



Dr. Julio Montaner and Carl Vanderspek

The BC-CfE Mourns Carl P. Vanderspek

The BC Centre for Excellence in HIV/AIDS (BC-CfE) is mourning the passing of its dear friend and generous supporter Carl P. Vanderspek. Having achieved tremendous success in business, he sought out champions and causes whose success would have great impact and his support of the BC-CfE was central to this philosophy.

Many years ago, Carl met Dr. Julio Montaner, the BC-CfE's executive director and physician-in-chief. As Carl and Dr. Montaner's relationship grew, Carl became a key supporter for the projects and policies espoused by Dr. Montaner. Carl saw the promise of BC-CfE's **Treatment as Prevention**® not only for HIV/AIDS, but also for hepatitis C, mental illnesses and substance use. Putting his entrepreneurial skills to work, Carl sought to help motivate the bureaucracy, minimize the red tape, and avoid the interminable wait times that typically accompany the establishment of new innovative programs. In this regard, he played a central role in strategically advising Dr. Montaner in his quest, and most critically, in the establishment of a new clinical research and innovation centre in Vancouver's Downtown Eastside, known as the Hope to Health (H2H) Research and Innovation Complex.

Donald Mackenzie, a personal friend and director of Carl's foundation, the 625 Powell Street Foundation, described him as one of the most humble people you could ever meet, despite his incredible business successes. Donald shared how Carl would often say, "I do the easy work, I just write the cheques!" Not one

to ever seek the spotlight, Carl declined formal recognition for his support, but behind the scenes he enjoyed celebrating the success of those he supported.

Carl was very hands-on in overseeing the projects to which he was committed. At the H2H Complex, Carl ensured he had an office, so he could be on-site to monitor the extensive renovations required and the progress of the subsequent work.

He enjoyed frequently engaging with Dr. Montaner and his colleagues, to discuss the optimal layout for H2H and potential ways to optimize the wrap-around services offered at H2H to improve the lives of those living in Vancouver's Downtown Eastside. Carl was a big picture visionary, and a strategic thinker. His input, guidance and commitment were invaluable to the success of our efforts.

Carl was often frustrated with what he saw as the glacial pace of the system in helping communities most in need. He was committed to breaking down barriers and cutting through red tape to make sure projects got done and care delivered. He was a true man of action.

In Dr. Montaner, Carl had found a friend, a partner, and a cause to champion, to fight for, and to support. Dr. Montaner provided Carl the ideal opportunity to leave a lasting impact in Vancouver, in BC, and the world. A theme emerges when speaking to those closest to Carl, and it's his desire to leave the world a

better place, and for the improvements into which he poured his efforts to continue to flower and grow.

"Carl was a true friend, a wise counsel, and magnanimous supporter. He played a critical role in enabling us to make our dreams a reality. He will be dearly missed. However, we look forward to continuing to work productively with his 625 Powell Street Foundation to ensure we see the fruits of his efforts flourish at the Hope to Health Research and Innovation Complex for a long time to come", said Dr. Montaner.

Carl's desire was not that of a legacy, but instead to provide people and organizations with the tools they needed to do the great work he knew they could carry on. Carl's sentiment is nicely captured by a quote from the Dalai Lama, who said, "Just as ripples spread out when a single pebble is dropped into water, the actions of individuals can have far-reaching effects."

Carl P. Vanderspek was a man of great successes, few words and simple tastes. A man who could have exclusively spent his final years enjoying his time with his beloved wife Margaret, their family, his dog, and a wide-range of pass-times. However, beyond that, he was fully committed to support his preferred champions and their causes, as he believed by enabling great success it will spur on others to achieve success. We are forever indebted to Carl for his overwhelming generosity and his unwavering dedication to making the world a better place. We are confident that Carl's ripples will be felt wide and far.

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— BC-CfE Executive Director & Physician-in-Chief Dr. Julio Montaner



Virtual Journal Club examines role of supervised consumption sites in healthcare delivery

» The BC-CfE Virtual Journal Club met last month to discuss some of the positive impacts of supervised consumption sites. The discourse was led by Dr. Kate Salters, a research scientist with the BC-CfE’s Epidemiology and Population Health program, and supplemented by Christina Fulton, a BC-CfE peer research associate and former client of supervised consumption sites (SCS).

The journal article discussed is titled, “*It’s not just injecting drugs”: Supervised consumption sites and the social determinants of health*”.

As per the article, an estimated 15.6 million people globally inject drugs and about 16% of this population lives with HIV and just over half have the hepatitis C virus.

Furthermore, researchers found those who inject drugs are vulnerable to a range of social determinants of health inequities. An Australian study cited in the paper found that out of a group of about 900 people who inject drugs, 23% were homeless, 88% were unemployed, 54% had been in prison, and 18% had difficulties accessing needles and syringes in the past month. Violence and food insecurity were also common themes in their lives.

Locally, BC has been under a public health emergency due to the opioid-related overdose crisis since early 2016 and has seen the establishment of numerous SCS, including one run by the BC-CfE at its Hope to Health Complex on Powell Street. The COVID-19 pandemic has severely exacerbated the overdose crisis resulting in increased toxicity of street drugs, more people using drugs alone, and greater difficulty in accessing some health services.

The BC-CfE’s Supervised Consumption Site provides a safe and hygienic space for people to use their own drugs, access to sterile injection equipment and medical supervision and intervention if required. The BC-CfE’s SCS is part of a continuum of services at the Hope to

Health Complex that is staffed with an interdisciplinary team of physicians, nurses, counsellors, and peer navigators. The team provides “wrap-around” healthcare services, including offering safer pharmaceutical alternatives to the increasingly toxic supply of street drugs.

As Fulton explained, and as the paper discussed echoes, clients of SCS often feel the experience of care at the sites is just as important as the effectiveness in the delivery of quality healthcare. This means that for people who inject drugs, encountering negative experiences at SCS such as facing stigma or discrimination can lead to fewer visits or avoiding such services altogether.

With this knowledge, the staff at the SCS at Hope to Health work diligently to counter stigma and instead offer a refuge of acceptance. The site opened in October of 2020 with COVID-19 protocols in place and was able to benefit and learn from the experiences of the other SCS and overdose prevention sites in the Lower Mainland. As Dr. Salters said, “The SCS at H2H is more than just a facility where people can use safety and get supplies; it’s a place where people are offered respect, listened to, and given clinical care and nursing support if they need it.”

Furthermore, Dr. Salters highlighted five areas in which SCS positively impacted social determinants of health. These impacts are social connectedness and community, emotional support and stress reduction, safety and security, help with housing, and health service access and use.

Fulton, who co-led the journal club, has not used for more than five years and she credits SCS for helping her find a place of belonging and acceptance. “[A SCS] is a place to build relationships, to get understanding of addiction, homelessness, drug culture, and mental health issues that in mainstream settings usually go unnoticed,” said Fulton.

BC-CfE research on coronavirus evolution deepens understanding of viral mutations

» The BC-CfE continues to lead the way in COVID-19 research, with the latest published research on the topic coming from the Centre’s Molecular Epidemiology and Evolutionary Genetics Group.

The paper, which features contributions from almost all members of the group, focuses on evolutionary patterns among coronaviruses that have jumped from animal hosts into humans and is titled “*Variable routes to genomic and host adaptation among coronaviruses*”.

The collaborative effort was also aided by researchers with the Bioinformatics Programme at the University of British Columbia, UBC Department of Medicine, and funded by the Canadian Institutes of Health Research (CIHR).

The researchers analyzed over 48,000 genomes from across the coronavirus family for this study, collected from both animals and humans, providing a pan-coronavirus perspective on changes in viral genomes during jumps from animals to humans. “Viral colonization of a new host species provides opportunities for changes to arise in the viral genome and be selected for as the virus adapts to the new host environment.” says Vincent Montoya, a Research Associate at the BC-CfE and first author on the study.

Montoya also highlights that these changes in the viral genome could be favoured by natural selection if they give the virus a fitness advantage. For instance, by improving the binding affinity to host cell receptors for entry, improving replication efficiency or immune evasion, or any other phenotypic change that might increase the virus’ ability to make more copies of itself and transmit between hosts.

“A clear understanding of where, when, and how these changes in the virus genome occur following a jump into a new host species is useful for understanding the emergence of new viral variants of concern, vaccine design, public health responses to reduce the impact of viral transmission, and predicting future pandemics.” says Dr. Jeffrey Joy, Senior Scientist in the BC-CfE

Molecular Epidemiology and Evolutionary Genetics group and senior author on the study. In their study, the BC-CfE researchers sought to understand how these genomic changes happen in coronaviruses by analyzing all available virus genome sequences from all the known hosts of the seven known coronaviruses that have spread from animals into humans.

This analysis shows an inverse association between the number of sites in the viral genome under positive selection and the length of time the virus had been circulating in the human population – in other words, the longer a virus has been circulating in a species, the fewer evolutionary changes will be favorable. The ongoing accumulation of observable changes in the SARS-CoV-2 virus genome suggests that this virus is still in a period of divergent evolution as it adapts to its human host. Overall, the study’s results contribute to the global understanding of both coronavirus genomic adaptation following a host species jump and the evolutionary forces underlying the emergence of new viral variants.

Angela McLaughlin is a PhD student Research Assistant working with Dr. Joy, at the BC-CfE and the UBC Bioinformatics Programme. McLaughlin said, “Investigating evolutionary trends common among different coronaviruses that have successfully jumped into humans is important in order to better understand the trajectory of the SARS-CoV-2 pandemic in a wider context. This is not the first, nor will it be the last, time that a coronavirus has had the opportunity to jump into and transmit between humans. This study helps to illuminate where genetic changes are most likely to arise and be selected for in coronaviruses, which has vast repercussions for how we design vaccines, predict which mutations and lineages are concerning from a public health standpoint, and better prepare for the next pandemic.” She added that, “Our group is thankful for the opportunity to have collaborated on this project, and we are thankful for support from the BC-CfE, the CIHR 2019 Novel Coronavirus (COVID-19) Rapid Research Funding team grant, Genome Canada, and Genome BC.”

BC-CfE research provides real-world data on efficacy of generic cART



First introduced in the mid-1990s through the pioneering work of BC-CfE Executive Director and Physician-in-Chief Dr. Julio Montaner, combination antiretroviral therapy (cART) is a pillar of the **Treatment as Prevention®** strategy that has enabled people living with HIV to live longer and healthier lives and has dramatically reduced the risk of HIV transmission.

Despite their obvious benefits, the high cost of brand-name antiretrovirals reduces cART availability, especially in lower-income countries. In BC, cART is distributed at no cost to patients via the publicly funded BC-CfE Drug Treatment Program (DTP). To reduce costs to the program – thus allowing the BC-CfE to deliver a broader range of services to persons living with or at risk of acquiring HIV – the DTP began dispensing a generic efavirenz-emtricitabine-tenofovir DF (EFV-FTC-TDF) combination pill when it became available in April of 2018.

In a recently published study titled “*Untimed Efavirenz Drug Levels After Switching From Brand to Generic Formulations*,” Birgit Watson, Kieran Atkinson, and other members of the BC-CfE Laboratory’s Therapeutic Drug Monitoring team, used high-performance liquid chromatography and tandem mass spectrometry (HPLC-MS) to evaluate the rollout of the generic pill in BC.

The study’s senior author, Dr. Chanson Brumme, explains: “Health Canada’s quality standards for brand name and generic drugs are identical. Drug manufacturers must show that people absorb and metabolize the brand and generic products in the same way. However, these analyses are usually performed in volunteers without HIV. This means we have limited ‘real-world’ data on the suitability, efficacy, and safety of generic antiretrovirals in the people who benefit most from cART.”

This study was carried out with help from 99 consenting DTP participants who switched from brand name EFV-FTC-TDF to the generic equivalent. By measuring EFV concentrations in plasma samples originally collected for routine viral load testing, the researchers demonstrated that participants’ EFV concentrations remained essentially unchanged after switching drug formulations. This finding suggests that participants were getting the same benefit from the generic formulation. Indeed, all participants’ viral load maintained low or undetectable after switching, and no adverse events were reported.

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 BC and conduct analyses of the effectiveness of HIV-related programs.

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