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**4th IAS Conference on
HIV Pathogenesis, Treatment and Prevention
Opening Session
International AIDS Society and
Australasian Society for HIV Medicine
July 22, 2007**

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[START RECORDING]

[Music Playing]

ROBERT WELSH: Welcome tonight. We're the Descendance Aboriginal Dance Group and tonight we're going to share a little bit of [foreign language spoken] song and dance, but before we do that, we now pay respect to and acknowledge the local tribes from this area, the Eora [misspelled?] Nation for tonight performing and telling our stories here on their story land. We come from the very far northern regions of Queensland from Cape York Peninsula and the Gulf of Carpentaria. All of the songs and stories come from this region, so we do acknowledge now and pay respect to the local Eora people.

This first dance that we did tonight is called Jalamar [misspelled?]. And Jalamar, in our language, simply means welcome, so we welcome everyone here tonight into our cultural circle here. We would like to do a dance now known as [foreign language spoken]. [Foreign language spoken] means fire and [foreign language spoken] is a sacred piece of land on an aboriginal community, which is just south of Cannes, right on the coast there, known as Yaraba [misspelled?]. On [foreign language spoken] many rituals and ceremonies once occurred, like baptisms, initiations, marriage, birth, circumcisions, et cetera. This is a baptism usually done with a really big fire and plenty of smoke. Our people, they were baptized in the bush by fire and smoke.

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[Music Playing]

[Applause]

ROBERT WELSH: Alright, our next dance is the story of Australia's most famous animal, [foreign language spoken], the kangaroo. We now pay respect to the kangaroo because indigenous Australia is made up of over 600 nations, and the kangaroo is responsible for providing each of those nations a life source. For this, they survived thousands of years. With the meat, it nourished our people. The bones were used for different tools and weapons. The skin was used for cold times like this to keep warm, to make shelter or to make bedding. The sinew in the kangaroo's tail is very, very strong. It's used as a natural string. So we pay respect to [foreign language spoken], the kangaroo.

[Music Playing]

[Applause]

ROBERT WELSH: Okay, we're just going to do two dances now that don't involve the [foreign language spoken]. This first one here comes from the very tip of Queensland, where the rain forest and the Great Barrier Reef come together. It's a beautiful part of Australia up there. This next song and dance sings about [foreign language spoken], the emu. Up in the rain forest, you're not going to find an emu walking around. It's just not his habitat. You're more likely to find his brother, [foreign language spoken], the cassowary, a bird very similar

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to an emu. It's just a little bit shorter, a little bit more colorful and a lot more vicious. It can be found in the rain forests all around North Queensland, so we do this dance in respect for [foreign language spoken], the emu. He is our brother.

[Music Playing]

[Applause]

ROBERT WELSH: Okay, [foreign language spoken] – [foreign language spoken] tells the story of one of the Seven Natural Wonders, the Great Barrier Reef. This story is of the men when the tide was going out. They followed the water's edge with their spears. As the tide went out further past the reef, the coral became exposed and it starts to form natural fish traps. The men are in the fish traps now and they're spearing all of the trapped [foreign language spoken], fish.

[Music Playing]

[Applause]

ROBERT WELSH: [Foreign language spoken] means mosquito biting us. It tells of the [foreign language spoken] people and the type of lands of Cannes [misspelled?] from Mossman all the way through to Cook Town. It tells of them preparing to go into the mangroves and collect their shell meat – oysters, [foreign language spoken] shells, [foreign language spoken]. But there were also many mosquitos and sand flies, so to avoid getting bitten, the people would rub mud all over their bodies,

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from head to toe. Once the mud had dried, the mosquito found it a little bit difficult to pierce through the mud to get into the skin. Secondly, they would light fire and smoke the mangroves out. Thirdly, more importantly, with the eucalyptus leaves, when you hang the younger leaves over the fire, the heat will extract the oil from the leaf. It's used as a natural repellent against the mosquito and the sand flies. It's very, very good for healing their infectious bites [foreign language spoken].

[Music Playing]

[Applause]

SHARON LEWIN, M.D., PH.D.: Good evening, everyone. My name is Sharon Lewin. I'm president of the Australasian Society of HIV Medicine. Together with the International AIDS Society, it gives me great pleasure to welcome you to Sydney, to Australia and to the 4th IAS Conference on HIV Pathogenesis, Treatment and Prevention. As is our practice in Australia at public events and gatherings, I would first like to acknowledge the traditional aboriginal owners of this country. I, therefore, would like to welcome the aboriginal elders here today and pay respect to the [foreign language spoken] people of the Eora Nation. The [foreign language spoken] people are the traditional Aboriginal people of the land that we stand and meet on today that we now know as Sydney. Welcome to the Eora Nation [foreign language spoken] land.

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The Australasian Society for HIV Medicine is the peak organization representing health care professionals working in HIV in Australia and is a key partner in the Australian response to HIV. We are delighted to have had the opportunity to be the local host for this meeting and to have worked so closely and productively with the International AIDS Society over the past two years to make this an outstanding meeting. I would now like to introduce Pedro Cahn and David Cooper, the co-chairs for this conference.

Dr. Pedro Cahn is the international co-chair of IAS 2007 and president of the International AIDS Society. Pedro has been a key figure in the IAS over many years and has served on the IAS Governing Council since 1996. He has played a major role in the evolution of IAS into the highly effective organization it is today. Pedro is president and co-founder of the Huesped Foundation, one of the major AIDS organizations in Argentina. He is also chief of the Infectious Diseases Unit at Juan A. Fernandez hospital and assistant professor of Infectious Diseases at Buenos Aires Medical School. He has been a senior leader in clinical trials and research and a tireless advocate for universal access to antiretroviral treatment. I would like to welcome Pedro Cahn.

[Applause]

PEDRO CAHN, M.D., PH.D.: Honorary ministers

[inaudible], ladies and gentleman and colleagues, on behalf of

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the International AIDS Society, I am honored to welcome you to the 4th IAS Conference on HIV Pathogenesis, Treatment and Prevention. This is the first time the IAS has held an international meeting in Australia, the country that has since the beginning of the epidemic played a leadership role in the global response to AIDS. There were many who warned the IAS about the feasibility of hosting a major scientific meeting in a location that seems so geographically remote, but I am delighted to report that those who said we could not have a successful conference here were quite simply wrong. Scientific interest and other attendance in the conference has exceeded our most optimistic expectations. Over 3,100 abstracts were submitted to our conference, a more than 50-percent increase over the last IAS conference in Rio de Janeiro.

Today, we have 6,700 participants. It is incredibly rewarding for us and our local partner, the Australian Society for HIV Medicine, to see the scientific program we have developed for this conference acknowledged by this level of interest from every corner of the globe.

As you know, this is a scientific meeting that has an explicit focus on the application of science, translational research. From basic science to new drugs and biomedical prevention interventions. Unfortunately, research funding in the developing world has not kept pace with the scale-up of treatment and prevention cases. We are badly in need of

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research that will tell us what impact our programs are having in the areas of the world where 90-percent of the epidemic is focused and how to adjust our programs to make the best use of our investment and to save as many lives as possible.

That is why, in advance of the conference, we released the Sydney Declaration. The Sydney Declaration calls for 10-percent of all research devoted to HIV programming in countries to be dedicated to research that would tell us how to make the best use of our treatment and prevention investments. We must identify which approaches are effective in the field, which are not and why. Integrating research into the overall scale up to universal access in the developing world will also help strengthen the capacity of the health work force and develop research infrastructure where it's needed most. This research should not be seen as an additional burden on countries, but, on the contrary, as the only means by which we can refine our understanding of what is and what is not effective. We need to ensure that this allocation does not come at the expense of existing treatment or prevention programs. We can't afford not to fund this research. Good research, as we know, drives good policy and we have never been in greater need of good policy.

Last, but not least, this will also help mitigate the health care workers crisis in the developing world. But working conditions, AIDS mortality and low salaries are fueling the brain drain from south to north. This is one of the

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majority advocacy issues in the IAS agenda. I should also note the biomedical prevention track, introduced at the last IAS meeting at Rio de Janeiro, has been formally incorporated as a permanent feature of the pathogenesis conferences. As you know, the prevention research field is expanding. During the next three days, we will hear about some important new strides we are making in this area. And yet, we must do more because the epidemiology does not lie. We are falling behind in preventing HIV. Australia taught the rest of the world much about how collaboration between government, science and community could achieve a significant and long-lasting impact on this epidemic. Australia has also been at the forefront of global efforts to protect the human rights of people living with HIV and to reduce stigma and discrimination against the communities most affected by HIV and AIDS.

Recent comments by high governmental authorities have cast doubt on Australia's commitment to reduce stigma and discrimination for people living with HIV. Fortunately, neither the scientific community nor the Australian people support these statements. We stand united with local and global AIDS community to ensure that people living with HIV have the right to travel without harassment or the requirement to disclose their HIV status. [Applause]

Epidemics are not stopped by immigration officers. We are confronting HIV, not people living with HIV. Before I step

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away from the podium, I want to thank ASHM, our local partner, for their tremendous support and collaboration. I particularly want to thank Dr. David Cooper, my co-chair, for his leadership in shaping the scientific program of this conference, as well as Dr. Sharon Lewin and Dr. John Calder [misspelled?], the deputy local co-chairs, as well as the many talented and dedicated individuals who volunteered their time on the program committee of this conference.

Last, but not least, I would like to acknowledge the support of our sponsors, without whom this conference would not be possible. The Australian Department of Health and Aging; the Australian Agency for International Development; [Inaudible] World Health; the Bill & Melinda Gates Foundation; the U.S. Center for Disease Control and Prevention; our major industry sponsors, Abbott, Boehringer Ingelheim, Bristol-Myers Squibb, GlaxoSmithKline, [Inaudible], Pfizer, Roche, [Inaudible], as well as all our other sponsors. I encourage you to sign the Sydney Declaration and advocate with your countries to increase the commitment to scale up research. I hope you are challenged and stimulated by the science at this conference and come away with a renewed sense of hope and dedication to the enormous challenges ahead.

Thank you for joining IAS and ASHM in this exciting conference. I am sure that our discussion will be remembered

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as a milestone in the scientific development in the HIV field.

Enjoy the conference. [Applause]

SHARON LEWIN, M.D., PH.D.: Thank you, Pedro. I'd like to now introduce Professor David Cooper. David is the local co-chair of IAS 2007. David is the director of the National Centre for HIV Epidemiology and Clinical Research and professor of medicine at the University of New South Wales in Sydney, Australia. In addition to directing the National Centre, David is head of the Immunology/HIV/Infectious Diseases Clinical Service at St. Vincent's Hospital, here in Sydney, one of the largest services for the treatment of HIV disease in Australia. In addition, he is director of HIVNAT, a clinical research and trials collaboration based at the Thai Red Cross Centre in Bangkok, Thailand.

Internationally, if people think of just one name in HIV research in Australia, it is undoubtedly David Cooper. David has played a major leadership role nationally and internationally in HIV clinical research and care since the very beginning of the epidemic. However, in Australia, we also know him as an excellent and caring physician and a passionate advocate for the infected community. He has mentored and continues to inspire current and future generations of outstanding HIV clinicians and researchers in Australia and the Asia Pacific Region. I'd like to call upon David.

[Applause]

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DAVID COOPER, M.D., D.SC.: Thank you very much, Sharon, for that. Federal Minister for Health Honorable Tony Abbott and State Minister for Health Honorable Reba Meagher, distinguished guests and delegates, colleagues and friends, welcome to the conference. I'm very pleased to welcome you to the 4th IAS Conference on HIV Pathogenesis, Treatment and Prevention, the first time that a major HIV/AIDS conference has been held in this country. For many of our international colleagues, this will be your first time in Australia's premier city of Sydney. For those of you who've been here before, welcome back. These large-scale meetings are an opportunity to listen to each other, to exchange ideas, to gain new perspectives and perhaps new collaborators, so I invite you all to make the most of these four days.

One reason why the International AIDS Society chose Sydney to host this meeting was in acknowledgment that Australia punches well above its fighting weight in HIV research. For that recognition, we thank you. In particular, I would like to thank Pedro Cahn, president of IAS and Craig McClure, IAS executive director and all their support and organization staff for all the hard work that has brought you this conference. Thanks also to the local host ASHM, the Australasian Society for HIV Medicine, and its indefatigable head, Levinia Crooks. Some of you may not know that ASHM was one of the first HIV medicine societies in the world, and it

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has been a tireless champion of education, training and advocacy, both here in Australia and in our region.

Thanks also go to the conference deputy chairs, Sharon Lewin and John Kaldor, both of them significant figures in HIV research in Australia and overseas. Thanks to our track chairs and track committees who have dedicated much time and effort over many months in bringing you what I think is a superb program.

Some of our international colleagues may not know that much of Australia's HIV successes results from an enduring partnership between governments, the HIV infected and affected communities, and the health care and biomedical sector. Research is the bridge between the biomedical and health care sectors and research success results from all arms of the partnership pulling in the same direction. From the earliest days of the pandemic, Australian governments of all stripes have understood the need for prevention and treatment, for innovation and bipartisan political support for sometimes contentious or unpalatable measures and, above all, the need to listen to affected communities. As a result, HIV infection per capita in Australia is one of the lowest of all OECD countries. Australia has supported clinical trials and clinical research from the early days and has consistently and rapidly introduced new treatments and prevention measures when available. We had the politically difficult, but absolutely essential, needle and

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syringe exchanges, the medically supervised injection center here in Sydney, peer education amongst injecting drug users, the use of sharps disposal containers in medical and non-medical settings. Consequently, we have had no substantial epidemic amongst injecting drug users and that is after more than 20 years of the epidemic. Because we have one of the most effective universal public health insurance systems in the world, nobody is denied treatment. [Applause]

This has been a partnership which has endured and has saved lives and supported whole communities. This is something to be proud of and a partnership with not just saving, but actively nurturing. However, in recent times and in the face of increases in HIV infections in several Australian states, this partnership is at risk of fragmenting politically. Pointing fingers of blame will do nothing to curtail infections. Threatening to demonize people living with HIV infection will not help. Making recent immigrants from developing countries the alleged culprits will not help. We must remember and return to those measures which have served us so well before, the proven tools of prevention, the most effective treatments and both underpinned by the best research and open dialogue among partners. Most importantly, political leadership that builds on success, rather than undermining it.

Australia is a very wealthy country by any measure. Many nations in our region are much less fortunate. Among the

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countries which form our regional arc of instability, particularly Papua New Guinea and others, escalating rates of HIV infection is contributing to social dislocation and political unrest. We have already have a grim lesson from African nations about the affect of HIV in fracturing families and communities. In recognition of these problems to our north, there are many fine examples of skills transfer and capacity building, assisted by Australians, to our regions which have brought substantial benefits to communities throughout Asia and the Pacific. Much of this has been achieved with support from the Australian government.

Our Minister for Foreign Affairs Alexander Downer has been an unsung warrior for HIV treatment and control throughout the region. His portfolio includes Australia's foreign aid arm, AusAID, which has HIV as one of its priority funding areas. Mr. Downer appointed as Australia's HIV Ambassador Ann Marie O'Keefe [misspelled?], who has worked tirelessly and effectively to increase the profile of HIV issues at the government level and also advocated continued priority for HIV funding in the AusAID portfolio. I commend Mr. Downer, Miss O'Keefe and AusAID for their work, but we need to do more to reduce the impact of the epidemic in our region.

In addition to the invaluable work funded by AusAID, particularly in the very effective bilateral arrangement agreement, I urge the Australian government to recognize the

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HIV knows no borders and that the international funding bodies, such as the Global Fund and UNAIDS, which are taking a whole-planet approach to the epidemic also deserve much more practical support of wealthy countries such as ours.

Moreover, we would like to acknowledge the generous support of this meeting from the Minister for Health and Aging, Tony Abbott and the Commonwealth Department of Health and Aging, notably Jane Halton and her colleagues, particularly to assist in bringing delegates from our region. At the state level, I would like to thank the New South Wales government for its support, including the New South Wales Minister for Health, Reba Meagher, the New South Wales Department of Health and the Department of State and Regional Development and the Sydney Convention and Visitor's Bureau, with particular acknowledgment of Mr. [inaudible] Harris and his colleagues.

We are all here for a common purpose – to share and extend our work. The very best research that we can conduct to create the best possible treatment outcomes will never be good enough until every person affected by HIV can benefit. This is what this meeting is about and I hope you all have a productive few days. Thank you so much for attending. [Applause]

I'd now like to welcome the Honorable Tony Abbott, Minister for Health and Aging of the federal government of Australia. Tony Abbott was a journalist with *The Bulletin* and *The Australian* before becoming press secretary and political

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advisor to the leader of the opposition, Dr. John Hewson [misspelled?]. He was then elected member for Warringah at a by-election in March of 1994. After March 1996, Minister Abbott was parliamentary secretary and then junior minister in the employment portfolio, before becoming minister for employment and workplace relations. In November 2001, he became leader of the House of Representatives and was appointed minister for health and aging on 7th October, 2003.

Minister Abbott is married to Margaret and has three daughters. He was educated at St. Ignatius College in Riverview and Sydney and Sydney University, where he played rugby and was president of the Student's Representative Council. At Oxford University, which he attended as a Rhodes Scholar, he was awarded "blues" in boxing. He has written two books in defense of the existing constitutional system. Minister Abbott, it is a pleasure to welcome you here this evening. [Applause]

Thank you. Thank you for coming.

TONY ABBOTT: Thanks very much, David. May I say, I was incredibly gratified by that lengthy introduction, but it was entirely unnecessary. I suppose that when my department provides \$630,000 to help a conference go, you get that kind of a generous introduction.

Ladies and gentlemen, on behalf of the federal government and on behalf of the people of Australia, I welcome

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you to this very important international conference.

Worldwide, some 40 million people are living with HIV/AIDS. Almost 3 million people will die of AIDS every year. This conference is about giving 40 million people hope and about saving some 3 million a year who would otherwise die, because they are men and women like us and they deserve our compassion and, above all, they deserve our help.

This conference is important for Australia. About 17,000 Australians are living with HIV/AIDS. Nearly 7,000 Australians have died of AIDS since the pandemic began. Notwithstanding all the advances in treatment, AIDS remains a serious public health issue, a potential prime-of-life killer for people who should not die. In common with other developed countries, Australia has experienced over the last three or four years a significant increase in new HIV notifications, notwithstanding the success of our public health campaigns over the past two decades and notwithstanding the extraordinary sense of responsibility shown by at-risk groups whose leaders have been careful to counsel people against risk-taking behavior.

I also want to congratulate conference organizers and the international societies for choosing to hold this conference here in Sydney, Australia. I'd like to think that in part this is because of our ongoing commitment to HIV/AIDS research. The commonwealth government spends almost \$10

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million a year on dedicated HIV/AIDS research funding and about \$75 million has been spent by our National Health and Medical Research Council on project funding over the past six years.

In part, though, I'd like to think that Sydney, Australia has been chosen for this conference because of our country's leadership in the fight against HIV/AIDS. David, thank you for paying tribute to my friend and colleague Alexander Downer. He is a warrior in this particular fight. You called him an unsung warrior – please, sing his praises because politicians get little enough and certainly Alexander deserves praise in this area.

In the decade up to 2010, Australia will spend \$600 million on the international campaign against HIV/AIDS. Domestically, we will spend well over \$100 million on AIDS treatment as a federal government to complement the many tens of millions which state governments spend on AIDS prevention campaigns. The government recently committed to a new \$10 million campaign to raise awareness of the continued risks that AIDS still pose to particular groups in our population. I note that none of the international visitors to this conference have had to undergo testing before they arrived here. I am very pleased that that is the case and so it should remain.

[Applause]

I should point out that permanent residents of Australia do require AIDS tests, as they have for many years.

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Henceforth, they will have to give enforceable undertakings about treatment. But this is because we want to help people, not judge them. This is because we want to treat people, not quarantine them. This is a big-hearted and a compassionate country. A little over 200 years ago, modern Australia didn't exist. Modern Australia only exists because people have been freely able to come here from all over the world. The extraordinary society, which I hope you will come to experience over the next few days, has only come about because we have seen the best in others and encouraged all people to be their best selves. I certainly hope that this will be your experience here in Australia while you are attending this very important conference. [Applause]

SHARON LEWIN, M.D., PH.D.: Thank you, Minister Abbott. I'd like to now introduce the Honorable Reba Meagher, MP, Minister for Health here in New South Wales and member for [inaudible] in Sydney. Reba Meagher was elected to the New South Wales Parliament in 1994 to reproduce the electorate of [inaudible]. In 1999, she was appointed parliamentary secretary assisting the minister for transport and roads. In 2002, she was appointed parliamentary secretary assisting the minister for police. She was elevated to the ministry in 2003 when she became the minister for fair trading and the minister assisting the minister for commerce. In 2005, she was sworn in as the minister for community services and youth and

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incorporated the portfolios of aboriginal affairs and minister assisting the Premier on citizenship in November 2006. This year, in April, she was sworn in as minister for health. Prior to her political career, Ms. Meagher worked as an industrial officer with the Transport Workers Union and an electorate officer to the federal member for [inaudible]. Please join me in welcoming the Honorable Reba Meagher.

[Applause]

REBA MEAGHER: Good evening, ladies and gentlemen, Minister Abbott. It is my great pleasure to welcome you to Sydney for the 4th IAS Conference on HIV Pathogenesis, Treatment and Prevention. New South Wales is more heavily impacted by HIV and the challenge it poses to individual and public health than other parts of Australia. We are home to some 58-percent of Australians living with HIV/AIDS. New South Wales was the first place in Australia to record an HIV notification. Fortunately, we responded early and energetically to the threat that it posed. Our vigilance has paid off and in New South Wales, we've seen HIV notification rates fall by 17-percent since 1996. We are fortunate to have access to resources and the existence of a well-developed health system. Last year alone, New South Wales invested nearly \$19 million in tackling AIDS. These have been great advantages in helping keep rates of infections low and producing good health outcomes for people living with HIV/AIDS.

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However, access to resources alone is no guarantee of effectiveness. Less tangible assets like leadership, bipartisan political support and a willingness on the part of many to work across political, social, disciplinary and professional boundaries have been as much a part of our success.

Meeting the challenge of HIV/AIDS required support for frank, effective education and prevention programs for those most at risk and the reshaping of the health system to improve its capacity to respond. Maintaining community support for New South Wales Needle and Syringe Program has been a challenge for successive governments. Yet, this program alone has been estimated to have saved over 30,000 HIV infections since it began.

Initially, HIV was a poorly understood disease which primarily affected members of marginalized communities. This situation demanded strong emphasis on partnership in the development and delivery of health services and prevention programs. A crucial part of this partnership has been the role played by clinicians, not just in providing quality patient care, but as committed patient advocates who worked with communities to ensure access to high-quality care where people were treated with dignity, understanding and expertise.

New South Wales Health invests significantly in a publicly funded network of HIV treatment centers and supports

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and encourages the ongoing involvement of general practice in HIV medicine through funding to Australian Society for HIV Medicine. New South Wales also remains a center of clinical and research expertise in HIV/AIDS. We're proud to be home to the National Centres in HIV Epidemiology and Clinical Research and HIV Social Research and to the Australian Centre for HIV and Hepatitis Virology Research. The partnership approach to HIV/AIDS has served the people of New South Wales well. It has provided a framework for collaboration between government, affected communities, researchers and medicine and has ensured that programs and services are informed by both the best available evidence and experience of those living with or at risk of HIV infection. Behavior change and supporting communities to rise to the challenges brought by HIV are just one part of the picture.

We have more options open to us than ever before, in terms of how to approach prevention, treatment and care. There will be disappointments along the way, but there will also be many successes. Understanding these successes and the conditions under which specific intervention is effective is critical.

We are proud of our achievements in New South Wales to date, but we are also very aware that this achievement is fragile and stabilization of infections is a long way from eradicating HIV. We will continue to need new approaches and

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fresh ideas, along with the open and constructive debate that events like this offer. Your presence here today and the quality of this conference program remind us of the depth and breadth of skill, the talent, the commitment and the availability to address the challenges of the future.

Sydney is a beautiful city and I hope that many of you will have the opportunity to stay on after the conference and enjoy some of our sites. I wish you well with your deliberations over the next few days. I hope they are challenging, rewarding and inform future gains in this area. Thank you. [Applause]

DAVID COOPER, M.D., D.SC.: It is now my pleasure to introduce the first keynote speaker tonight. Michel Kazatchkine is the executive director of The Global Fund to Fight HIV, Malaria and Tuberculosis, and is also an IAS Governing Council member. Michel was appointed executive director of the Global Fund in February 2007 and previously has served as French ambassador for HIV/AIDS and communicable disease. Since 2004, he has served as chair of the World Health Organization's Strategic and Technical Advisory Committee on HIV/AIDS and as a member of the WHO's Scientific and Technical Advisory Group on Tuberculosis. In these roles, he provided guidance over a broad range of strategic and policy issues concerning the health sector response to these major infectious diseases.

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In 1985, Michel Kazatchkine started at clinic in Paris specializing in AIDS, which now treats over 1,600. Three years later, he opened the first night clinic for people with HIV in Paris, making it possible for patients to obtain confidential healthcare outside working hours. From 1998 to 2005, Dr. Kazatchkine directed the French National Agency for AIDS Research, ANRS, and served as the head of the Department of Immunology in the Clinical Immunology Unit at the Hopital Europeen George Pompidou in Paris. He served as vice chair of the Board of the Global Fund between 2005 and 2006.

Dr. Kazatchkine attended medical school at Necker-Enfants-Malades in Paris, studied immunology at the Pasteur Institute and has completed post-doctorate fellowships at St. Mary's Hospital in London and Harvard Medical School. He has published more than 600 research papers in leading journals. Ladies and gentlemen, join me in welcoming Michel Kazatchkine.

[Applause]

MICHEL KAZATCHKINE, M.D.: Honorable ministers, distinguished guests, dear colleagues and friends, good evening. It is an honor for me to speak at this opening ceremony and a pleasure to be back in Australia and in the beautiful city of Sydney. Thank you, Sharon. Thank you, Pedro. Thank you, John. Thank you, David. [Foreign language spoken]

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My message today is really one of hope – not mere optimism, but hope based in reality, such as the real progress we have now made in expanding global access to HIV treatment. Hope because of the opportunities that exist for prevention. Hope because of encouraging advances in science that we will be discussing at this conference. Hope because the world is coming together as never before to act on health.

We have witnessed major changes since many of us gathered for the first of these pathogenesis and treatment conference in Buenos Aires just six years. This slide lists a number of these changes, which I will briefly illustrate in a minute in my presentation: A change in paradigm about the relationship between health and development, the mobilization of the civil society in the developing world for global health, the mobilization of the political world and the mobilization of large resources for AIDS and global health, the access to cheaper drugs and commodities, the demonstration of the feasibility and effectiveness of large-scale treatment interventions in resource-poor settings, the effective integration of prevention and treatment, and the emergence of a new science of operation research.

It's worth recalling that the seeds of much of our success to date were planted in that year, 2001, with the first UN General Assembly on HIV/AIDS, the publication in *Science* of the first global resource needs estimates for AIDS, and the

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call by Kofi Annan for the creation of a Global Fund for Health.

First, as I said, in the last six years, there has been a major change in paradigm about how we see the relationship between health and development. Today, health is no longer seen as a happy by-product of development. Schools, bridges, even clean water – those traditional markers of development are clearly no guarantee that people will be healthy. Rather, in the age of AIDS, we understand much better that people must be healthy for the societies to fully develop. In the health sector, that which has long been considered as a non-profitable source of expenditure is clearly coming now to be understood as a necessary investment for development. We see this in the Millennium Development Goals. We, in the AIDS community, are primarily concerned with Goal Six, combating HIV, AIDS, malaria and other infectious diseases, but there is a health dimension to all of the MDGs. Agriculture accounts for one-third of GNP in most affected countries. It has been estimated that up to 20-percent of agriculture workers in Southern Africa could die of AIDS by 2020.

Fighting AIDS is key to progressing on other goals, such as educating the young and empowering women. We simply cannot advance on any one aspect of development without also thinking how we much work to stop this epidemic.

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Second is the mobilization of the political world. Since the G8 Meeting in Okinawa and the UN General Assembly in 2001 through this year's G8 Summit in Heiligendamm, Germany, health – especially AIDS – has been on the political agenda as never before. In this region, as has been said by others, Minister Downer deserves great credit. But as priorities change, we must make sure that AIDS and global health remain high on the political agenda.

In the political realm, there is also a knowledge through all of civil society. Look at how AIDS treatment activism has politicized health, first in the developed world, then in Latin America, Asia and now Africa. Journalists Against AIDS Nigeria, the Treatment Action Campaign, the Thai Drug Users Network and Red [inaudible] Plus are some of the justly angry and impatient voices that have brought a new sense of urgency to the fight against AIDS in developing countries.

And the International Treatment Preparedness Clinician comes as a remarkable example of the new global reach of civil society. It is hard to believe that only six to eight years ago none of these groups existed, and it isn't just their moral authority that has made the difference. At the Global Fund, we are presented with evidence every day of the critical role of civil society that it also plays in implementation and ensuring accountability.

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Resources. As we were considering phase II data on tenofovir and debated structured treatment interruptions in Buenos Aires, phase II data on tenofovir that looks like medieval ages now. The world was spending less than \$2 billion dollars a year on fighting AIDS up from only a few hundred million dollars just a few years before. Since then, the commitments have continued to increase to reach \$9.6 billion dollars a year in 2006. We have the Global Fund, we have PEPFAR, the World Bank's Map and other efforts. This money is now making an enormous difference in the countries where it is needed most.

In just the last five years, the Global Fund has committed nearly \$8 billion dollars in the 136 countries. It is funding almost 25-percent of AIDS programs globally and two-thirds of the world's malaria and TB programs and now estimated to save around 3,000 lives a day in the three disease areas. And as you can see on this slide, on the [inaudible] of this slide, major increases in coverage have been achieved in just the last year. From a mere 200,000 people on NC retroviral treatment in 2001, more than two million people in developing countries now benefit from therapy. Thailand, Brazil, Botswana have universal access, and in Asia, there's been a sevenfold increase in the number of people on treatment in the last five years. Of course, more needs to be done, particularly in reaching children with HIV and the most vulnerable in

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particular it is essential that we take serious steps to ensure that injection drug users with HIV and sex workers in Indonesia, China, Vietnam and many countries in Eastern Europe and Central Asia have access to the essential prevention treatment and support that they need. Not only doing what is easy when we expand access, but doing what is right. This is our collective responsibility.

Treatment outcomes now clearly demonstrate that treatment in resource-poor setting is feasible and effective. This is a slide from the UpLink [misspelled?] cohort studies that is familiar to most of you. Virologic responses are as good in South Africa as they are in Switzerland and so are adherence rates. Because fewer drugs are used, regimens are changed less frequently in South Africa than in Europe or the U.S., helping to minimize resistance. Our concerns now include reducing rates of loss to follow up, diagnosing people sooner so that they can get the full benefit of treatment and addressing the major challenge of tuberculosis co-infection.

The progress on prevention has been slower and it is harder to measure, but in these five years, we have moved well beyond the treatment-versus-prevention debate. Donors know that they must support and all countries have committed into implementing comprehensive programs. Our way of thinking has changed because we must now do prevention in the context of treatment, harnessing the benefits of both.

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Operational research. For a long time, we have talked about a need for operational research in resource-poor settings. Often, our questions have greatly outnumbered the answers. How can we best integrate treatment and prevention? What are the most effective models for service delivery? How do we best support adherence in a Serengeti's village? For a long time the programs at these conferences seemed oblivious to such questions. Now, as we shall see in the coming days, new research methods and collaborations are helping to answer them. We have been learning, for example, and these data are from studies in responsive studies in Western Africa, from multidisciplinary observational research that the availability of anti-retroviral treatment in Africa impacts positively on motivation for testing and disclosure. That there is a lower likelihood of risk and behaviors in treated people, contrary to what people were sometimes suggesting prior to us scaling up. That clinical research can be done and done well in resource-limited settings.

Early in the decade some, among them prominent scientists -remember the Paris Conference in 2003 - claimed it would be a mistake to move rapidly through large-scale access to AIDS treatment in resource-limited settings. A number of claims were made at that time that if resources are scarce, prevention should be a priority over treatment, that anti-retroviral treatment is too expensive, that it is not cost

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effective, that effectiveness, tolerance and adherence in resource-poor settings are unknown and that if we hurry too much scaling-up therapy, there would be a risk of disseminating resistant viral strains, in fact, operational research has now invalidated those claims.

Let me now turn to my hopes and to the challenges and some of my concerns for the near future. In 2005, the G8 set the goal of coming as close as possible to universal access to HIV treatment by 2010. Every UN member state has since adopted the goal including universal access to prevention and care as well. While my presentation today is focused on access to treatment, we all recognize that we will only be successful in winning the fight against this epidemic if treatment is coupled with largely intensified efforts on prevention. These on the slide are some of the considerable challenges we face in the next three and a half years if we are going to make universal access into reality. Resources and their sustainability, drug costs, weak health systems, integrating prevention with care, HIV/TB Co-infection, monitoring impact, policy and advocacy.

First, resources. UNAIDS has estimated that \$18 billion was needed this year to fund a comprehensive global response to AIDS, \$22 billion next year and up to \$23 billion by 2010. On the supply side, long-term and sustainable donor commitments are needed to meet these funding needs and donors are responding to the call for much higher level of sustainable

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funding. In Germany last month, the G8 leaders endorsed a proposal of a threefold increase that is six to eight billion US dollars in annual resources channeled through the Global Fund by 2010 and President Bush has proposed doubling the resources currently committed to PEPFAR. We must all do our part in living up to our commitment in the implement the community to maximize the effectiveness of the resources by harmonizing and aligning our efforts not the least because our collected performance in coordination will determine our ability to secure more funding, but sustainability of resources in the long-term is not just the responsibility of donors. Many developing countries have committed to increasing their amount that they themselves spend on health and they must honor these commitments. For this to be possible without excluding the poor, innovation is needed. The fight against AIDS gives countries the opportunity to begin thinking about how the building blocks of sustainable social perfection including health insurance can be put in place. In most cases in the developing world, the purchase of medicines and health spending are at the direct expense of households. Each year, over 100 million families fall below the threshold of poverty back of health related expenses. In addition, and as shown in this slide - in the lowest part of the slide - here in one Western African country the wealthiest 20-percent of the population benefits from 40-percent of health-related services. The ones

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that provide an inspirational example in the form of [inaudible] community-based insurance schemes that use a Global Fund ground [misspelled?] as seed funding to pay health insurance premiums for the poor. Health insurance properly implemented gives people better financial access to health services, contributes to sustainability and on current evidence increases utilization of health facilities for up to three to five times.

Drug costs. This is a slide that was given to me by MSF. Drugs, as you know, currently account for well over 50-percent of AIDS program costs in some countries. While the best price for the first-line regimens is now less than \$100 per person per year the option of replacing D4T with tenofovir in first line regimens, would increase the annual cost of treating an adult for one year in a developing country from around \$100 to over \$100 in the best-case scenario. In addition, second-line treatment is needed for 5- to 10-percent of patients and TB/HIV Co-infection denotes even more expensive first-line treatment meaning the total drug cost will inevitably rise in the years ahead on a population-wide basis. We must begin planning for this at the same time as we maintain advocacy for lower drug prices and encourage greater competition in the drug market and strongly defend the right of countries to respond to AIDS as a public health emergency.

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AIDS has highlighted the fragility of health systems in developing countries and perhaps our major challenge is to build health systems at the same time as we invest in the response to AIDS and other diseases. By this, I mean by improving the basic infrastructure needed to deliver AIDS services – beds, waiting rooms, laboratories, basic equipment, drug supplies, and above all the health workforce. It is no coincidence that the countries experiencing the worst shortages of health workers as shown on this slide are to a large extent all those with the highest HIV prevalence. Human resources are now widely seen as the more precious and scarce resource of all.

Tuberculosis remains a prominent cause of illness and death among people living in HIV, with HIV in developing countries even in the era of increased access to anti-retroviral therapy. This is another slide from UpLink [misspelled?]. Chronic neglect and chronic investment in TB control and research have meant that TB programs in many countries are unable to cope with the rising rates of TB caused by HIV epidemic leading to unnecessary deaths and the development and spread of drug resistance. Urgent, massive investment in TB research is the only way we are going to find better ways to prevent diagnosed and treat TB in people living with HIV.

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Next, we must further invest in improving the quality and scope of data that show the impact rather than just the processes and inputs of scaling up without good evidence that investing in AIDS will have a significant and enduring impact on survival, mortality, health systems and the epidemic. It will become ever more difficult to sustain commitment from donors and countries. Malawi offers an example here. Shown on this slide, the Global Fund supported introduction of treatment has led to a very significant drop in mortality in its major electricity company. Haiti is another with a broad range of system-wide benefits demonstrated through its AIDS and TB effort, improved delivery of clean water, sanitation, vaccinations, improved primary health care indicators and a four-fold increase in prenatal visits.

The final challenge I wish to highlight is the need to further develop policy and advocacy in two key areas. One important argument for the public subsidy of health is that there are strong society-wide benefits from disease control interventions. As the Sydney Declaration calls for, we need to think much more seriously about how as an international community, investment in drugs and other health technologies and research and development can be further encouraged and secondly human rights. The debate around inequity and poverty has led to the realization that economic development cannot occur without access to human rights including that of access

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to health. Let us all be more vocal about the link between rights, specifically the right to health and democracy.

Dear friends and colleagues, together in short six years you have given hope to millions where none existed. You have begun to deliver. Let us now work to make hope a reality for the millions who are still waiting. Thank you for your attention. [Applause]

SHARON LEWIN, M.D., PH.D.: Thank you, Michel, for a most inspiring speech. I would now like to introduce our second keynote speaker, Maura Elaira-Pa Mea. Maura comes from Papua, New Guinea, our near neighbor to the north. Now, as president of Women Affected by HIV and AIDS in Papua, New Guinea, and a member of the steering committee of the Asia-Pacific Network of Positive People, she is a nurse by training and was one of the first women in Papua, New Guinea, to come out about her HIV status. She has worked with almost every NGR active in the field of HIV in her country and was recently recognized for her committee with the Papua, New Guinea, HIV awards medal presented by the Governor General of Papua, New Guinea. We are delighted that Maura has been able to join us this evening. Please join me in welcoming Maura Elaira-Pa Mea.

[Applause]

MAURA MEA: I wish to acknowledge the traditional owners of this land, the Guardio Clan [misspelled?] of the Ara [misspelled]? Nation and welcome all guests including the

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Honorable Mr. Tony Abbott, the Australian Minister for Health; and Ms. Reba Meagher, New South Wales Minister for Health; Ms. Almira O'Keefe [misspelled?], the Australian Ambassador for HIV and AIDS; professor David Cooper and Dr. Pedro Cahn, the co-chairs of this conference; Craig McClure [misspelled?]; the executive director of IES; and all other distinguished guests and delegates.

My name is Maura Elaira-Pa Mea, and I am from Igat Hope, a National Network of Positive People in Papua, New Guinea. I am deeply honored to be asked to you, to speak to you this evening at the opening ceremony of this very important [inaudible] AIDS Conference here in Sydney.

The number of HIV infections and deaths due to AIDS has been rising throughout Asia and has been steadily increasing in the Pacific especially in Papua, New Guinea. It is over 10 years since the first triple combination therapy was proven to be effective. In treating HIV, [misspelled?] reduced the AIDS related deaths, but even today from Latin America to Africa from the Caribbean to Asia and the Pacific, hundreds of positive people are dying everyday because they are not able to access these treatments. This evening, I will tell you some things about me and what HIV is doing to my country, and I will talk about how to improve the future of HIV positive people.

I went through a very difficult time when I was diagnosed with HIV in 1997. We had no counseling or care and

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support services in place to help us. I saw great pain and suffering around me, particularly from the stigma and discrimination that frequently accompany public knowledge of being HIV positive. In the face of my struggle and the struggle of so many positive people, having to deal with HIV, I took the step of talking openly about HIV to try and break down some of the barriers. I came forward with 19 other positive people to form an organization for positive people in Papua, New Guinea, and we named our organization, Igat Hope. Igat Hope in Malaysian Fijian of Papua, New Guinea, simply means "there is hope." And it is that hope that I cling to believing that things could be very different.

During my involvement with Igat Hope, I have advocated with other members for access to life-saving treatment and comprehensive sexual education to protect the community through prevention [inaudible] from HIV infection. I have strongly advocated that I, like all other women, should have my sexual and reproductive rights respected. [Applause]

Despite all the efforts made, even now I am struggling at times to be heard. Certainly, stigma and discrimination remains a huge burden on the lives of positive people. In other Pacific countries such as Fiji, they are experiencing increases every year in diagnosed cases with very few care and support structures. It is hard to deal with HIV when you are already struggling financially and have little or no

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opportunities for employment and no other means of income.

This is a time where judicial and policy makers need great resolve to address the growing crisis that is unfolding in the region particularly in my homeland, Papua, New Guinea.

One of the keys to addressing the HIV epidemic is to address stigma and discrimination. An important way of doing this is to put a real human face to the epidemic and embrace the principles of Greater Involvement of Positive People, GIPP, in decisions that affect their lives, those principles are as important today as they were when they were first developed in 1994. These principles tell us how important it is to involve HIV positive people at all levels of response to the epidemic from policy and strategy development true to implementation nationally, regionally and globally. GIPP has been shown time and time again to be a central component of an effective and successful response to the epidemic. Apart from ensuring that responses are relevant to the needs of HIV positive people, I call upon individuals, communities, non-governmental organizations, donors, and governments to ensure that GIPP is implemented in all of their work. [Applause]

The role of the treatment must involve positive people as key players because there are a lot of challenges and issues we face starting and staying on treatment. We need governments to agree to [inaudible] action to make sure we all have equitable access to medicines and medical care. Not just anti-

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retrovirals, but treatments for opportunistic infections and common co-infections such as TB and Hepatitis C. [Applause]

There is a huge need for improved health infrastructure and trained HIV practitioners who are both skilled and experienced. The need for beds by people with AIDS in the main hospital of [inaudible] in Papua, New Guinea, outnumbers the bed capacity. There is a need for better care and support programs, which are often in short supply. We want people to stop being afraid of us and discriminating against us to allow us to work and move ourselves out of the poverty that HIV so often brings and to allow us to help prevent others from becoming infected.

There is a fundamental deeper principle, and I want to end my talk with you. The principle is talk with us, not about us. In the Malaysian Fiji of Papua, New Guinea, we say, [inaudible]. So, once again, talk with us, not about us. Thank you. [Applause]

DAVID COOPER, M.D., D.SC.: It's a pleasure to introduce Dr. Anthony Fauci from the United States. Tony is director of the National Institute of Allergy and Infectious Diseases, one of the major institutes of the National Institutes of Health. Since 1984, Dr. Fauci has overseen NIAID's extensive research portfolio of basic and applied research to prevent, diagnose and treat infectious diseases such as HIV/AIDS and other sexually transmitted infections,

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influenza, tuberculosis, malaria, an illness from potential agents of bioterrorism. The NIAID fiscal year 2006 budget is approximately \$4.4 billion U.S. dollars.

Dr. Fauci serves as one of the key advisors to the White House and the U.S. Department of Health and Human Services on Global AIDS issues and on initiatives to bolster medical and public health preparedness against emerging infectious disease trends such as pandemic influenza.

Dr. Fauci has made many contributions to basic and clinical research on the pathogenesis and treatment of immune-mediated diseases, including HIV/AIDS. He continues to devote much of his research time to identifying the nature of the immunopathogenic mechanisms of HIV infection and the scope of the body's immune responses to the AIDS retrovirus.

Dr. Fauci serves on the editorial boards of many scientific journals as an editor of *Harrison's Principles of Internal Medicine* and is author, co-author or editor of more than 1,000 scientific publications and textbooks. His leadership and the ability for the U.S. NIH to do HIV research is almost certainly his major doing, and we must credit him for this.

In May of 2007, President Bush awarded Dr. Fauci with the National Medal of Science, one of the highest honors presented by the White House for scientific research. Thank you, Tony, very much for coming to this meeting and addressing us tonight.

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The title of Tony's talk is "HIV/AIDS in 2007: Much Accomplished, Much to Do." [Applause]

ANTHONY FAUCI, M.D.: Thank you very much, David. Distinguished guests, ladies and gentlemen, it's a great pleasure for me to be here with you this evening in this beautiful city of Sydney to give a keynote address in this opening session of the Fourth International AIDS Society Meeting.

When the organizers asked me to give this lecture and told me that I could pick my title, I decided that I would talk to you on the subject that's shown in this first slide, "HIV-AIDS in 2007: Much Accomplished, Much to Do." And the reason I did that is that when asked, I reflected back 11 years ago to the meeting in Vancouver in 1996 at the time of great expectation and great optimism when the first results of the combination therapy, which was then known as HAART, was able to be displayed and presented to the people at that meeting, and the editors of the *Journal of American Medical Association*, the next month in July asked me to give a perspective about that meeting and to celebrate the many accomplishments, but I asked if I could do it in a balance. Certainly celebrate great, important scientific contributions, but importantly to put into perspective the much that needed to be done, and in fact, nothing has really changed in that philosophical approach over

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the past 11 years, and it is in this regard that I have chosen to use this as my title.

What I would like to do is to take what is really the theme of this meeting, pathogenesis, treatment and prevention and very briefly go over with you the accomplishments that have been done as well as the challenges that we face. Let's start with pathogenesis. Pathogenesis is an important part of HIV research for the simple reason that all that we do with treatment and prevention and ultimately a vaccine development is really related to the bedrock of information that we get from pathogenesis.

So, what have we accomplished? Much. One of the most important is the understanding of how the virus works because the early dissection of the replication cycle of HIV led to an awareness of the multiple points of vulnerability for which we could target anti-retroviral therapy. As shown on this slide, with the very earliest drugs against reverse transcriptase followed by the drugs against protease, really led the way for the important breakthroughs in treatment that have benefited so many people. In addition, an understanding of the complexities of the pathogenic mechanisms from early primary infection with the more recent realization of the importance of the gut associated lymphoid tissue, the mass of viremia [misspelled?], the immune activation, which is somewhat of a paradox in HIV because it's the engine that drives replication at the same

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time it's an attempt by the immune system to block and ultimately stop infection progression.

Another important thing that we learned was that the immune response to HIV was only partially effective. That was a pathogenic finding, but it has been now the reason why we've had so much trouble in the development of a vaccine because of the body's inability to handle in the natural state this particular virus, and we'll get back to that in a moment.

What must we do in pathogenesis? There still is a lot to do. Over the past couple of years, it has become clear that the early events in HIV infection are assuming a new level of importance, particularly the early seeding of the gut associated lymphoid tissue and the irreparable damage that occurs during that brief what we call window of vulnerability, in addition, a better appreciation of the establishment of a reservoir of infection. Those early events point to the need for our attempts to intervene and the whole question again of when is the right time to start therapy is a question that still burns unanswered such as can treatment and/or a vaccine prevent the establishment of HIV infection or mitigate the early events of HIV pathogenesis and thus alter the course of disease, and when I mention vaccines in just a moment, this particular principle will loom large. The reservoirs of HIV, as we stated, my colleagues and I, about eight years ago a true obstacle to the eradication of virus understanding the kinetics

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and the dynamics of this reservoir is critical. Years ago, more than 10 years ago, we and others engaged in experiments in treating people for an extended period of time and then hoping that with the suppression of viremia, we may have suppressed the virus enough hopefully eradicating it, which was a bit naive at the time, perhaps allowing the body to contain it with the residual immune response.

Unfortunately, that was not to be the case. As shown on this slide, when we interrupted therapy on patients who were well controlled and a viremic invariably the virus returned in each and every one of them causing us to go back and look at this concept of the reservoir as depicted on this slide when you have anti-retroviral therapy, you block viremia, and it was assumed that the reservoir was a static phenomenon, yet, the attrition or the diminution of the size of the reservoir was very inconsistent despite adequate control of viremia. We now know that it is not a static process. That despite the suppression of viremia, there is still cross infection at a low, sub-detectable level. Most of these patients were patients who were started late in the course of their infection. We are now looking at what happens when you start therapy much earlier.

There are a number of other pathogenic issues that are now being addressed in the much to do category. Host restriction factors that might serve as new targets for

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enhancement. The influence of host genetics on HIV acquisition. For example, the recent paper that came out in science from the Chavey [misspelled?] group, showing the association with three genes, the polymorphisms of three genes, with a good control of HIV replication, new insights into the immune response and finally structural studies of the envelope. Next, treatment. Perhaps the greatest reason for celebration of the fruits of science. Indeed, much has been accomplished.

Getting back to this slide of the multiple points of vulnerability of the virus. More than 23 drugs that have proven effective against HIV have been approved by the US Food and Drug Administration as well as other regulatory authorities throughout the world. The results have been nothing short of spectacular. A recent estimate in the *Journal of Infectious Diseases* this past summer in a conservative estimate indicated that approximately three million years of life was saved by the combinations of therapies that we used from 1996 through 2005. Truly a cause for celebration. However, the idea as mentioned by Michel Kazatchkine, about getting access to individuals, there has been, in fact, considerable progress in the developing world with the PEPFAR program that Michel mentioned, the Global Fund, which he heads, as well as a number of philanthropies and NGO's such as the Gates Foundation, the Clinton Foundation, and [inaudible]. The results on this have also been truly remarkable. Just a few years ago, less than

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300,000 people in the developing world were receiving anti-retroviral therapies. As of December of '06, more than two million people are receiving anti-retroviral therapies. A considerable accomplishment, but there's a big "but" to that and the "but" is what we need to do because, in fact, in and of themselves, there are limitations and challenges of anti-retroviral therapies – toxicities and side effects, the emergence of resistance, the cost access issues that Michel mentioned, and again, the persistence of reservoirs.

There's been good news, and you can hear about this at this meeting because there continues to be a robust pipeline of new drugs. In fact, in 2007, a number of anti-HIV agents are in various stages of development ranging from entry inhibitors up to and including the still in pre-clinical developments new targets such as Trim 5-alpha. Now, this is a slide that's somewhat depressing because it keeps going up and up. Namely the estimated number of people who are living with HIV globally. The critical issue with regard to treatment is that as of the end of 2006, only 28-percent of people and just 15-percent of children who need anti-retroviral therapy in low and middle-income countries, are actually receiving them. So, if you do the math, we have a serious problem because 4.3 million people each year get infected and for every one person that we put on therapy, six people get infected. This was very well articulated by Peter Piot of UNAIDS when he said that treatment

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isn't going to stop the epidemic because in 2005 as he mentioned, there was six new infections for every person put into treatment. That is not sustainable and that means we will be losing the battle.

What does that mean? That means the next and final issue that I'll address is the issue of prevention, an area in which, indeed, much has been accomplished. So, let's examine that. If you look at proven prevention strategies either through sexual transmission, the behavioral change programs, condom promotion have worked where they have been utilized, preventing bloodborne transmission, the initial screening of the blood is the obvious big item there, but also needle and syringe exchange programs and treatment programs for addiction, have worked where utilized and preventing mother to child transmission was one of the great breakthroughs of a few years ago.

A very important bit of data came out this year and that is the efficiency and effectiveness of male circumcision in decreasing the risk of acquiring HIV. I know you are all familiar with the landmark study that was started by the French in South Africa and then were confirmed by NIH funded studies in Kenya and Uganda. This is something that needs to be implemented in a culturally sensitive manner.

Now, having said that with the accomplishments, what about much to do? There is an awful lot to do particularly in

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the arena of prevention, this slide troubles me. It troubles me because if you look at the numbers, it tells us that if you look at the percent of individuals at risk with access to HIV prevention, it is really quite unnerving. If you look at injection drug uses, only 8-percent have harm reduction capabilities. Condom access, 9-percent. Men who have sex with men, only 9-percent have behavioral change programs available to them. HIV testing in Africa, only 10- to 12-percent of adults have that available to them. Mother-to-child transmission prevention, 11-percent and less than 20-percent of commercial sex workers have the availability of behavioral change programs. We must do better than that. In fact, half of the 60 million HIV infections that we project will occur by 2015 could be averted with a comprehensive scale up of proven prevention strategies. We know of the need for topical microbicides. There's no doubt about that. However, if you look, in fact, at the successes of this, they have been dreadful. They've actually failed. Does that mean we need to decrease our effort? No. It means we need to heighten our effort to try and prove where possible that these new preventive approaches can actually be utilized, and finally, an HIV vaccine.

In the meeting of vaccines in Amsterdam last year, I introduced a concept that was summarized in this paper by Peggy Johnson and I just recently in the *New England Journal of*

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Medicine, we called it an HIV vaccine evolving concepts and the point that was made is that the development of an HIV vaccine must diverge from the classic paradigm for viral vaccines and there is some optimism that a less than perfect vaccine mainly one that will, in fact, not necessarily prevent infection, but might prevent the progression of disease and from the progression of disease less people who are exposed would be infected because of the lower viral set point. In other words, the principle is getting back to this slide that if you see this early event of a burst of viremia and a viral set point, could a vaccine that did not prevent infection actually decrease the burst of viremia with a lower viral set point that would then allow a prevention of infection. And finally, we must not keep out of our sights the possibility that with the development of a truly neutralizing antibody against multiple epitopes and multiple isolates that, in fact, we would be able to have a vaccine that is actually preventive.

And finally, one last point that I think we should point out. Michel alluded to it during this talk, that our intention on HIV particularly in the developing world, the developed world paid attention to it because the developed world was affected by HIV but less so by other diseases like tuberculosis, malaria, et cetera. And it was only through the lens of HIV do we now realize the other co-morbidities and co-infections mostly in the developing world such as tuberculosis,

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malaria and neglected tropical diseases. So, if there's a good that comes out of the intention, it's to the fact that although we are dealing with a devastating pandemic with HIV, it is also accompanied by a number of other problems in the developing world that can only be solved by the building of a sustainable health infrastructure that involves not only HIV, but also these other diseases.

So, I'll close with a reiteration of the original reason why I chose this topic - because it is a time to celebrate great scientific advances. There's no doubt about that, but we should remember that history will judge us a global community by what we do in the next 20 years as much by what we've accomplished in the first 26 years. And so accomplishments are important, but they should never be considered in the abstinence of the commitment of what we must do in the future. Thank you. [Applause]

SHARON LEWIN, M.D., Ph.D.: I'm sure you'll agree with me that we've had three outstanding keynote addresses, each thoughtful and thought-provoking. I hope the three days brings you, the participants of the meeting, new ideas, new strategies to tackle conflict problems, new approaches to treat your patients, new collaborators, and new friends.

I would like to bring your attention to a rally being held tomorrow to support issues of women in global HIV research. It will be held tomorrow morning at eight o'clock in

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the Parkside Auditorium. I hope you enjoy this beautiful city
and this beautiful country and have a wonderful conference.

We'll see you tomorrow.

[Applause]

[END RECORDING]