



Dr. Anthony Fauci (above), MD and director, the U.S. National Institute of Allergy and Infectious Diseases (NIAID), credited Dr. Julio Montaner, director, BC-CfE with the Treatment as Prevention strategy at the recently concluded IAS 2011 Rome conference.

HIV leaders advance Treatment as Prevention at IAS 2011

BC-CfE-pioneered treatment strategy gathers momentum at global conference

The recent 6th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention (IAS 2011) was dominated by advances in and support for the Treatment as Prevention strategy to fight HIV and AIDS.

The convention – which attracted more than 7,000 of the world's foremost HIV researchers, scientists and doctors to Rome, Italy from July 17 to 20 – saw leading figures in the global fight against HIV endorse Treatment as Prevention and recognize the central role that the BC Centre for Excellence in HIV/AIDS and its director, Dr. Julio Montaner, have taken in developing the strategy.

"Julio has been talking about Treatment as Prevention for a very long period of time," said Dr. Anthony Fauci, MD and director, the U.S. National Institute of Allergy and Infectious Diseases (NIAID). "Now we have absolute confirmed data that he was right all along ..."

"The idea of the tension between Treatment and Prevention, we should just forget about it ... because Treatment is Prevention."

The Treatment as Prevention strategy advocates for widespread HIV testing and facilitated access to free HIV treatment for all medically eligible HIV-positive individuals. Current HIV treatment reduces the amount

of HIV in the blood to undetectable levels, thus improving the health of HIV-positive individuals. At the same time, the treatment decreases the amount of HIV in sexual fluids to undetectable levels, thereby reducing the likelihood of HIV transmission by over 90 per cent.

Immediately prior to the conference, *The Lancet*, a leading global medical journal, published an editorial comment by Dr. Montaner that emphasizes the critical role of expanding access to HIV treatment under a global Treatment as Prevention strategy to stop the HIV pandemic.

Based on the effectiveness of highly active antiretroviral therapy (HAART) in reducing transmission of HIV, Dr. Montaner called on the international community to support an immediate and expanded roll-out of HAART.

"The evidence is clear: treatment conclusively prevents morbidity, mortality and transmission," wrote Dr. Montaner. "The challenge remains to optimize the impact of this valuable intervention. Failure to do so is not an option."

Support for Dr. Montaner's message was immediate and encouraging.

"Treatment as Prevention is one of the most important and promising additions to the range of prevention strategies available to us today," said Dr. Elly Katabira, president of the IAS and Chair of IAS 2011. "Dr. Montaner's column is a rallying call for the universal endorsement and funding of this approach for the benefit of our future generations."

A recent study by the U.S. National Institutes of Health (NIH) reported that immediate use of HAART led to a 96 per cent decrease in the risk of HIV transmission among heterosexual couples where one partner is HIV positive.

"These results are a real scientific breakthrough and a game changer in the response to HIV," said Michel Sidibé, executive director of the Joint United Nations Programme on HIV/AIDS (UNAIDS). "We must embrace Treatment as Prevention as part of a combination prevention strategy to achieve our collective vision of zero new infections and zero AIDS-related deaths."



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– Michel Sidibé, executive director, Joint United Nations Programme on HIV/AIDS (UNAIDS)





One-on-one with internationally acclaimed expert on addiction research

» Dr. Nora Volkow is the director of the National Institute on Drug Abuse (NIDA) at the U.S. National Institutes of Health. Dr. Volkow's extensive body of research demonstrates the use of brain imaging to investigate addiction and other mental disorders. Her pioneering work is instrumental in showing that addiction is a disease of the human brain.

She has been honoured with several awards in recognition of her outstanding research contributions. Among her many accolades, in 2007 she was named one of *TIME* magazine's "Top 100 People Who Shape Our World."

At the 2011 International AIDS Society (IAS) conference in Rome, Dr. Volkow presented a lecture on *Ending HIV Transmission Among Drug*

Users by 2015. In an interview with *Forecast*, Dr. Volkow discusses her presentation and provides her thoughts on Treatment as Prevention.

Q: What can you tell us about your presentation?

A: Briefly, abuse of drugs has played a key role in expanding the global HIV epidemic since its inception—through needle sharing among people who inject drugs as well as intoxication-related risky sexual behaviours. We believe that the state of science has advanced now to the point that we are able to prevent HIV transmission among people who inject drugs and other vulnerable populations, and this in turn would have a dramatic impact on improving global health.

Q: How do you propose we could end HIV transmission among people who inject drugs?

A: Evidence-based interventions for people who inject drugs are ready to be implemented on a global scale. These include: drug treatment, sexual risk reduction programs, community outreach, syringe exchange programs, HIV testing, counselling and linkage to care and highly active antiretroviral therapy (HAART) as treatment and prevention of disease transmission. Universal access to HIV prevention, treatment, and care for injection drug users has been endorsed by international organizations such as the World Health Organization (WHO), but at present these goals remain largely unmet. A co-ordinated worldwide effort is needed to implement comprehensive evidence-based programs.

Q: What impact will this have on the global HIV epidemic?

A: Research shows that proactively seeking out people who use drugs, testing them for HIV, and engaging them in HAART treatment (for those who test positive) while providing treatment for the substance use disorder, can improve patient outcomes and prevent HIV transmission at the population level.

Q: What do you think needs to be done to ensure people who inject drugs are regularly tested for diseases and have access to treatment and care?

A: A very promising approach, termed "Seek, Test, Treat, and Retain" (STTR), involves reaching out to high-risk, hard-to-reach groups who have not recently been tested (seek), providing HIV testing (test), initiating treatment for those who test positive (treat), and monitoring and maintaining them in HAART therapy (retain) while also keeping them engaged in treatment for their substance use disorder. NIDA is supporting research to further test this strategy in populations at greatest risk, who generally remain outside the treatment loop, such as people who inject drugs or those in the criminal justice system.

Q: The Treatment as Prevention strategy was touted as a game changer at the Rome conference. What are your thoughts on the role of Treatment as Prevention in global HIV/AIDS' programs?

A: Dr. Julio Montaner has led this strategy for many years, and it now seems to have finally taken hold. As he has noted, Treatment as Prevention is a double hat trick, or as I phrase it, "a no-brainer." Treatment reduces morbidity and mortality in those already infected with HIV and has a secondary preventive effect on HIV and tuberculosis transmission. However, I am concerned that treatment with HAART is not yet available to all HIV-positive people who need it. We urgently need to address this issue.

Q: What else do we need to do in order to curb the spread of HIV/AIDS?

A: We must act now, joining forces to integrate strategies and share the best knowledge we have to transform public health. Scientific evidence clearly shows that a variety of interventions can prevent HIV transmission, but there are structural, policy, and financial barriers that must be overcome in order to implement combination-prevention strategies, which are our best hope for eliminating HIV transmission altogether.

HAARTbeats

HAART strengthens immunity of HIV-positive children, regardless of viral loads

» Treating HIV-positive children has traditionally been more challenging than treating HIV-positive adults.

Children often find it harder to adhere to medications and battle side effects that are a result of taking antiretrovirals since a young age for a prolonged period of time. Therefore, researchers have been investigating the long-term efficacy and safety of antiretroviral use by children.

A study published recently in *HIV & AIDS Review* has good news. The study showed that highly active antiretroviral

therapy (HAART) can improve CD4 cell counts (percentage of white blood cells) in HIV-positive children regardless of their viral loads (amount of HIV in the blood).

"Our study showed a good capacity for immunological recovery in pediatric patients infected by HIV, with CD4 response maintenance in subsequent years," Dr. Lilian Diniz of Brazil's Federal University of Minas Gerais and lead investigator of the study, told *The AIDS Beacon*.

Researchers analyzed the long-term effect of HAART on the immune response

(CD4 cell counts of at least 25 per cent) and viral load of 196 HIV-positive children in Brazil from 1998 to 2006. Participants' ages ranged from 0 to 12 years, with an average age of 3.4 years. Baseline CD4 counts and viral loads were obtained before the start of the study.

Children were followed over their first three years of treatment. Study results showed that after 24 weeks of HAART, children's average CD4 count was above 25 per cent, which is normal. Children who had CD4 counts between 15 and 24 per cent at the start of the study had a

four times higher chance of achieving a CD4 percentage of 25 per cent or higher by week 24, compared to children with CD4 counts of less than 15 per cent.

The study authors suggested that the results provide insights into when HAART should be initiated in HIV-positive children.

"The initiation of HAART before severe [immune] suppression occurs seems to be more effective for recovery of maintenance of normal CD4 levels," said Dr. Diniz.

BC-CfE staff presentations at the IAS 2011 conference

Several staff members of the BC Centre for Excellence in HIV/AIDS (BC-CfE) delivered oral and poster presentations at the recently concluded 2011 International AIDS Society (IAS) conference in Rome. Researchers Hasina Samji, Krisztina Vasarhelyi, Kora DeBeck, Viviane Lima, Mark Hull and Rachel McGovern presented at the conference. Due to limited space, we have selected a few presentations for review below.

Factors associated with late initiation of HIV treatment in a cohort of HIV-positive individuals in British Columbia, Canada

Poster presented by Hasina Samji

Delayed treatment initiation limits the therapeutic success of highly active antiretroviral therapy (HAART), and is associated with higher morbidity and mortality. Researchers of this study sought to examine the socio-demographic and clinical factors associated with delayed treatment initiation.

Participants over 19 years of age were recruited from the Drug Treatment Program (DTP) at the BC-CfE. Interviewer-administered surveys, completed between 2007 and 2010, were used to collect information regarding housing, drug use, sexual behaviour and other clinically relevant socio-demographic factors.

In the 18-month period before the study interview date, 192 individuals initiated HIV treatment, of whom 47.4 per cent were classified as late initiators (defined as having a CD4 cell count of below 200 cells/ μ L). The median time to treatment initiation after HIV diagnosis was three years. Seventy per cent of the total number of participants were male, 30 per cent were of Aboriginal ancestry and 35 per cent reported unstable housing. Just over half the sample had ever injected drugs and the same proportion had been incarcerated.

Researchers concluded that unstably-housed HIV-positive individuals may be at an increased risk of deferring initiation of antiretroviral treatment.

"It is imperative that we develop long-term solutions to meet the housing needs of unstably-housed HIV-positive individuals," said Samji, an epidemiologist at the BC-CfE. "Stable housing has been shown to significantly improve engagement in medical care and to reduce risk behaviour. Thus, it is a critical component of a multi-pronged public health strategy that is needed to improve treatment outcomes for people living with HIV and AIDS."

Changes in risk behaviour following HIV diagnosis and subsequent HAART initiation in men who have sex with men

Poster presented by Dr. Krisztina Vasarhelyi

This study showed that in the years immediately following the introduction of HAART to the world in 1996, HIV diagnosis had a significant impact on risk behaviour in the men who have sex with men (MSM) participating in the VANGUARD study. VANGUARD was one of the largest and longest running behavioural and HIV seroincident (refers to a cohort study that aims to measure HIV incidence in a population by monitoring that population and recording the number of new infections that occur) studies of young gay and bisexual men in North America.

The study found indicators of sero-sorting (the practice of using HIV status as a decision-making point in choosing sexual behaviour), strategic positioning and decreased risk behaviour with regular, but not with casual partners.

"Our study found no evidence that men who have sex with men engaged in more risk behaviour after the introduction of

HAART. As we move forward with Treatment as Prevention programs, monitoring risk behaviours will remain important so that we can design HAART expansion strategies that achieve the best results," said Dr. Vasarhelyi.

Evaluating the impact of "Treatment as Prevention" on reducing HIV transmission, using surveillance data

Oral presentation by Dr. Krisztina Vasarhelyi

Dr. Vasarhelyi presented a mathematical method for detecting the success of "Seek and Test" strategies by monitoring changes in the proportion of diagnosed infections – the indicator of success for a successful strategy. The method relies on surveillance data, allowing near real-time feedback on the impact of Seek and Test programs.

Dr. Vasarhelyi's team gauged the method for B.C. and the STOP HIV/AIDS pilot project and generated simulated surveillance data, which they used to demonstrate the utility of the method. The team will be able to apply this method to evaluate the impact of STOP HIV/AIDS as the first surveillance results from the pilot project become available.

What do combination HIV prevention programs look like for people who use drugs?

Dr. Kora DeBeck presented at this workshop

This workshop focused on the use of combined HIV prevention programs to reduce HIV transmission among people who inject drugs. "Well studied" interventions such as needle/syringe programs, drug dependence treatment, and antiretroviral therapy were examined.

Participants were staff of community-based HIV/AIDS organizations, and researchers and policy officials concerned with HIV among people who inject drugs. They described synergies among HIV prevention programs and emphasized the benefits of implementing combination approaches.

Oppressive criminal justice systems were repeatedly identified as barriers to the successful implementation of combination HIV prevention programs for people who inject drugs. The importance of integrating a human rights-based approach into HIV prevention responses was highlighted.



From left to right: BC-CfE researchers Kora DeBeck, Krisztina Vasarhelyi, Hasina Samji and Rachel McGovern made presentations on a variety of HIV/AIDS-related topics, including Treatment as Prevention at the IAS 2011 Rome conference.



Conversations at Rome

At the 2011 International AIDS Society (IAS) conference in Rome, Dr. Julio Montaner (right), director, BC-CfE discussed the success of Treatment as Prevention to date with Dr. Eric Goosby, United States Global AIDS Co-ordinator and head of the U.S. President's Emergency Plan for AIDS Relief (PEPFAR).

HIV therapies provide near normal lifespan in Africa



» A landmark study by the BC Centre for Excellence in HIV/AIDS (BC-CfE), the University of Ottawa and the University of British Columbia (UBC) shows that patients in Africa receiving combination antiretroviral therapy (cART) for HIV can expect to live a near normal lifespan.

The study, published in the prestigious *Annals of Internal Medicine*, is the first large-scale analysis of life expectancy outcomes in Africa for HIV patients on cART.

"The substantial life expectancy afforded by widespread access to cART underscores the fact that HIV diagnosis and treatment in resource-limited settings should no longer be considered a death sentence," said principal

investigator Dr. Edward Mills, associate researcher at the BC-CfE and Canada Research Chair in Global Health at University of Ottawa. "Instead, HIV-infected people should plan and prepare for a long and fulfilling life."

The authors believe that the study, conducted in Uganda, reflects the situation in many other settings in Africa, where simplified HIV/AIDS care in rural, semi-rural and urban settings is available.

"Our findings are further evidence that the global investment in HIV and AIDS programming is clearly working," said Dr. Mark Dybul, a study author who led the implementation of the multibillion-dollar U.S. President's Emergency Plan for AIDS Relief (PEPFAR) from 2006 to 2009. "Healthcare organizations – even in resource-poor settings – are providing services and therapies that offer important, life-saving benefits to people suffering from HIV."

The study analyzed a cohort of 22,315 individuals aged 14 or older, who initiated cART at The AIDS Support Organization (TASO) clinics between 2000 and 2009. In Uganda, life expectancy at birth is approximately 55 years and increases as individuals survive key milestones. Life expectancy at age 20 years for the overall study cohort on cART was an additional 26.7 years and at age 35 was an additional 27.9 years.

Males showed consistently lower life expectancy than females. Life expectancy at age 20 years was 19.1 years for males and 30.6 years for females, and at age 35 years was 22 years for males and 32.5 years for females. Men typically access care at a later stage, with more advanced disease, and have higher rates of mortality than females. "Men remain one of our huge challenges in terms of access to clinical services," said Mills.

The study found a strong association between baseline CD4 cell status and mortality when controlling for factors such as age, year of cART initiation and gender. Those who started cART earlier, at a higher CD4 cell count, lived longer.

Mills told *The Globe and Mail* that cART has three principal benefits:

- It keeps people from dying, so they can remain productive members of society
- It provides a normal life expectancy, allowing families to remain intact
- It makes those with HIV/AIDS far less likely to infect others, weakening the epidemic

As such, the study findings support the Treatment as Prevention strategy pioneered at the BC-CfE. The study was funded by the Canadian Institutes of Health Research (CIHR).

BC-CfE's Spring HIV/ARV Update: an educational forum on the latest developments in HIV/AIDS

The BC Centre for Excellence in HIV/AIDS (BC-CfE) sponsored the Spring HIV/Antiretroviral (ARV) Update on June 20 at the Sheraton Wall Centre Hotel in downtown Vancouver. More than 300 physicians, nurse practitioners, nurses, other healthcare providers and HIV community representatives attended this full-day educational event.

The program for this year's Update included presentations covering some of the latest developments in antiretroviral therapy, as well as key emerging concerns in the field of HIV/AIDS.

"At the BC-CfE, we continually strive to meet the HIV prevention and treatment goals for B.C., and knowledge transfer is one of the main ways we hope to do that," said

Dr. Julio Montaner, director of the BC-CfE. "Events such as the Spring HIV/ARV Update are perfect avenues to share the latest information with our B.C. colleagues in healthcare, which will assist them in providing the best treatment and care possible to their patients."

The event saw leading researchers from the BC-CfE and other local experts make presentations on varied topics related to HIV and AIDS, including: HIV testing; issues specific to HIV-positive women; mental illness, drugs and viral infection in the Downtown Eastside; and aging and HIV.

The event hosted Dr. Pablo Tebas from the University of Pennsylvania who presented on gene therapy approaches to treating HIV and bone disease in HIV-positive individuals.

Hon. Mary Polak, Minister of Aboriginal Relations and Reconciliation, attended the event and praised B.C.'s pivotal role in providing groundbreaking research and innovation that has led to life-saving solutions for people with HIV, and advanced the fight against the epidemic.

"Leading global health bodies such as the World Health Organization and UNAIDS are following our lead and supporting the Treatment as Prevention strategy, which was developed at the BC-CfE and proven here in British Columbia," said Minister Polak in her speech at the event.

She singled out B.C.'s STOP HIV/AIDS pilot project, which is based on BC-CfE's Treatment as Prevention strategy, as an example of the province's globally recognized leadership position in the expansion of HIV treatment and prevention.

"Through pilot projects such as STOP HIV/AIDS, our four-year initiative to improve access to HIV testing, treatment, and support services in British Columbia, B.C. is showing the world how to maximize the resources available today to successfully fight HIV and AIDS," said Minister Polak.

The Spring HIV/ARV Update was chaired by Dr. Patricia Daly, chief medical health officer and vice president, Public Health for Vancouver Coastal Health and Dr. Reka Gustafson, medical health officer and medical director of Communicable Disease Control for Vancouver Coastal Health.

The program for the event was developed by BC-CfE staff members – Drs. Marianne Harris and Silvia Guillemi. The event was accredited by the College of Family Physicians of Canada.



Hon. Mary Polak, Minister of Aboriginal Relations and Reconciliation at the Spring HIV/ARV Update

BC Centre for Excellence in HIV/AIDS

- > Improve the health of British Columbians with HIV through comprehensive research and treatment programs;
- > Develop cost-effective research and therapeutic protocols;
- > Provide educational support programs to health-care professionals;
- > Monitor the impact of HIV/AIDS on B.C. and conduct analyses of the effectiveness of HIV-related programs.

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E-mail: info@cfenet.ubc.ca

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