

# **BC COVID-19**

STRATEGIC RESEARCH  
ADVISORY COMMITTEE

## **BC COVID-19 Strategic Research Framework: An Evolving Guide for Decision-Makers and Researchers**

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## BC COVID-19 Strategic Research Advisory Committee

The BC COVID-19 Strategic Research Advisory Committee (SRAC) has been established to serve as a bridge between the Provincial Health Officer, government decision-makers and the health research community in BC in the specific area of COVID-19 research. The all-of-government response to COVID-19 is coordinated under the Health Emergency Coordination Centre (HECC) in BC and tied directly to the Provincial Health Officer and Cabinet.

Supported by the Michael Smith Foundation for Health Research, SRAC serves to provide coherent strategic alignment between the Provincial Health Officer, HECC/government and the BC research community. This framework is intended to aid that alignment and will evolve as the pandemic unfolds. It will be based on input and feedback from a wide variety of stakeholders. A key goal is to prioritize high quality research that will help to control, mitigate and eliminate the harmful effects of COVID-19 related disease and their impact on the people of BC. In addition, research into identifying and learning from the positive outcomes of interventions and adaptations will be encouraged. To meet this goal, this framework provides examples of research questions to aid with short, intermediate and longer-term management of the pandemic.

### Background

Public health is charged with extraordinary responsibilities in this time of pandemic. Rapid decision-making is required, often in the absence of complete information. Although evidence can be mobilized from existing literature and from information as it emerges globally, public health actions are necessarily specific to the needs of our communities. BC researchers are being called upon to provide, synthesize and mobilize evidence for actions leading to the control of the SARS-CoV-2 virus, the management of those infected, and the short and long-term impacts of the pandemic. This framework is intended to support the prioritization, coordination and acceleration of these efforts in BC. In the setting of massive international and national investments in research with direct applicability to many of the basic epidemiological and medical questions, this framework places strong emphasis on meeting BC-specific needs and enhancing BC-specific research strengths to serve our population and contribute to national and global efforts.

The health research ecosystem in BC crosses numerous sectors and disciplines. It is similarly enabled by numerous supports including but not limited to universities, regional health authorities, funding agencies, foundations, life sciences industry, and government.

At the date of this writing, BC researchers have attracted over \$9M in peer reviewed research funding. An inventory of active projects is being assembled by the BC Academic Health Science Network (BC AHSN) at: <https://bcahsn.ca/covid-19-response/inventory/>

## Enabling responsive research

### *Principles and assumptions:*

- Research efforts should build on BC strengths as a component of the national and global contribution and leverage resources where possible
- Research efforts should address BC-specific needs that cannot be otherwise met (e.g., BC population serology studies, surveys of the population, and analysis of health care organizational structures in the context of response)
- Identification of research needs must be based on as wide a range of information and input as possible, including patients and the public, without causing delays in the research response
- First Nations in BC have articulated approaches to research that must be embedded in the research enterprise. These address the fundamental concerns of First Nations' ethics, cultural safety, trauma informed care, and indigenous approaches and worldviews in the conducting of research and the translation and implementation of research findings
- Fostering collaboration will avoid unnecessary duplication of research efforts
- Wider use of cross and multi-disciplinary teams, including sequential projects, is needed to address complex questions that cross traditional boundaries of expertise. Where possible research efforts should be integrated into the health delivery system. Innovative approaches should be considered such as the direct funding of COVID-19 specific research teams in addition to individual research projects
- Processes such as data access, ethics approvals, institutional approvals, and access to biobanking should be linked and streamlined to accelerate projects
- Diverse methodologies and perspectives, including those with lived experiences, will be required to understand impacts on marginalized and/or vulnerable communities and individuals, including social and cultural impacts. There is an opportunity to build on current strategies for patient-oriented research
- Access to participation in research must, where appropriate, include British Columbians who live outside the major urban areas
- Expanded sharing of methodologies, materials and data are needed
- Existing long-term research initiatives and mechanisms can be mobilized to support some of these specific needs (e.g., existing surveys, disease registries, cohort studies)
- There is an increased need for the synthesis and dissemination of research results in a global environment of emerging evidence
- Rapid knowledge mobilization is required
- Existing research and innovation support structures in BC should be leveraged
- The capacity of research teams may be impacted by the control measures themselves and this must be considered in resource allocation, and;
- Diversion of research resources from other critical areas of health research must be monitored and managed

<i>BC Health Research community actions</i>	<i>Status</i>	<i>Notes</i>
Provide ongoing comprehensive information regarding funded projects to reduce unnecessary duplication and allow for the identification of opportunities for collaboration by: <ul style="list-style-type: none"> <li>o <i>Establishing a BC COVID-19 research inventory</i></li> </ul>	Complete	<a href="#">BC AHSN Inventory</a>
o <i>Leverage existing groups to communicate and collaborate across the research spectrum</i>	Ongoing	
o <i>A series of symposiums to share information about ongoing projects</i>	Ongoing	University of BC and BC Centre for Disease Control coordinated the first of these
o <i>Working through online collaboration platforms (e.g CanCOVID-BC)</i>	Ongoing	<a href="#">CanCOVID</a> <a href="#">Population Data BC (PopData)</a>
o <i>Participating in national and international research networking</i>	Ongoing	
Engage regularly with Health Research Council of BC (HRCBC) (senior health research representatives of BC's health authorities (including the First Nations Health Authority (FNHA)), research intensive universities, government and funders) to ensure provincial input into the framework as it evolves	Ongoing	
Establish and support expert working groups in pertinent subcategories, to target and refine research synthesis efforts, and enhance knowledge translation that respects cultural and language diversity in BC	In Progress	
Support the development and implementation of a set of First Nations and Indigenous COVID-19 research priorities	Start date TBD with FNHA	Build on recent MOU with MSFHR and FNHA
Connect researchers to ongoing knowledge synthesis platforms	In Progress	
Encourage funders to create criteria for funding calls that are complementary to the efforts of other agencies and that are based on an ongoing review of needs and gaps ( <i>SRAC available to funding agencies to provide advice on criteria for calls and approach to prioritizations</i> )	Ongoing	

Streamline research processes: ○ <i>Ethics approvals</i>	Complete	Available through <a href="#">Research Ethics BC</a>
○ <i>Biobanking</i>	In progress	
○ <i>Coordination of clinical trials</i>	In progress	
○ <i>Data access</i>	Underway with PopData, Provincial Health Services Authority and Ministry of Health	
○ <i>Institutional approvals</i>	In discussion with HRCBC	
○ <i>Identify extraordinary infrastructure needs</i>	Ongoing	
Require the open publication of methodologies and intermediate research products to facilitate the success of ongoing research	Ongoing	Example is the Wellcome Trust's <a href="#">joint statement on sharing research data and findings relevant to the novel coronavirus (nCoV) outbreak</a>
Track the impact of control measures on research team performance	Request to HRCBC	
Track the impact of research funding reallocations to COVID-19 research on pre-existing initiatives	Request to HRCBC	

## Current Situation and Research Questions to Aid Short-Term Management (present to July 2020)

### Assumptions

- We are very early in the epidemic in British Columbia
- We are most likely nowhere near a herd immunity threshold that would help to bring it to a natural end
- Without public health measures and social distancing, many more people will be infected and our health system overwhelmed
- Yet, numbers of new cases, hospitalizations and ICU bed occupancy are falling in BC. Transmission has slowed down and a further decrease in cases is anticipated if public health measures are sustained
- Clusters and potentially large outbreaks are still likely to occur
- We are only here because of social distancing and public health measures
- Relaxing too soon or too much will predictably cause a rebound
- Communications efforts will be required to combat misinformation and maintain a coherent societal response
- Control measures are having secondary impacts on the health and well-being of the population, social determinants of health and the delivery of health care services. Understanding these risks and measured outcomes should inform public health action
- Treatment approaches to COVID-19 related disease are emerging from experience around the world and here in BC
- The unique geography and culture of BC requires special attention to the remote, rural and First Nations communities

### Research questions

<i>How long must we maintain current distancing measures? What are the key factors that need to be considered in determining the length of time BC needs to maintain current distancing measures? How would we determine the relative weight of those factors, and from whose perspective?</i>
<i>At what incidence rate or after how much time without a new case would it be safe to consider relaxing some public health measures?</i>
<i>Can we use big data to create a measure of distancing in real time?</i>
<i>How can we optimize modelling of disease transmission and impact based on BC-specific data strengths?</i>
<i>How can new platforms, for example metagenomics, contribute to the understanding of COVID-19 disease?</i>
<i>If partial relaxation is possible, what are the options (e.g., small businesses first?) and what would be their respective health and economic effects? Can we quantify these risks?</i>
<i>Can process engineering concepts (feedback) be built into the approach for safety?</i>

<i>Can we define optimal strategies for testing and screening of travelers and others to prevent reignition of the epidemic?</i>
<i>What are the enhanced needs for population health surveillance? Are there important subpopulations at increased risk at this time? (e.g., rural communities, people with insecure housing, Indigenous people, those with chronic illness, those with acute and chronic mental health needs, those with substance misuse disorders, at-risk children)</i>
<i>Are there evidence-based interventions that would support specific urgent interventions to prevent and mitigate the impacts on maternal and child health and domestic and gender-based violence in the setting of prolonged family isolation?</i>
<i>How do we develop and implement best practices in the clinical care of COVID-19 patients? This includes the full array of research (and its translation) that supports clinical care: new drug development and repurposing, evaluation of remote monitoring and follow up, critical care protocols etc.</i>
<i>What are the optimal evidence-based approaches for the use of personal protective equipment in health care, essential services and in the wider community?</i>
<i>How is the pandemic impacting the management of the opioid crisis?</i>
<i>How do we develop and implement best practices in the clinical care of non-COVID-19 patients during the pandemic?</i>
<i>What are the specific public health and clinical service needs of remote, rural and First Nations communities?</i>
<i>How do the public health measures impact First Nations practices supporting health, wellbeing and healing (e.g. access to the land, ceremony, wellness practices, substance use treatment and support)? How can measures be tailored to local circumstance to mitigate negative impact?</i>
<i>What methods do we need to be using including instruments such as new surveys (or retooling of existing surveys) and what data do we need to be collecting now in order to understand the full range of impacts and evaluate mitigating interventions?</i>
<i>How do we rapidly evaluate the direct and indirect costs and benefits of the control of COVID-19 disease in the context of other preventable conditions?</i>
<i>What are the best practices, in the BC context, for providing support during isolation to vulnerable groups (e.g. Seniors, those with mental illness, persons with disabilities) during isolation?</i>



## The Immediate Future and Research Questions to Aid Intermediate-Term Management (August to December 2020):

### Assumptions:

#### Control of transmission can be maintained:

- A period of sustained distancing and public health measures will be required to drop rates of transmission
- Our culture of physical contact will have to stay changed until and unless we have vaccine-mediated immunity or zero transmission, or the disease severity is more clearly understood. This means maintenance of physical distancing at a certain level
- Relaxation of some of our present measures will be possible after a time but this will need to be done with great care and careful evaluation (modelling suggests that there is a threshold of relaxation beyond which the risk of rebound increases) and consideration of direct and indirect health impacts
- Enhanced screening/testing especially of travellers and meticulous contact tracing with deliberate supports for people in isolation will most likely be required
- A vaccine will be developed and mass immunization programs will be initiated

#### There is a need to monitor and mitigate the impacts of COVID-19 disease and required control measures on the health system and on population health:

- Necessary redeployment of health services will impact patients and providers
- Models of care will change
- Waitlists for some services will increase
- People will be differentially impacted by both the disease and the control measures
  - Underlying health and socioeconomic disparities will be amplified
  - Impacts will include psycho-social effects
  - Mitigation of these effects, requires ongoing surveillance and targeted action

### Research questions:

*Can we provide better tools and processes to help handle the work of screening, isolation and contact tracing and how do we rapidly ramp up the workforce the next time around? What are the best practices in the deployment and reorganizing of health services to provide these functions? How do they need to be tailored to specific communities?*

*What is the best approach for the phased reintroduction of the full array of clinical services (hospital, community-based and rehabilitative care, and diagnostic services)?*

*What can be learned from the rapid deployment of virtual care? What are the outcomes?*

*What can we learn from the spread in institutions such as long-term care facilities, in BC? Successes and challenges?*

<i>What were the impacts on access to primary care and community care?</i>
<i>What were the impacts on the health of health care workers and other essential workers?</i>
<i>What were the health and psycho-social impacts of the public health measures on individuals, family-units, and communities?</i>
<i>Are there differences in approaches and outcomes between communities, including remote and rural areas? Are there generalizable lessons to be learned from successes?</i>
<i>How well does the public understand and support the public health measures? Are there differences across cultural groups, geography, demographics?</i>
<i>What is the impact of the wide dissemination of information and misinformation through social media on control measures and the health of the public?</i>

## Research Questions to Aid Longer-Term Management of the Epidemic (January 2021 and onwards)

### *Assumptions*

#### **Control of transmission is the public health goal:**

- We need to aid in the effort to achieve vaccine-mediated immunity in BC and elsewhere. This will involve tracking and aiding development, accelerating safety and clinical trials (e.g., through the Canadian Immunization Research Network (CIRN) & Vaccine Evaluation Centre (VEC), studying and assuring a potential supply chain; and planning distribution in advance
- We need to find, invent and properly assess drug and biological therapies for COVID-19 disease
- We need a game plan to assure early access to therapies proven of benefit in randomized controlled trials
- In the absence of a working vaccine or drugs, we will need the option of defining a global strategy to reduce or eliminate risk using public health or other measures

### *Research questions:*

<i>What are optimal vaccine design strategies and how quickly can they be brought to bear?</i>
<i>Are vaccines safe and effective?</i>
<i>Can we define priority populations for vaccine to reduce transmission and morbidity more quickly?</i>
<i>How can we efficiently contribute to BC-led, national and global trials of vaccines and other clinical therapies?</i>
<i>What is the best way to assure supply chain and distribution of new vaccines or drugs whose safety and efficacy have been demonstrated?</i>
<i>What are the culturally safe and evidence-based communication and outreach approaches for vaccination programs required to meet the needs of vulnerable subpopulations (e.g. in rural communities, with insecure housing, with chronic illness, acute and chronic mental health needs, with substance misuse disorders)?</i>
<i>What public health and other strategies can be developed as additional options to end the epidemic?</i>
<i>What kind of routinely usable laboratory automation/organization would allow a massive ramp up of a novel test for full population accessibility, if required?</i>

## There is a Need to Retool for the Future

### Assumptions:

- Current public health systems need reinvestment and retooling to better prevent and respond to emerging threats
- Health services need plans that provide for timely and adequate response to surges and continue to support ongoing service delivery needs
- We need to continue to develop a strong evidence-base for future decision-making
- We must learn from experience:
  - We must not forget what we have learned about ourselves
  - Did a communitarian spirit help pull us through?
  - If we can do it in an acute crisis, what can transfer back to society for the long-term?
- We must recognize the sacrifice and contributions of our coworkers, our neighbours, our grocery store, sanitation workers and the public at large. How can that knowledge reshape us for the better?
- There is a need to evaluate the short, medium, and long-term impacts in primary and community care and on the health system as a whole.

### Research questions:

<i>What investments in public health, health services and supporting technology are required to prevent or better respond to future emerging threats?</i>
<i>What does our experience during this pandemic teach us about the value of social innovations such as more flexible access to a safe drug supply for substance users or considerations of a guaranteed minimum income?</i>
<i>What can we learn from our response in BC to support fast and effective local, national and global response in the future?</i>
<i>What lessons can we learn for future pandemic planning from the psycho-social impacts of the COVID-19 public health measures?</i>
<i>Can we use BC-specific surveillance strengths to identify possible longer-term effects of COVID-19 disease as they emerge? (e.g. chronic medical conditions, birth defects)</i>
<i>Can we develop models to assist with the ongoing planning and evaluation of:</i> <ul style="list-style-type: none"> <li>• <i>the procurement and distribution of medical supplies for hospitals, health facilities, community services, and providers to accommodate surge requirements?</i></li> <li>• <i>the configuration of health services to allow rapid reconfiguration to meet surges in demand?</i></li> </ul>
<i>How do we redesign congregate living situations to reduce the transmission of infections?</i>
<i>Do health system structural and organizational factors (such as governance, funding allocation methods and payment mechanisms) impact the ability to respond and to mitigate effects?</i>

*How can society continue to value critical work from low wage sectors like care home workers and grocery store clerks?*

*What rapid health system innovations have been put in place and how do we decide which should continue beyond the pandemic?*