to model epidemic behavior so that we can estimate incidents even

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in absence of those. We need to innovate and experiment with new behavioral and instructional prevention approaches. I am not trying to suggest that we reallocate a way from the biomedical I am suggesting we need new money for this.

We need to learn while doing. Stop scaling-up massive interventions where we could do it in a way that allows us to measure impact. Invest in education, not just training. That was one of the principal findings of the PEPFAR evaluation. If all we do is think with year horizon we are going to train existing doctors how to deliver ART.

We are going to train existing teachers to deliver prevention messages. We are not going to train the new people that are needed to scale up our programs. We need to be more efficient about our delivery. One way we can encourage that is to follow some of the initial innovations that have come from the global fund. We need to see action down to the bottom level as Ava Haun has done and that is tying funding to performance.

And finally we need to generate new knowledge as I have said we need to collect better data as I have said. We need to strengthen our capacity to use the data to manage more effectively as I have said. But none of those, the fact that we do not have them today are not excuses for not doing more and better with the people and tools that we currently have.

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Because we could do a hell of a lot better with what we currently have.

Thank you. [Applause]

HELENE GAYLE: Thank you, Stefan. Our final speaker is Dr. Piot who is the Executive Director for UNAIDS and has been since its creation in 1995. As many people have said, he has done an incredible job to really put prevention back on the map where it belongs through the efforts of UNAIDS and through the advocacy of UNAIDS.

Peter is going to talk about coming to terms with the complexity, a call to action for HIV prevention.

PETER PIOT, M.D.: Thank you, Helene, and good afternoon everybody. Let me also say that I am really happy that that conversation in my old office with Richard led to something. And thank you Richard and Pam for really stimulating us. I would like to particularly thank Pernina Monai [misspelled?] [inaudible] and Stef Bertozzi for being co-editors of this volume.

Here you can see also the co-authors of the paper. I have been to every single AIDS Conference and it is true that the last several years prevention was definitely not at the forefront. But at the very first conferences that was all that was there it was the epidemiology and then virology and discoveries and some biology. Because there was also a lot going on, particularly in the gay community in the West and in

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Australia. As Jeff O'Malley and Richard have said, we have wasted a lot of time but perhaps possibly and paradoxedly it may not have been possible to get serious about prevention before we had bitten the, how do you say that? The bullet on treatment, and that may be a paradox. It may not sound very rational but coming with first, massive prevention efforts in a community where people are dying and where there is not a feeling that we do something that is simply not a very rationalo option. And secondly, if there is so much money for prevention today, even if it is not enough, it is because also of treatment.

That is the kind of paradox that we always need and the contradictions of life, I guess. I will focus on the last part of our paper and that is the call to action because basically all the rest has been said.

And it is a call to action of all authors of every single paper. So, it is not just the authors of the paper you see here. Basically what we are seeing is that we have strong enough evidence that what works is combination prevention for at least two reasons. The evidence as we heard and then also a very important one equally, that Tom mentioned and that is the need for choice.

So, the four steps that we identified to effective combination prevention. First something that has become more at the forefront and is knowing your epidemic and act on it.

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History has shown us that we have been very slow to recognize that HIV dynamics are very high. We still may come up with surprises and that is why accurate and timely surveillance is so important. Not only for classic epidemiologic surveillance but also surveillance that takes into account populations, behaviors, social context.

Also, initial HIV outbreaks in highly vulnerable populations have been followed in some cases but not in others by a slower spread. Sometimes, this can affect much larger numbers of people. Yesterday, Jeff Garnett, in his plenary addressed this as well. We can predict more or less where we are going in the short and medium-term but in the long-term, frankly, that is highly uncertain. We should accept that and not become too dogmatic about that.

A scaling of the optimal mix through the levels needed for maximum impact is a key. Setting specific operational targets both ambitious and actionable and generating systematic social change. All this was discussed by other speakers.

I would like to add, as I said in my opening speech, that single or double interventions, the so called magic bullets, are not effective. Frankly they may be even counter productive and give rise to higher incidence and more infections.

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There are no short cuts or one dimensional solutions. We really have to disabuse ourselves of the notion that the epidemic can be conquered by this magic bullet. Rather we should focus on scaling up combination efforts. We should build on the evidence based which produces maximum effect. I think also, particularly following Stef's paper, we should focus at least as much on the how as on the what. I think that in the current stage improving the how is probably going to even more effective and may have more results.

Combination prevention what does it mean? It depends where you are. It means addressing immediate risks; needles, condoms, you see a small piece of foreskin there on the right hand. We need to be addressing underlying vulnerability services and commodities changing social norms.

If we pull out any of these elements it would be as damaging to the effectiveness of prevention programs, as it would be to pull out one of the drugs in combination treatment, as you see on the left hand side.

Coverage and scale are really key as we have heard and I also have a couple of slides on the other hand because I think indeed that it is a prime example of what is possible. What you see here is a mix. India, in this case, in order to reach highly vulnerable populations of government interventions which is the government of India in red or in brown and green the other hand. In some cases strong civil service and an

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administration that works with high coverage by the government. In others it is a private initiative that did it.

One problem that we do not have a solution for yet is what is the tipping point for effective prevention? We know that for treatment effectiveness depends on access for every single individual to treatment to save each individual life. But when it comes to prevention which is both an individual act and a community issue we do not know is there something like a tipping point. We know and has been very well studied for various immunizations programs we do not know, do you need 80 percent of coverage, 60 percent, 40 percent? If there is universal accesses to HIV prevention it may not necessarily mean 100 percent. And knowing that and studying that in each community or type of community I think would provide incredibly valuable information on how we should set our targets in a better way,

We also have to keep our eyes on the long-term horizon. We just heard from Jennifer, a solid case why social change and structure interventions are such essential element of combination prevention. But for the long term, also the social change is necessary because social norms are going to be the underpinning of a long term sustainable prevention.

Think for example about concurrent partnerships in Southern Africa. That is not something one is going to fix with a few short-term interventions. But some take two tears

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before you see the effect, some take three, for five years in some cases we will need far more time. So, that is why it is also so important, in an evaluation of programs to keep that kind of time line in mind.

Leadership it has been said it is very important, which is something I have been talking about a lot. But I would like to add besides the political leadership is also technical leadership. Where is the technical leadership on prevention? It is often in academia and academic disputes are very important to move the agenda and knowledge. But they can be frankly paralyzing when it comes to the real world and we need to distinguish that.

Technical leadership is really an enormous gap in many, many countries when it comes to prevention. The political leadership we have talked a lot about and that is why I think these Conferences are so important. But also in terms of accountability who is in charge of HIV prevention? In a government structure it is clear that when it comes to treatment it is the ministry of health.

When it comes to prevention which is largely happening outside, it is different. Countries that have a multi-sexual, et cetera National AIDS Counsel it is clear that is in charge. So, that is an issue that should be clarified.

I would say in the end, pragmatism and science. What do I mean by that? On the one hand we know enough to make an

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impact so let us be pragmatic, let us do it. On the other hand, we need to make sure that our knowledge improves while sailing as Stef has said.

It is time to be frank with young people about sex. That is also a part of leadership. Ignoring the realities of sex puts our children in greater danger, not only for HIV but think of epidemics in many countries of teen age pregnancies. Sexually transmitted diseases. This is not just an HIV thing. This goes far beyond that and people who say we should not invest in sex education, they are really putting our children in high, high danger.

This is an example where good politics can save lives and bad politics kill people. Just take the example of the City of New York, where the rates of infection with HIV from 13 to 19 year old boys have doubled in the past five years. This figure may even be higher with the recent figures that were just released.

One in four teenagers across the U.S. have at least one sexually transmitted disease. In many schools, as you have seen in this article from the New York Times, access is blocked to Web sites about AIDS, even to access their own curricula from the school system. Signed parental permission is needed, as if young people do not know how to access all kinds of stuff on the computer [laughter] you know? That is a real structural

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obstacle talking about the structure intervention that could make a difference.

We need to work together to build demand. There has not been that push for prevention as there has been for treatment. Prevention activism is really not there. Building that strong constituency is going to be really key. I think one of the most significant developments over the last few years has been is TAC and the t is for treatment. The Treatment Action Campaign in South Africa has taken HIV prevention as a major cause with marches asking for sex education, for condoms in schools and so on. If that would happen everywhere in the world I am sure that there will be far more attention going to prevention.

We need to broaden also the HIV research agenda. And I do not have the time to go into that. But it is really for me a mix of everything that was said and particularly going to into the how of going to scale the issues that Stef discussed.

In academia I would say the business school here is far more important than the school of public health or the school of medicine to find out what works and how to learn from it.

I am nearly through. There has been much talk in this conference about strengthening health systems. That is long overdue and that is very good, however, with the exception of prevention of mother to child transmission, that is not going to have much impact on HIV prevention. Think of sex workers or

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injecting drug users harm reduction and so on. So, it is high time and hope that the next Conference we will also have debates about building capacity for prevention. The issue that Stef brought up and that is at several levels and I will not go over it in detail.

We are on the last slide and on the other hand again where as far as I know it is about the only large scale project that is effectively investing in community capacity. We in classic public health are scared of that; we do not know how to do that because it may challenge some of our blueprints that we have prepared for these communities. It is not going to work that way.

So, let me conclude by saying that series is clearly found that a combination prevention tailored to each situation does work but its full potential has not been reached for political effectiveness and programmatic reasons. And yet it would make a huge difference. The paper has shown that for example, if we intensify prevention as of today, 12 million fewer HIV infections will now occur better now and 2015 than would have occurred pace of prevention.

The progress that we have made is real but also fragile; we have seen it in countries like Uganda, now Kenya, in Thailand where we have seen an increase again of new infections. So, it is never over it is also for life. It is high time and here I echo Stef and we have not discussed it but

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it is high time to bring in true professionals of behavior and social change in to this field. They can help with the how. [Applause] They can help with the how and you find them in business that is the way it is.

We have got some examples of social marketing of condoms and the results are there. But we have not really applied to Proctor & Gambles, and Coca Colas and all of that selling sometimes things that are not so healthy and yet we are doing it. We are buying it. As long as it is combined with a community involvement and the roots and a good business we will do that in any case.

They are expensive but with current types of investments in HIV prevention when can afford it. It would be better to invest in that for some time so that ultimately we will have a better return on the investment and also more effective programs.

And I think that will be the next frontier in addition to finding new tools.

Thank you very much.

RICHARD HORTON: Thanks very much, Peter. Well, time has beaten us but what you have heard today I hope you will agree is a compelling, sophisticated and achievable agenda for prevention implementation at country level.

Two final pleas as you are leaving. Based on the premise that if are going to defeat HIV we have to look beyond

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the virus. First if we really believe in what we have heard, believing in prevention we have to redefine, broaden the definition of prevention.

Prevention is not only about tackling the causes of HIV infection because HIV casts a long shadow over our societies. Prevention also has to be about treating the consequences of infection. For individuals with families, communities and our societies. For those left behind when a parent or a partner is no longer with us.

And second, prevention will not work if we only define it negatively. Stopping something from happening. Prevention is also about allowing human sexuality to flourish as part as our personal quest for liberty and self realization. It is about fulfilling our hopes for those who are closest to us. It is about living out our belief in the global identity and common future among all of us.

Prevention is a positive affirmation of our commitment not merely to avoid infection, but also to advance a vision of what it means when we call ourselves human. Prevention of HIV AIDS means sustaining our aspiration to love, to show compassion, to protect dignity and to feel what is the sheer joy of living on this beautiful, fragile planet.

Thank you to our speakers. I would like to thank Peter [inaudible] and Stefano for leading this project, to our

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authors, to UNAIDS for their brilliant partnership, to Helene for co-chairing and to all of you for being here.

Thank you very much. [Applause]

[END RECORDING]