



First row L-R: Dr. Julio Montaner, Eric Harris, Dr. Zunyou Wu, Dr. Mark Hull, Dr. Mark Brockman; Second row L-R: Dr. John Gill, Dr. Chelsea Elwood, Dr. Chanson Brumme; Last row L-R: Dr. Zabrina Brumme, Dr. Alnoor Ramji, Dr. Philippa Hawley, Dr. Peter Phillips, Dr. David Harris

Spring HIV/ARV Update brings latest in HIV research to Vancouver from local and international speakers

The spring HIV/ARV Update brought expert presentations about scientific findings on hepatitis B and HIV co-infection, breastfeeding policies, HIV cure strategies, and more.

China's chief epidemiologist addresses the country's HIV epidemic

Dr. Zunyou Wu—Chief Epidemiologist, China Centre for Disease Control and Prevention (China CDC), and Director of Division of HIV Prevention, the National Centre for AIDS/STD Control/China CDC—was a featured speaker at the BC-CfE Spring HIV/ARV Update. He shared China's unique experiences in addressing the HIV and AIDS epidemic, presenting that an estimated 30% of people living with HIV in the country remain undiagnosed today despite a boost in testing efforts. China has ramped up testing efforts: over 240 million HIV tests were completed last year alone.

"While the seek and treat approach does work, the population size of China makes it more challenging to control the epidemic," said Dr. Wu. "China needs to do everything possible: education, condom promotion, destigmatizing those infected, among other measures."

China began collaborating with BC in 2009 to tackle its rising rates of HIV and was the first nation to formally announce its adoption of the BC-CfE-pioneered Treatment as Prevention® (TasP®) strategy in 2011.

Importance of addressing syndemics of HIV and hepatitis B

Recent studies show that 35% of patients are not receiving curative hepatitis B treatment in cases where they are co-infected with HIV.

Dr. Mark Hull, a researcher at the AIDS Research Program (a collaboration between St Paul's Hospital and University of British Columbia) spoke of his experience treating an estimated 7–10% of HIV patients who are co-infected with HIV and hepatitis B. Dr. Hull stressed the importance of addressing these syndemic infectious diseases, particularly as HIV has the effect of increased risk of cirrhosis among individuals co-infected with hepatitis B.

HIV and hepatitis B both require treatment over a patient's lifetime. Dr. Hull said we need "a system in place to ensure individuals are being appropriately treated for both viral infections, particularly as co-infection increases the risk of progressive liver disease and liver-related mortality."

Providing infant feeding support for pregnant women living with HIV

Dr. Chelsea Elwood, Clinical Assistant Professor in the Department of Obstetrics and Gynecology at UBC, and health care provider at Oak Tree Clinic, spoke about the challenges faced by her pregnant patients living with HIV when deciding whether to breastfeed their infants.

While HIV treatment can make the viral load undetectable and, therefore, untransmittable in blood and sexual fluids, breast milk can remain a vehicle for HIV transmission. Breastfeeding results in about 50% of new HIV perinatal transmissions worldwide, but little research is done in high-income countries where antiretroviral therapy is more accessible. In high-income countries where access to clean water

and formula is available, Dr. Elwood recommends formula feeding to eliminate the risk of breastfeeding transmission, with close prenatal and postnatal support to the mother and the family.

"What we have found is that every woman really wants the best outcome for her baby," said Dr. Elwood.

"We believe that the risk of perinatal transmission of HIV should be zero in the province of BC," continued Dr. Elwood. "We believe that hep B should be the same and we are working really hard to make HCV (hepatitis C virus) the same."

Target is now long-term HIV remission

Currently, an individual who is on sustained HIV treatment can achieve an undetectable viral load allowing their health and longevity to improve. However, when treatment is interrupted the virus can rebound—which is a barrier to an HIV cure or remission. Dr. Mark Brockman, BC-CfE Associate Researcher and Associate Professor in the SFU Faculty of Health Sciences explained scientists now know that HIV develops a latent (or dormant) viral reservoir.

Research continues to build on our knowledge of how the virus diversifies in the body and persists within this reservoir. The question remaining for achieving HIV cure or long-term remission is: "How can we disrupt this latent reservoir?" Dr. Brockman provided an update on potential therapies that could target and eliminate the viral reservoir, saying *in vivo* and *in vitro* studies have been promising. (continued on the back page)

» "Treatment as Prevention® was initially proposed by Dr. Julio Montaner, an intervention which has become an international strategy. China has followed the strategy and made good progress, with some challenges ahead."

— Dr. Zunyou Wu, Chief Epidemiologist, China CDC, and Director of Division of HIV Prevention, NCAIDS/China CDC



Dr. Zabrina Brumme, Director of the BC-CfE Laboratory, spoke to the use of the CRISPR-Cas9 targeted genome editing system as a tool in HIV research, including research towards an HIV cure.

Research into the use of gene editing technologies in HIV eradication is supported by a historic case of an HIV cure. A second and more recent possible case of HIV cure achieved through a bone marrow transplant from a donor with a naturally occurring mutation in the human CCR5 gene, rendered the resulting protein non-functional. CCR5 is necessary for HIV to enter cells in the body.

The HIV virus uses human proteins at every stage of its life cycle. Dr. Brumme explained how CRISPR-Cas9's

research use, knocking out certain proteins, could help identify which ones may be essential to the replication of HIV. Equipped with this knowledge, potential therapies and strategies could be developed to enhance host proteins, knock them out, or even excise the viral genome.

"There are many challenges to the CRISPR-Cas9 technology," said Dr. Brumme. "However, it is a powerful technology and easy to use...It is possible, one day in the future, we may see these technologies in the clinic. But we need to be careful, as it raises important ethical questions that will need to be addressed."

Watch the HIV/ARV update videos online: <http://bit.ly/ARVvideo>.

CONFERENCE

Highlights: BC-CfE Research at CAHR 2019 in Saskatoon!

In addition to leading a number of ancillary events, researchers from the BC-CfE presented important findings at this year's CAHR Conference in Saskatoon—including several Peer Research Associates offering a community perspective on studies. The 28th Annual Canadian Conference on HIV/AIDS Research (CAHR) is the premier gathering in Canada for those working in all disciplines of HIV/AIDS research, policymakers, persons living with HIV and other individuals committed to ending the pandemic. A full list of posters and presentations at CAHR 2019 is available on our website: <http://bit.ly/BCCfE-CAHR2019>.

CANOC update

Dr. Taylor McLinden, who was recently named Scientific and Quality Assurance Officer with the BC-CfE's Epidemiology and Population Health & Drug Treatment Programs, presented an update on the largest longitudinal multi-province study of people with HIV on antiretroviral therapy (ART) in Canada. CANOC is comprised of over 11,000 participants and the study has enlisted people living with HIV on antiretroviral therapy between 2000–2016. In the future, the study will leverage CANOC's large sample size, considerable duration of follow-up and geographic representation to generate novel evidence to improve the clinical care of people living with HIV.

Social support key to lowering treatment interruption

Avenues for social connectivity are increasingly important for people living with HIV, according to

research presented by Tim Wesseling, a Peer Research Associate with the BC-CfE SHAPE study. Previous research has not adequately evaluated how social support may improve clinical outcomes in addition to known psychosocial benefits. SHAPE investigates the relationship between social support and ART treatment interruptions (TIs) among people living with HIV in BC. Among those on ART in BC, social support is negatively associated with TIs. Since social support is integral to promoting social, emotional and physical well-being, the findings suggest considering and evaluating interventions that foster social support for achieving optimal ART adherence.

The impact of loneliness and stigma on older adults living with HIV

Half of individuals living with HIV who are on treatment in BC are aged 50 or older and similar trends are seen throughout North America. As BC-CfE Clinical Research Advisor Dr. Marianne Harris presented at CAHR, loneliness and stigma are common experiences for older adults with HIV. The associations between loneliness, stigma, cognition, and mental health are complex. While this analysis does not sort out "causal" relationships, the results support the fact HIV-related stigma and loneliness have negative consequences for cognition and emotional health. Interventions should be developed to engage people in socially meaningful activities and reduce the consequences of stigma.

EVENT

Community event highlighted harmful impacts of HIV non-disclosure laws

On June 2, 2019, a panel discussion and a Body Mapping art exhibition focused on the realities of HIV non-disclosure criminalization for women living with HIV in Canada. Expert and community panelists discussed the medical, legal, social and personal impacts of the current laws.

Body Maps created by women living with HIV, gave attendees an opportunity to bear witness to how women living with HIV perceive and respond to the consequences of criminalization of HIV non-disclosure. The art showcased the resilience and strength of women living with HIV in Canada.

Under current Canadian federal law, people living with HIV can face criminal charges for not sharing their HIV status with their sexual partners, even if they do not intend to transmit HIV, and even if no HIV transmission actually occurs.

In 2012, the Supreme Court of Canada ruled that people living with HIV must disclose their HIV status to a sexual partner before having sex unless they use condoms *and* have a low viral load (1,500 copies/ml or less) in order to have no realistic possibility of transmission. People who do not meet these criteria can potentially face a criminal charge of aggravated sexual assault if they do not tell their sexual partners that they have HIV.



HIV non-disclosure laws can contribute to stigma, which can be a barrier to accessing HIV testing, treatment and care. The made-in-BC **Treatment as Prevention**[®] strategy—providing earlier and free access to HIV testing and immediate, supported and sustained access to HIV treatment—is key to curbing HIV and ending AIDS.

Modern antiretroviral treatment stops HIV replication driving HIV to undetectable levels in biological fluids, including blood, semen and cervico-vaginal fluids. As a result, people with HIV on antiretroviral treatment do not transmit the virus to others.

Research from the CHIWOS study, led by the BC-CfE, found that 80% of women living with HIV in Canada have experienced violence in their lives.

Currently, in cases where a woman living with HIV has been sexually assaulted, she is still legally obligated to disclose her HIV status to the assaulter, regardless of how this may affect her safety.

In testimony on HIV non-disclosure criminalization provided to the House of Commons Standing Committee on Justice and Human Rights on May 14th, BC-CfE Research Scientist Dr. Kate Salters said: "Women have reported being threatened, assaulted, abandoned, shamed and 'outed' as living with HIV after disclosing their HIV status to sexual partners."

AWARDS

Awards and recognition for BC-CfE researchers



BC-CfE Research Assistants Natalie Kinloch and Jinny Choi

Natalie Kinloch, BC-CfE Student Research Assistant, was named a Vanier scholar for her work in HIV research and phylogenetics. Through research undertaken in the BC-CfE's Laboratory Program, Natalie is helping make advances towards a possible HIV cure. The prestigious Vanier Canada Graduate Scholarships program is designed to attract and retain world-class doctoral students by supporting those who demonstrate both leadership skills and a high standard of scholarly achievement in graduate studies. Congratulations, Natalie!

Congratulations to BC-CfE Clinical Testing Research Assistant Jinny Choi, who received the New Investigator Award at the 28th Annual Canadian Conference on HIV/AIDS Research (CAHR). At CAHR, Choi presented her work on "The impact of geographic location on HIV viral suppression and mortality among people who use injection drugs." She also spoke about the role of knowledge translation and community engagement in research.

LECTURES & EVENTS

Forefront Lecture

Title: Localized economic modeling to support the US' ambitious plan to 'End the HIV Epidemic' by 2030

Speaker: Dr. Bohdan Nosyk

Tuesday, June 11, 2019, 12–1PM

Cullen Lecture Hall, Providence Level 1, St. Paul's Hospital

HIV Care Rounds

Title: Double Trouble: Tuberculosis and HIV - What a local HIV care provider needs to know

Speaker: Dr. William Connors

Wednesday, June 26, 2019, 12–1PM

Conference Room 6, Providence Level 1, St. Paul's Hospital

For more information, contact us at Education@cfenet.ubc.ca or visit our website at <http://education.cfenet.ubc.ca>

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;
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- > Monitor the impact of HIV/AIDS on B.C. and conduct analyses of the effectiveness of HIV-related programs.

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