

2020/2021

BCCDC Annual Research Report



THE UNIVERSITY OF BRITISH COLUMBIA



BC Centre for Disease Control
Provincial Health Services Authority



Image: BCCDC

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Message from the Director of Research



The past 18 months have presented those working in population and public health in British Columbia (BC) with herculean challenges, and the BC Centre for Disease Control (BCCDC) - along with the rest of the province - has had to rapidly adjust to meet them. To illustrate the scope of our applied research during this time, we are pleased to present the BCCDC's 2020/2021 Annual Report on Research.

Our organization has responded quickly and effectively to events over the past 18 months largely because of experienced and dedicated people. The BCCDC has welcomed, cultivated and benefited from collaborative relationships with an integrated network of academic, provincial and national partners. We pivoted to address the challenge of the pandemic only with considerable support from the Provincial Health Services Authority, Provincial Health Officer, Ministry of Health and health authority partners as well as strong research partnerships with academic institutions. We look forward to building on these enhanced relationships and tackling a broader spectrum of emerging public health needs in the future.

This Annual Research Report highlights the outstanding population and public health research activities undertaken by our members, trainees and staff during a difficult period. All data in this report reflects activities between April 1, 2020 and March 31, 2021.

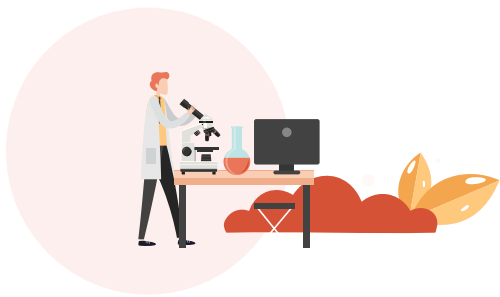
The report will present:

- How our research activities align with our 2019-2022 directional plan,
- Organizational statistics, e.g. publications, faculty members, funding,
- COVID-19-specific research highlights,
- Select non-COVID-19 research stories,
- Profiles of our five newest members, and
- Where we intend to go from here.

We would like to thank all members of the BCCDC, our government and community partners, and those working on the front lines of the COVID-19 and overdose crises in BC for their tireless work. We hope our activities over the past year have supported your efforts.

Sincerely,

David M. Patrick, MD, FRCPC, MHSc
Director of Research, BCCDC



BCCDC Directional Plan and Priorities: Our progress over the last year

Moving Forward, the BCCDC's current directional plan, outlines our goals of addressing specific public health challenges, improving our infrastructure and organizational capacity, and growing our research enterprise.

Since April 2020, the BCCDC has addressed many priorities despite the COVID-19 pandemic. Our development of molecular diagnostic testing for SARS-CoV-2; innovation of 'swish and spit' sample collection; research into how the virus moves through communities; resources on masking; and sequencing of the SARS-CoV-2 genome all contributed to our *Emerging Infectious Diseases* priority. We tackled *Vaccine Hesitancy and Immunization Coverage* through our critical work on COVID-19 vaccine effectiveness and safety, while addressing *Positive Mental Health* through research into people's experience of lockdown and school closure.

While our COVID-19 work was ongoing, the BCCDC also maintained focus on other critical priorities. We moved *Prevention of Substance Use Harms* forward by tracking overdoses and developing interventions for people who use drugs. Our research linking infant antibiotic use and childhood asthma is pointing to novel opportunities to address *Chronic Disease Prevention*, and we advanced *Climate Change* research through our assessment of wildfire smoke infiltration in health care settings. We tackled *Positive Mental Health* through the development of mental health resources for people accessing sexual health services.

Moving Forward also reinforced our commitment to *Advance Data Science, Surveillance and Analytics* and growing our *21st Century Public Health Laboratory*. The pandemic spurred us to develop real-time linked data capacity while bringing a new standard of data visualization to millions of British Columbians tuning in to the Provincial Health Officer's COVID-19 briefings. We also made immense strides towards our laboratory vision thanks to considerable investment in sequencing capacity and personnel.

Finally, the pervasive health inequities experienced by Indigenous populations in BC underscore our commitment to *Advancing Health Equity and Acting on Truth and Reconciliation*. Our research into COVID-19 misinformation and stigma led us and Indigenous partners to develop a number of resources specifically for Indigenous people. The BCCDC also advocated for First Nations communities to be prioritized for COVID-19 vaccine dissemination. This more equitable approach to pandemic management resulted in the First Nations Health Authority being the first to document community-level impact of the COVID-19 vaccine.

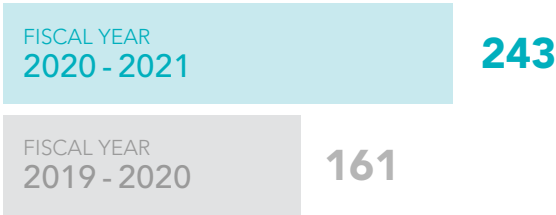
During this pandemic, BCCDC was well-placed to address questions related to the virology and epidemiology of COVID-19 and the effectiveness the vaccine; however, the pandemic also highlighted areas of need and potential growth. Progress has been made by assessing the societal impacts of the pandemic through the COVID-19 SPEAK Survey, and there are additional areas where further capacity could be developed, including knowledge synthesis, knowledge translation, research into behavioural science, public policy, the factors that affected individual and community risk of infection, and resilience to the societal impacts of the pandemic. As a result of the pandemic, opportunities for BCCDC to enable and support research throughout the public health system in British Columbia were highlighted.

Producing and Advancing Knowledge

Total Grants Awarded



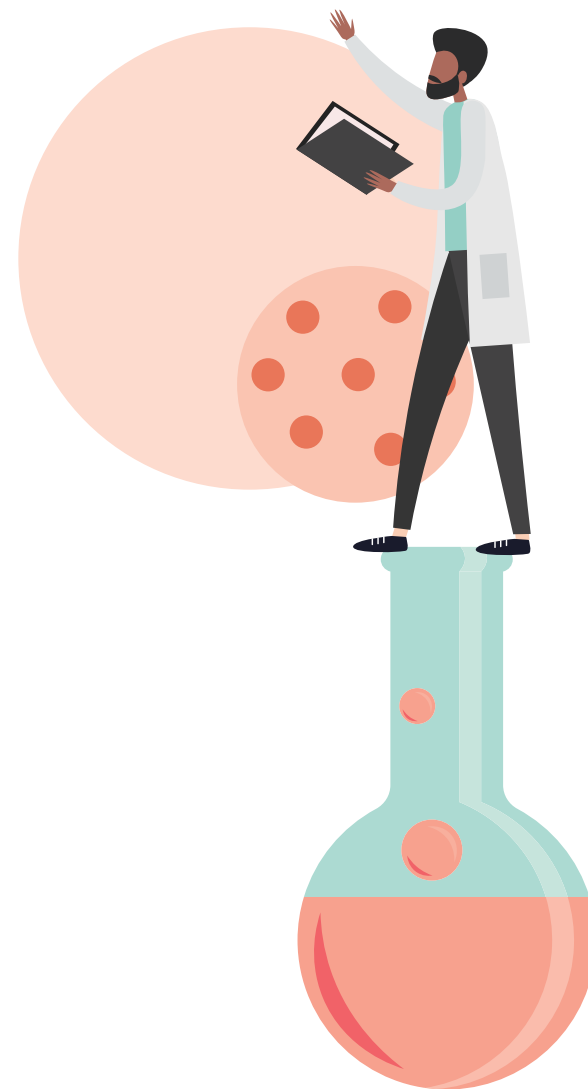
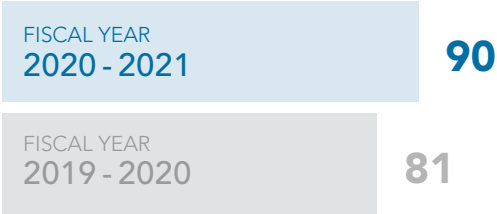
Publications



Researchers



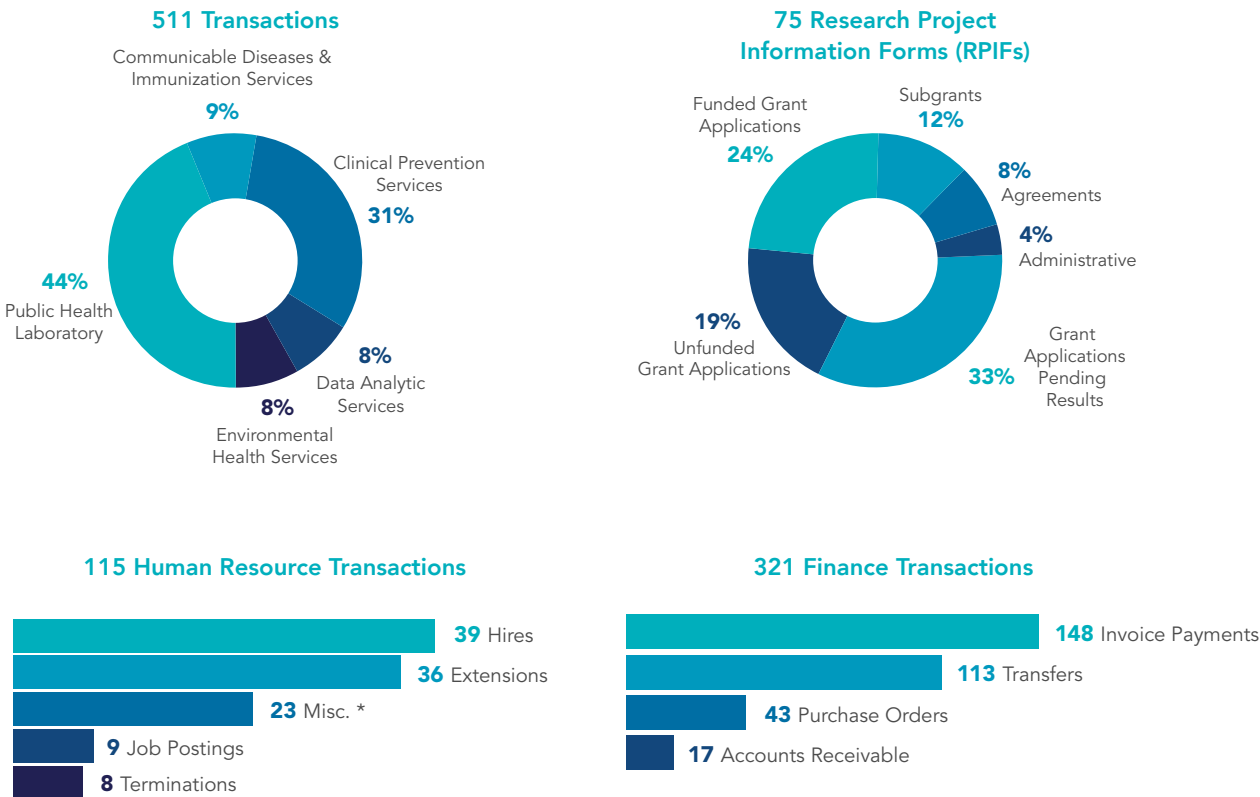
Trainees



Supporting Our Researchers

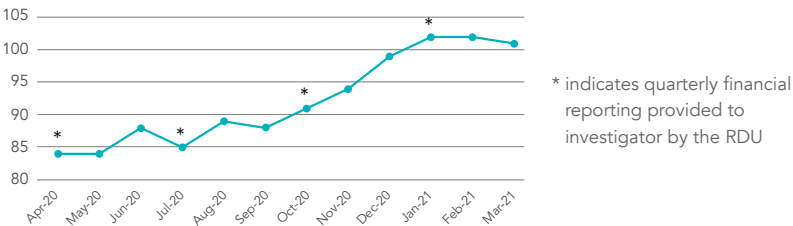
The UBC CDC Research Development Unit (RDU) is an administrative unit that supports research activities at BCCDC. This includes Research Funding (facilitating grant applications and agreements with other institutions), Finance (purchasing equipment, processing invoices for goods and services, transferring funds) and Human Resources (hiring, extensions, terminations, creating job postings).

In 2020-21, UBC CDC Research Development Unit Processed:



* Misc includes transfers, FTE and pay rate changes, etc.

Number of Active UBC-CDC Research Accounts



Supporting Our Researchers (continued)

BCCDC Research Week

Although we could not meet together in person, BCCDC Research Week 2020 was a great success as a virtual event. We featured a record number of presentations (56 in total), including keynote talks from Dr. Réka Gustafson (BCCDC’s role in the Provincial Pandemic Response: Contributions, Challenges and Opportunities) and Dr. Patrick Tang (Pandemic 201: Lessons from a global epidemic and two pandemics). While research on COVID-19 took centre stage, we were also pleased to showcase many other fields of research, including communicable diseases; overdose and harm reduction; and other topics of interest in population and public health. Across three days of sessions, the presentations attracted over 850 views. In a post-event survey, a majority of respondents agreed that the sessions were engaging, encouraged collaboration, and allowed them to learn from their colleagues.

BCCDC Public Health Grand Rounds

BCCDC Public Health Grand Rounds are weekly presentations from researchers based at BCCDC and other public health institutions in British Columbia. They are intended to encourage new ways of thinking, introduce new or update older ideas, and to generate discussion around important public health issues. BCCDC Grand Rounds reached a wider audience in 2020-21 as they were distributed virtually throughout BC and other provinces, and featured multiple talks with cutting edge research regarding SAR-CoV-2 and COVID-19. BCCDC Grand Rounds is a College of Physicians and Surgeons of Canada CME accredited activity.

28
Grand Rounds
Presentations

129
Average views
per presentation

3600+
Total views for
all presentations

Grand Rounds Presentations (2020-2021)
COVID-19 Guidelines for Testing L. Hoang & V. Yuen
How safe is re-opening? Real-time modelling and resurgence risk in COVID-19 & Mathematical models for COVID-19 C. Colijn & D. Coombs
CANCOVID-Preg: Canadian COVID-19 in Pregnancy Surveillance - Epidemiology, Maternal and Infant Outcomes D. Money
Where are we with COVID-19 serology testing in BC? M. Morshed, V. Barakauskas & J. Simons
Angiotensin-converting enzyme 2 (ACE2) expression in the nasopharyngeal epithelium of SARS-CoV-2 patients D. Twa & K. Kuchinski
Applications of viral genomics for COVID-19 in BC R. Harrigan & N. Prystajacky

Supporting Our Researchers (continued)

Grand Rounds presentations (continued)
Vancouver Coastal Health COVID-19 Response in Long-Term Care A. Hayden & M. Schwandt
Mitigating the impact of COVID-19 on marginalized people: The ‘Accelerating SARS-CoV-2 Seroprevalence Surveys Through Dried Blood Spots’ (ASSESS-DBS) Study S. Bartlett & M. Morshed
When will we have a COVID-19 vaccine? M. Sadarangani & D. Coombs
BC COVID-19 Population Health Survey – Preliminary Results E. Demlow & M. Oakey
Tracking SARS-CoV-2 in Australia A. Gonçalves da Silva
Impact of school closures on learning, child and family well-being T. Corneil, N. Dove, J. Wong, Q. Doan & C. Docking
Unintended Consequences of the COVID-19 Response J. Wong & B. Emerson
Is ethanol in kombucha of concern or is it a KALAMITea L. McIntyre & S.S. Jang
COVID-19: Treating disease, and figuring out what works S. Murthy
Applications of genomic epidemiology of SARS-CoV-2 in BC L. Hoang & N. Prystajacky
ACE2 – from discovery to the centre of a pandemic J. Penninger
Host Mediator Modulation in COVID-19 J. Russell
Preclinical studies of a protein subunit vaccine for COVID-19 R. Brunham
Understanding the uses and limitations of ventilation and air cleaning in COVID-19-risk mitigation J. O’Keeffe & A. Eykelbosh
Respiratory and patient reported outcomes after hospitalisation with COVID-19 and implications for follow-up A. Wong & A. Shah
Second Dose Deferral to Extend COVID-19 Vaccine Coverage: A Review of the Evidence D. Skowronski
LGBTQ2 Equity through Public Health Policy and Practice T. Salway
The effect of vaccination against pertussis during pregnancy on infants’ antibody responses to primary and booster vaccinations B. Abu-Raya
Catalyzing upstream mental health promotion and prevention through the development of the Youth Development Instrument H. Samji & M. Guhn
Tracking and understanding BC’s chronic disease and risk and protective factors data & Indicators of Multimorbidity for Chronic Disease Surveillance K. Smolina & D. Rasali
Public Health Intelligence for Zero Impact P. Abdelmalik
The Changing Landscape of SARS-CoV-2 Variants in BC J. Tyson & C. Hogan

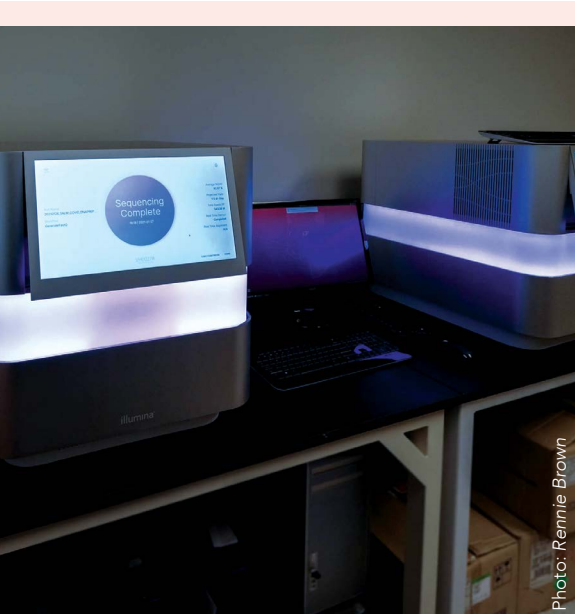
Role of BCCDC Research in COVID-19 Response



COVID-19 Early Diagnostics and Gargle Testing

Lead: Dr. Mel Krajden, Medical Director, BCCDC Public Health Laboratory

Dr. Mel Krajden and the BCCDC Public Health Laboratory (PHL) initiated the development of a [SARS-CoV-2 diagnostic test](#) within a few days after the viral sequence was published. The team's quick work meant that British Columbia was the first province to secure local COVID-19 diagnostic testing. The PHL was also instrumental in developing the [gargle test](#) as an alternative to nasopharyngeal sample collection. The gargle test enabled school-aged children to swish and spit to obtain their sample, making collection more comfortable for them, and reducing pressure on the nose swab supply chain.

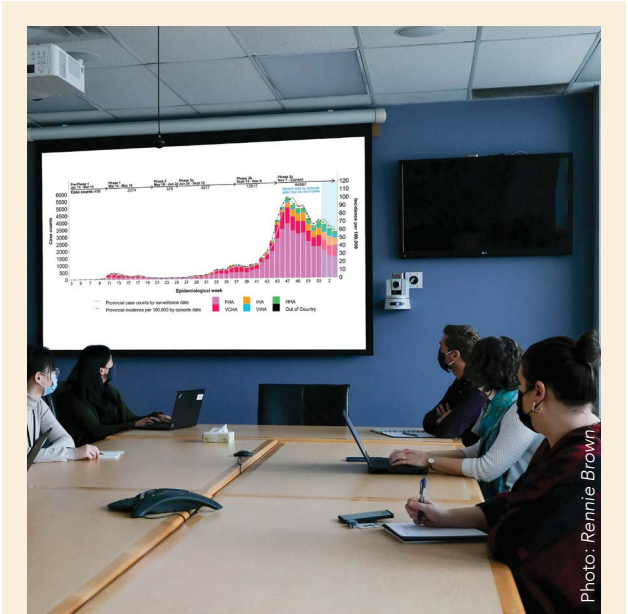


Sequencing the SARS-CoV-2 Virus

Lead: Dr. Natalie Prystajek, Program Head, BCCDC Public Health Laboratory Environmental Microbiology Program

On the day British Columbia saw its first case of COVID-19, Dr. Natalie Prystajek's team received funding from Genome BC to begin sequencing the SARS-CoV-2 virus. Sequencing was initially conducted for research purposes, but it quickly evolved into a routine public health service as the research team provided important data to support policy decisions. Sequencing provided evidence that many of our early cases were imported from the USA and Iran rather than China, contributing to a better understanding of global spread. Sequencing later showed that the majority of COVID-19 cases in school aged children and school staff was acquired in the community and supported keeping schools open in BC. Gene sequencing is now used to understand outbreaks, transmission dynamics, and the emergence of COVID-19 variants.

Role of BCCDC Research in COVID-19 Response (continued)



Tracking COVID-19 Through Data

Lead: Dr. Naveed Janjua, Executive Director, Data and Analytic Services, BCCDC

With other provincial partners, Dr. Naveed Janjua led the development of the BC COVID-19 Cohort (BCC19C), a surveillance platform that integrates COVID-19 data from British Columbia residents (e.g. laboratory tests) with their provincial administrative data (e.g. hospital visits). BCCDC working groups were established to investigate different aspects of COVID-19, including risk factors for severe outcomes, vaccination effectiveness and safety, socio-economic disparities and the intersection between the disease and the overdose epidemic. This platform has been leveraged by public health officials to make critical decisions, like identifying higher risk populations for vaccine prioritization.



COVID-19 Vaccine Effectiveness

Lead: Dr. Danuta Skowronski, Lead, BCCDC Influenza and Emerging Respiratory Pathogens Team

By re-analyzing publicly-available data from a randomized controlled trial, the research team [published findings](#) in the New England Journal of Medicine that showed one dose of the mRNA vaccine was over 90% protective after a two week wait period. To further check these findings, the team used [real-world surveillance data](#) from long-term care facility residents and health care workers that also showed substantial protection from a single dose. The research team [presented its analyses broadly](#), including to provincial and national committees, and provided evidence for the National Advisory Committee on Immunization's [decision](#) to recommend extending the interval between doses.

Role of BCCDC Research in COVID-19 Response (continued)



Photo: Michael Donoghue

First SARS-CoV-2 Seroprevalence Study

Lead: Dr. Danuta Skowronski, Lead, BCCDC Influenza and Emerging Respiratory Pathogens Team

In March 2020, the research team rapidly adapted its established emerging pathogen protocols to conduct the first series of sero-surveys (blood analysis) for SARS-CoV-2 antibodies using anonymized samples from LifeLabs. Each sero-survey snapshot included up to 2,000 patients of all ages within Greater Vancouver, where COVID-19 rates were expected to be highest. The results demonstrated that **less than 1% of British Columbians had been infected** with the COVID-19 virus by the end of spring 2020. This work helped public health officials validate their health measures and suppress COVID-19 through the winter and spring 2020 period. Since then, two more sero-snapshots have been taken, and more are planned.

Role of BCCDC Research in COVID-19 Response (continued)

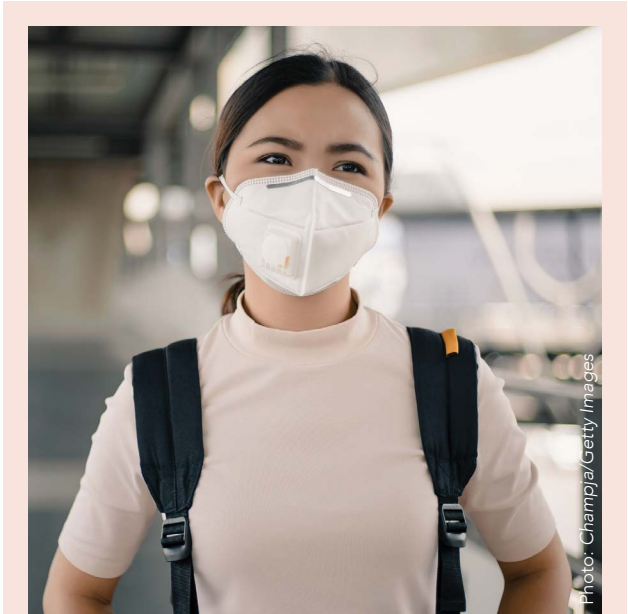


Photo: Champa/Getty Images

Masking During COVID-19

Lead: Dr. Juliette O’Keeffe, Environmental Health Knowledge Translation Scientist, National Collaborating Centre for Environmental Health, BCCDC; and Leela Steiner, Environmental Health Knowledge Translation Scientist, BCCDC Environmental Health Services

When, where, and what types of masks should be worn - and by whom - has been a constant topic of debate during the COVID-19 pandemic. The research team conducted a rapid literature review on the effectiveness of masks in reducing SARS-CoV-2 transmission, informing the development of **Masking During the COVID-19 Pandemic**, a guidance document for public health authorities. As new evidence emerged, the team developed a number of accessible web resources, including the **masks page** on the BCCDC website, and a primer on the **differences between masks**. Researchers and staff were invited to brief public agencies on their findings, while also advising community groups like schools and sports clubs.

COVID-19 Misinformation




Photo: BCCDC

Lead: Katie Fenn, Director, Quality, Safety and Accreditation, BCCDC; Harlan Pruden, Indigenous Knowledge Translation Lead at BCCDC Chee Mamuk; and Dr. Emily Rempel, BCCDC Knowledge Translation Lead.

In British Columbia, the COVID-19 pandemic has been characterized by a misinformation ‘infodemic’. The research team surveyed 3,000 British Columbian residents - including sizable Indigenous, South Asian and Chinese populations - to understand their knowledge, attitudes and behaviours related to **COVID-19 misinformation**. This work showed that these communities experience a greater burden of COVID-19 stigma. To address this, the team released a **COVID-19 Language Guide** which recommends inclusive language for written and digital COVID-19 content. The survey also resulted in the formation of the COVID-19 Indigenous Knowledge Translation Working Group, which developed **resources** to help Indigenous communities learn about COVID-19 in an accessible way.



COVID-19 SPEAK Survey

Lead: Dr. Jat Sandhu, Senior Executive Director, Innovation, Partnerships and Population Public Health Management, BCCDC; and Dr. Réka Gustafson, Vice-President, Public Health and Wellness, PHSA and Deputy Provincial Health Officer

In May 2020, the research team released the COVID-19 SPEAK Survey, a population health survey that gathered pandemic-related experiences of British Columbians. The survey was a tremendous success, garnering almost 400,000 responses. Results indicated that young people were most likely to lose their job, while households with young children reported extreme stress, sleeping less, and consuming more alcohol. Parents also said their children experienced impaired learning and worsening mental health. People from some visible minority backgrounds also experienced disproportionate adverse effects. Results helped inform public health measures, including return to in-school learning. A second round of the survey, released spring 2021, received 200,000 responses, and results from both rounds are available to the public on a [virtual dashboard](#).

“ In public health, we have a responsibility to monitor the effects and unintended consequences of the pandemic on the health and well-being of individuals, families, and communities in B.C. ”

Dr. Réka Gustafson



Wildfire Smoke Exposure in Healthcare Buildings

Lead: Dr. Sarah Henderson, BCCDC Scientific Director in Environmental Health Services

Following severe wildfire seasons in British Columbia (BC) in 2017 and 2018, researchers in BC installed air quality sensors in a healthcare setting to determine how much wildfire smoke infiltrated the building during an extreme wildfire smoke event.

Previous research has shown that wildfire smoke of PM_{2.5} (particles of 2.5 microns in diameter or less) is a dangerous air pollutant detrimental to human health, particularly for those individuals with underlying health conditions.

The research team, led by Vancouver Coastal Health and including Dr. Sarah Henderson, installed low-cost PM_{2.5} air quality sensors at the GF Strong Rehabilitation Centre (GF Strong) in August 2020 to evaluate how these small outdoor particles infiltrated the building. Two weeks later, dense smoke was transported into southern BC from severe wildfires along the west coast of the United States.

On typical days, the average PM_{2.5} concentration outside of GF Strong was approximately 8 µg/m3, and was less

than 3 µg/m3 inside. The average infiltration coefficient was 30%. During the smoke episode, the average PM_{2.5} concentration was about 60 µg/m3 outside and 25 µg/m3 inside, while the average infiltration coefficient was 40%. The main lobby experienced the highest smoke infiltration and indoor concentrations, whereas a fourth floor office had the lowest. In British Columbia the 24-hour air quality objective for PM_{2.5} is 25 µg/m3, and there were days inside GF Strong when concentrations were considerably higher than this benchmark.

The results demonstrate that installing low cost air sensors in healthcare settings can help us to understand the exposures of potential susceptible patient populations.

All the analyses for this project were completed by two UBC undergraduate co-op students, Phuong Nguyen and Nika Martinussen. Through this project, both students developed a keen interest in the application of data science to public health and gained valuable experience in R, a language for statistical computing and graphics.



Photo: Eric Sanderson

Interventions for Harm Reduction in British Columbia

Lead: Dr. Jane Buxton, Physician Epidemiologist and BCCDC Medical Lead for Harm Reduction

Research into harm reduction in British Columbia has resulted in prevention services, provision of supplies for clients, and additional research funding to support the needs of people who use drugs.

The [British Columbia Harm Reduction Client Survey \(HRCS\)](#) is completed by adult clients at harm reduction supply distribution sites across the province. The HRCS is an annual survey¹ that collects information about drug use, perceived stigma, and accessibility of harm reduction services. Dr. Jane Buxton has led this research since its inception in 2012.

Since the beginning of the survey, results have identified emerging trends such as the increasing use of methamphetamine, poly-substance use, knowingly using fentanyl, and smoking opioids as the preferred route of use. The survey has also been used to:

- Evaluate programs, like the uptake of take-home naloxone;

¹ Except 2016 and 2017

- Respond to timely concerns, like the reasons for using substances alone, and
- Identify the level of clients' knowledge of the *Good Samaritan Drug Overdose Act*.

The latest HRCS results led to a number of interventions in the reporting period. The HRCS identified that more people are smoking drugs than injecting them, which led to the BC Ministry of Mental Health and Addictions providing funding support for inhalation overdose prevention services, including smoking supplies such as pipes and foils, and for research funding to explore the reasons behind people smoking opioids instead of injecting them. Further, the HRCS noted that many clients were unaware of the *Good Samaritan Drug Overdose Act*, resulting in research partners like the RCMP implementing knowledge translation initiatives with people who use drugs.

In fiscal year 2020/2021, eight trainees participated in this work, including two PhD students, one Masters student, two resident physicians, and three medical students.

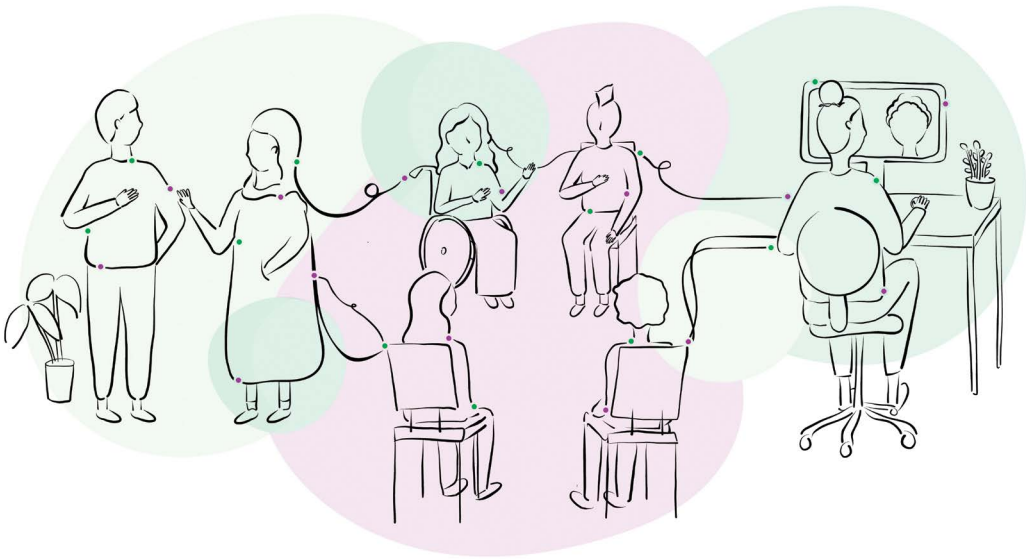


Image: Designs That Cell

Addressing Anxiety in People Accessing Sexual Health Services

Lead: Dr. Travis Salway, Affiliated Researcher in the BCCDC Clinical Prevention Services division

Mental health concerns are common for people accessing sexual health services. However, many clients do not have access to mental health care. Dr. Travis Salway led the development of mental health resources for people accessing sexual health services.

The research team used data from the [SmartSexResource](#) – an anonymous, [real-time chat service](#) monitored by BCCDC nurses – to determine how users expressed their mental health concerns, and the nurses' responses to them. The research team used inductive thematic analysis to characterize a purposive sample of 28 chat discussions that included references to anxiety or worry. Any potentially identifying information was removed prior to analysis. These transcripts were contrasted to a random sample of 25 chats without references to anxiety.

The team found that anxiety about sexual health was common among chat users. Although mental health concerns were broadly related to sexual health, many were specifically related to HIV, including its transmission risk, symptoms, and testing.

Notably, these concerns were often not alleviated by sexual health information or additional testing,

suggesting that some chat users may benefit from other types of supports, including mental health interventions. As a result of these findings, the research team developed two resources:

[Supporting and addressing anxiety in sexual health care:](#) A resource for providers was developed in concert with sexual health professionals. It offers service providers information about sexual health-related anxiety as well as effective strategies to address it.

[MindMapBC:](#) The team also developed an online database of mental health resources for clients accessing sexual health services. *MindMapBC* reduces barriers by connecting clients with low-cost and accessible mental health supports, all of which accept self-referrals, and many of which are LGBTQ2+-affirming. Due to COVID-19, the team highlighted remote-access services, and in the future, the team hopes to expand the reach of *MindMapBC* to include more services outside the Lower Mainland.

Four trainees participated in this work, including three Masters of Public Health students and one Bachelor of Science student. This work was co-led by Sarah Watt, MPH, Research Coordinator.

Other BCCDC Priorities (continued)



Photo: Mikumi/Getty Images

Reducing Antibiotic Use in Infants Prevents Childhood Asthma by Protecting Diversity of the Gut Microflora

Lead: Dr. David Patrick, BCCDC Director of Research and medical epidemiology lead for antimicrobial resistance

Researchers have linked a recent decrease in the incidence of childhood asthma with a reduction in antibiotic prescriptions.

The research team, led by Dr. David Patrick and Dr. Stuart Turvey from BC Children’s Hospital, concluded that the downward trend of childhood asthma diagnoses since 2000 could be attributed to preserving a diverse gut microflora, by avoiding the negative effects of antibiotics.

The study, published in *The Lancet Respiratory Medicine*, looked at population-level data from 4.7 million British Columbians and individual level data from 2,644 children for their rates of childhood asthma diagnoses and of antibiotic prescriptions as infants. The study team also reviewed 917 fecal samples of infants to determine how the diversity of their gut microflora related to antibiotic prescriptions and asthma incidence.

The findings were stunning. Asthma incidence in children had decreased 26% between 2000 and 2014 in association

with more prudent antibiotic prescribing in infancy.

And with every 10% decrease in antibiotic prescribing, asthma rates fall by 24%. The team also found that the more courses of antibiotics an infant was prescribed, the higher the likelihood they would be diagnosed with asthma by age five.

The explanation is thought to reside with the gut microflora. Antibiotic prescriptions in infancy were found to decrease its diversity, and lower diversity was associated with an increased risk of asthma at age five.

The research team is now conducting a large retrospective cohort study to broaden and strengthen these observations. It is also developing a “business case” for community antibiotic stewardship (CAS). CAS was already a health priority because it slows down antibiotic resistance and is cost saving. If it also reduces childhood asthma and allergy, every jurisdiction in the world should consider mounting a program.

New People

Réka Gustafson MD, FRCPC, MSc, MHSc

Dr. Réka Gustafson is the PHSA Vice President, Public Health and Wellness and Deputy Provincial Health Officer and provides leadership to the BCCDC. In addition, she is a Clinical Associate Professor at the UBC School of Population and Public Health. Dr. Gustafson leads the integration of population and public health promotion, planning and prevention across PHSA’s clinical programs. As Deputy Provincial Health Officer, she is responsible for the delegated functions, duties and activities carried out under the Public Health Act. Dr. Gustafson completed her Master of Science, Master of Health Science and MD degrees at UBC. She holds a fellowship in Public Health and Preventative Medicine and certification in Family Medicine. Before her current position, she practiced public health as a Medical Health Officer in Vancouver Coastal Health for over fifteen years.



Photo: Juan Solorzano

Catherine Hogan MD, FRCPC, MSc, DTM&H

Dr. Catherine Hogan is a full time Medical Microbiologist at the BCCDC Public Health Laboratory. She recently completed her post-doctoral training at Stanford University, where she developed, optimized, and improved diagnostic methods for infectious diseases. During this time, Dr. Hogan led a multidisciplinary team that completed proof-of-concept work demonstrating the successful adaptation of a novel and universal metabolomics method for infectious diseases diagnostics. She has been active in investigating diagnostic aspects of the COVID-19 pandemic, ranging from sample pooling for screening, large-scale testing of health care workers, and identification of prognostic markers of clinical severity. Her work has been recognized through several awards including the Infectious Diseases Society of America, and the Association of Medical Microbiology and Infectious Disease Canada. Dr. Hogan serves as associate editor for the Journal of Clinical Virology. She has also been a successful recipient of a Michael Smith Foundation for Health Research Health Professional-Investigator award.



Photo: Michael Donoghue

New People (continued)

Photo: Rennie Brown



Geoff McKee *MD, MPH*

Dr. Geoff McKee is a public health physician and the Medical Director of Population and Public Health at the BCCDC, focusing on prevention of chronic disease and injury through supporting health promotion and healthy public policy. He is also a clinical instructor at the UBC School of Population & Public Health and a research advisor for the UBC Public Health and Preventative Medicine Residency Program.

Dr. McKee’s interest is in applied public health research related to the use of administrative and survey derived data to assess the health of the population and inform public policy. Dr. McKee completed his Medical Degree, Master of Public Health and specialty training in Public Health and Preventative Medicine all at the University of British Columbia. Before his current position, he worked as a Medical Health Officer at Vancouver Coastal Health, providing support for the Coastal Rural region, Population Health, Indigenous Health and Public Health Surveillance Unit.

Photo: Rennie Brown



Jat Sandhu *MBA, PhD*

Dr. Jat Sandhu is the Senior Executive Director, Innovation, Partnerships and Population Public Health Management at BCCDC. Additionally, he is a Clinical Associate Professor with the UBC School of Population and Public Health and an Adjunct Professor with the SFU Faculty of Health Sciences.

In his role, he oversees a portfolio including strategic planning and implementation; data analytic services; public health information; governance; communications and knowledge translation; stakeholder management and collaborative partnerships; and sustainability of strategic and transformative population health initiatives.

Dr. Sandhu completed his MBA from the Imperial College of Science, Technology and Medicine Business School in England, and possesses a PhD in Epidemiology from the University of Bristol. Prior to joining his current position, his experiences have encompassed the British Military Hospital Pathology; WHO regional training centre for Medical Education in Sydney, Australia; the Australian Red Cross; the Provincial Laboratory for Public Health in Alberta; and various others.

New People (continued)

Photo: Michael Donoghue



John R. Tyson *PhD*

Dr. John R Tyson is a Senior Scientist for Wet Lab Genomics at the BCCDC Public Health Laboratory. For over a decade, he worked as a UBC Research Associate, utilizing a broad array of molecular techniques, including molecular DNA cloning, RT-PCR, Sanger and Next-generation sequencing methods in biology research. Dr. Tyson is recognized internationally for his leadership and contributions to the development and applications of Oxford Nanopore technologies. Over the last year in collaboration with local and international colleges he has helped developed cost effective, and widely adopted, SARS-CoV-2 sequencing methods (ARTIC network amplicon sequencing). His work has continued within the BCCDC on tracking and characterizing the genetic drift observed in the SARS-CoV-2 genome lineages here in BC and the emergence of variants of concern (VoC).



BCCDC Directional Plan and Priorities:

Where we want to go from here



Photo: Sasistock/Getty Images

In *Moving Forward*, we wrote, “It is wise to note that if history is any guide, there will be further surprises and challenges in the years to come.” Just weeks after the BCCDC released our directional plan, our community confronted the beginning of a global pandemic. This event, combined with other public health emergencies in British Columbia like the overdose crisis, has challenged population and public health like never before.

COVID-19 has clearly shown how the ripples from one emerging infectious disease can affect the entirety of our research, practice and operations. It has demonstrated that the BCCDC has the right people thinking about the right public health issues in British Columbia. It has also undoubtedly highlighted that our organization must remain nimble and flexible as we move into the future, so that we are equally well-positioned to address the next public health crisis.

The pandemic has also underscored the need for the BCCDC to increase our capacity. First, we need to enhance our public health research so we can more effectively support on-the-ground public health practice when it matters. Second, we need to continue building on our achievements in data science to ensure they are maintained.

Recently announced and future investment in the BCCDC and in the BCCDC Foundation for Public Health should make it possible for us to reach these goals while also broadening our base of expertise in vital areas such as health economics, mathematical modelling, and population and mental health.

We have done a lot, but we can do more. To this end, the BCCDC will take steps to renew our directional plan, increase our capacity, and continue protecting the health and wellness of British Columbians.

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