Michael Smith Health Research BC

2023 British Columbia Health Research System Rapid Assessment

November 2023

Michael Smith Health Research BC

Table of Contents

Executive Summary

Introduction

The COVID-19 pandemic highlighted the value of research. In response, efforts are underway to maximize B.C.'s research strengths for better health and health care, and a stronger knowledge economy.

In this context, Michael Smith Health Research BC (Health Research BC), in collaboration with the Health Research Council of BC (HRCBC), conducted a rapid assessment of the provincial health research system. Interviews were conducted with 55 people — from universities, patient groups, provincial government, Indigenous Nations and organizations, health authorities, and the life sciences sector — and findings were analyzed according to the World Health Organization (WHO) framework for health research systems and its four components: **governance**, **financing**, **building capacity**, and **producing and using research**.

Governance

This WHO framework function refers to activities that support system functioning, e.g., vision, coordination, priority setting, ethics, and monitoring and evaluation. Progress has been made on some of these elements, and others could be advanced. Interviewees saw an opportunity for a system-level vision for health research — one that addresses equity, diversity, inclusion, and Indigenous reconciliation and self-determination. Research priority-setting provincially was not deemed critical — but smaller-scale, thematic mechanisms for identifying research priorities may be worth pursuing.

Understanding of the research underway in B.C. and its value and impact remains a challenge. Ethical standards for health research is a strength in B.C., and progress on research ethics approvals processes was noted. The Ministry of Health-led Research Approvals Processes Project (RAPP) is recognized as important in improving research efficiencies.

Concern was raised over how B.C.'s health research processes may reinforce colonial biases and harms. The lack of standardized guidance with respect to diversity and inclusion in research is considered a weakness. The provincial government's support for research is seen as a key enabler for this WHO framework function.

Financing

Financing in the WHO framework relates to securing and allocating research funds. This is seen as an area of strength for B.C.'s health research system, including the provincial government's long-term investments in health research. B.C.'s researchers and institutions "punch above their weight" in terms of generating funding from a range of sources.

A declining pot of federal research funding is seen as a threat to B.C. Attention to equity was raised as important — as in ensuring that research funding is distributed throughout the province, and to First Nations, Métis, and Inuit researchers, organizations and communities — and knowledge translation was highlighted as needing investment. The B.C. government is recognized as supporting and promoting a research positive culture, which should encourage opportunities to increase B.C.'s competitiveness.

Ethical standards for health research is a strength in B.C.

Building Capacity

This WHO framework function is about building, strengthening and sustaining the human and physical capacity to conduct, absorb and utilize research. As far as human capacity, researchers continue to be a strength of B.C.'s system, thanks to universities' ability to recruit high quality researchers. Interviewees felt that researchers not based in large academic institutions are often at a disadvantage in funding competitions. Talent gaps noted were health professional researchers, rural and primary care researchers, health data scientists, and artificial intelligence (AI) researchers. Mid-career and graduate student support were also seen as gaps.

As far as physical capacity, the province's research-intensive universities are key strengths, and other universities are developing strengths, especially in applied research. Data infrastructure is improving, and data platforms are seen as strengths, as are the province's large disease-based data sets. The number of comments about data — including access and linkage — suggests an opportunity to communicate more clearly about the range of data-related work underway.

Producing and Using Research

The WHO framework function of producing and using research includes generating, translating and communicating research to inform health policy and practice towards better health and health care.

Production of high-quality research outputs is a B.C. strength. Areas where research could be increased include: Phase 1 clinical trials; health services and health systems; population and public health; primary care; rural/remote; and research on issues of importance to First Nations, Métis, and Inuit people.

Other areas for improvement noted were increasing institutional partnerships, involving industry earlier, resourcing research support roles, and building mechanisms for collaboration. These could include memoranda of understanding (MOU) between health authorities and local universities, Indigenous Nations and organizations with the broader research community, and team-based research opportunities. Progress in patient engagement in research was noted as a strength, with a concern about the decrease in federal funding.

While B.C. is seen as strong in research production, those interviewed indicated that enabling evidence use is the area with the least progress since the 2014 B.C. Health Research Strategy. Informants encouraged focused attention, supportive policies and processes, and investment.

> B.C. has world class institutions and people — but talent gaps are clear.

Conclusion

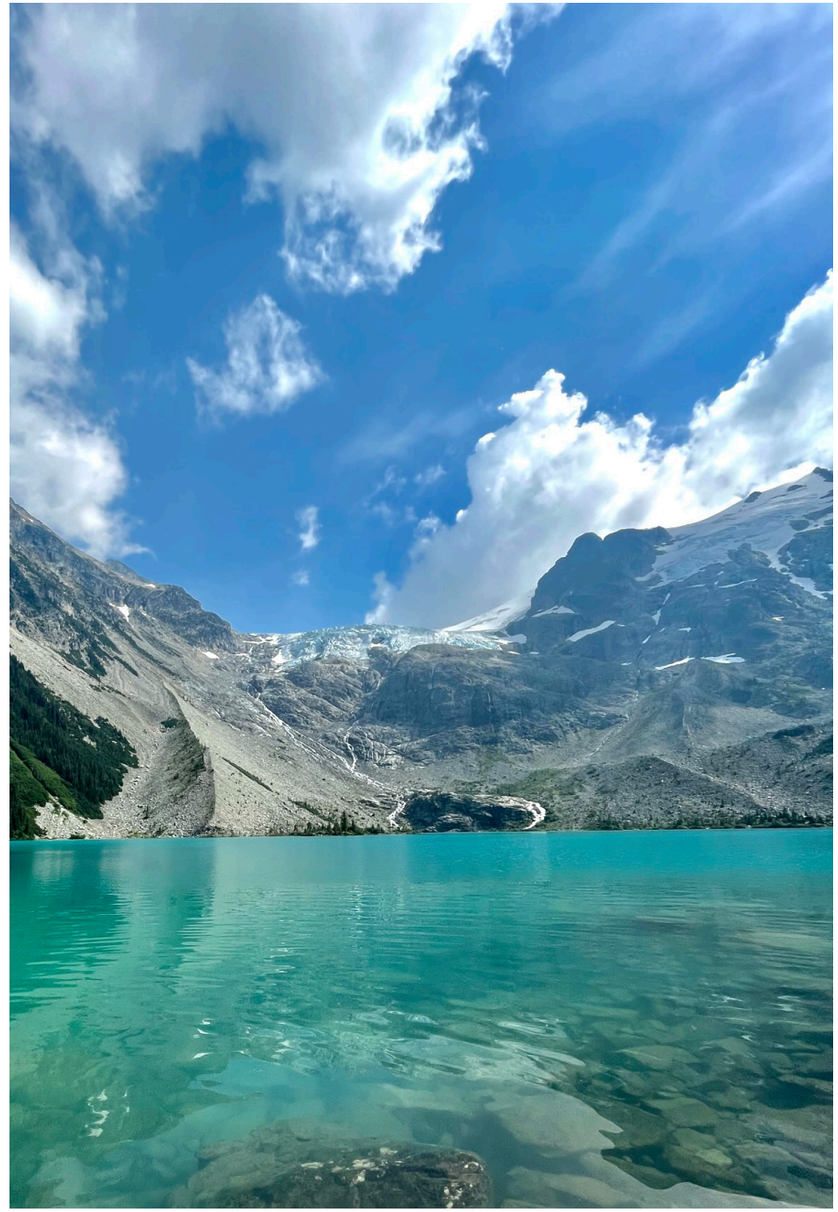
Consultations suggested that coordination and leadership within the B.C. health research system is a key area of opportunity, and related actions around vision, research priorities, standards and processes, and impact were proposed.

Those interviewed said B.C. has world class institutions and people — but talent gaps are clear. Resourcing research operations and clinical trials capacity were identified as needs.

The topic of data for research was highlighted as a challenge, with the Ministry of Health's leadership appreciated. Finally, the use of research evidence in practice and policy was identified as an area where there is still a long way to go, and a concerted effort required by the broad research community.

Overall, findings from this rapid, high-level assessment suggest that the B.C. health research system is characterized by substantial goodwill and collective interest in collaborating to continue to build and sustain a strong health research system.

The Executive Summary concludes with a table on the next page illustrating a summary of opportunities raised for strengthening B.C.'s health research system organized within WHO framework functions.



Summary of opportunities to strengthen B.C.'s health research system

Governance

- A unifying vision for health research in B.C.
- A more coordinated approach to measuring and communicating research impact
- Identifying areas where provincial research priorities would be useful
- Maximizing the efforts of the RAPP and accelerating related harmonization efforts

Financing

- A deeper understanding of research funding sources, flows and trends in B.C.
- Innovative ways to stabilize research operations in health authorities and research institutes
- Building on B.C.'s success with obtaining philanthropic funding for research

Building Capacity

- Assessing BC's talent and career pipeline gaps
- Expanding programs to support clinicians to do research that improves care
- Supporting research that allows researchers in under-represented parts of B.C. to compete successfully
- Partnering to improve funding opportunities for First Nations, Métis, and Inuit researchers
- Communicating more clearly about the range of data work underway in B.C.
- Maximizing efforts of the RAPP and accelerating related harmonization efforts (also noted under governance)

Producing and Using Research

- Formal partnerships between universities and health authorities, and more collaboration between established and emerging institutions
- Processes to strengthen provincial-level links between Indigenous Nations and organizations representing priorities for health and health research and the broader research community
- Incentivizing formation of interdisciplinary and transdisciplinary teams
- Mechanisms to involve industry earlier in the research process
- Mechanisms to increase diversity of patients involved with research
- Further exploration towards addressing the conditions for improved evidence use
- Investigating strengths and gaps related to health research space, platforms and equipment

Introduction

The COVID-19 pandemic highlighted the value of research to the health of populations and health care systems. Countries worldwide are examining their health research systems and acting to fill gaps.

In British Columbia, reports such as Research is Care and assessments by the former B.C. COVID-19 Strategic Research Advisory Committee highlighted opportunities and recommended collective action.

In response, efforts are underway to build on B.C.'s strengths to maximize the production and use of evidence for better health and health care, and a stronger knowledge economy. These include government strategies (e.g., the B.C. Life Sciences and Biomanufacturing Strategy) and processes (e.g., the Research Approvals Processes Project); infrastructure and talent development; collective efforts such as the provincial clinical trials visioning process; and patient engagement efforts. Per their mandate letters, B.C.'s health authorities are supporting health research advancement.

There are also national initiatives aimed at strengthening health research systems (e.g., Canada's Biomanufacturing and Life Sciences Strategy, the Report of the Advisory Panel on the Federal Research Support System, and the review of the Federal Approach to Pandemic

Science Advice and Research Coordination) as well as international ones (e.g., the Declaration on Research Assessment, and the WHO statement on clinical trials).

British Columbia's health research agency, Health Research BC, in collaboration with the Health Research Council of BC (HRCBC), is building on this momentum in and across jurisdictions to identify opportunities to strengthen B.C.'s health research system.

To start, Penny Cooper Evaluation was contracted to conduct a rapid, high-level assessment of the system based on interviews with leaders and practitioners in health, health care, health research and life sciences. This report presents the perspectives of those people and related opportunities, including areas for validation and further exploration.

It is important to note that the work presented in this report is a snapshot of the health research system at a moment in time, and only a first collaborative step towards understanding and strengthening it. Health Research BC recognizes the importance of including diverse voices and partnering with a range of individuals and groups in this work — and acknowledges that this initial assessment does not achieve that diversity. Health Research BC is grateful to the people who agreed to be interviewed for this report and collectively provided a solid base for broader engagement. Further phases of this work will more deeply explore additional perspectives and opportunities — and seek to strongly align with related studies and existing provincial initiatives and strategies — towards maximizing the benefit of research for the people of British Columbia.

Goal and Approach of the Assessment

The goal of the rapid assessment was to gather views on the strengths, weaknesses, opportunities and threats in B.C.'s health research system.

The focus was on progress since production of the 2014 B.C. Health Research Strategy (see Appendix A) in the context of the World Health Organization's framework for health research systems and their four functions: governance, financing, building capacity, and producing and using research.[1]

A 10-member working group of the HRCBC (see Appendix B) guided the project, and includes the perspectives of health authorities, universities, research institutes, funders and the B.C. Ministry of Health.

Health Research BC drafted the initial list of interviewees with a view to ensuring a range of views from across the province, including established health research-involved individuals, organizations and groups including research-intensive university vice presidents of research, provincial government representatives, Indigenous Nations and organizations, patient partners affiliated with the Canadian Institutes of Health Research (CIHR)'s Strategy for Patient-Oriented Research in B.C., health authority leaders, life sciences leaders, and HRCBC members. The list was endorsed by the working group and emails were sent to 60 individuals; 55 people participated, for a response rate of 92 per cent (see Appendix C). Participants brought perspectives from the various roles they play across B.C. but were asked to speak with the province in mind, as opposed to their institution, region or profession.

Three group discussions were conducted; other consultations were one-on-one interviews. A discussion guide was drafted, tested by working group members and revised. Group discussions were conducted by Zoom, recorded and transcribed. Most individual interviews were conducted by phone and notes taken. Transcripts and notes were deconstructed and organized according to the four functions of the WHO framework, using the 2014 B.C. Health Research Strategy actions as sub-categories, and then thematically analyzed within these categories.

1. Hanney, S.R., Kanya, L., Pokhrel, S. et al. "How to strengthen a health research system". Health Res Policy Sys 18, 72 (2020). https://doi.org/10.1186/s12961-020-00581-1

Findings

An overview of cross-cutting topics referenced throughout interviews is presented below, followed by findings organized under the WHO framework functions of governance, financing, building capacity, and producing and using research. The 2014 B.C. Health Research Strategy actions are listed at the beginning of these sections and referenced within them. Each section ends with a table of opportunities.

Cross-Cutting Topics	Implications
Climate change is highlighting the interconnections among the health of people, animals and ecosystems.	Transdisciplinary, multi-jurisdictional research is needed to solve complex problems facing B.C., including inequitable consequences of climate change.
Inequities in health care and health outcomes are stark, especially for First Nations, Métis, and Inuit people and communities; other issues are the toxic drug supply and continued mental health effects of the pandemic.	Addressing inequities is a critical part of an effective health research system.
The reports of the Truth and Reconciliation Commission, National Inquiry into Missing and Murdered Indigenous Women and Girls, and racism in the health care system in B.C. (In Plain Sight) have fundamentally altered understanding about what research is needed, how it gets done and who does it.	Prioritizing the needs, voices, and experiences of First Nations, Métis, and Inuit people and communities is an essential step toward reconciliation within the province's health research system.
The role and applications of AI in research and health care are increasing.	Focus is needed to understand and respond to the positive and negative implications of AI, including in the health research system itself.
The fiscal environment for research is challenging, including increases in cost-of-living in B.C. and related recruitment and retention challenges.	Finding the balance between continuing to support existing research strengths and addressing gaps will become more important.
COVID-19 exacerbated pressures on B.C.'s health care system, including health human resource challenges.	Research processes need to be efficient. Embedded research strategies (including protected time for research) and support for health services research — including health human resource research — will become more important.
Planning is underway for a new medical school at Simon Fraser University.	B.C.'s health research system will need to be informed by opportunities related to the new medical school as they emerge.

Findings

Governance

2014 B.C. Health Research Strategy related actions:

- Establish ongoing provincial mechanisms for health research priority-setting
- Develop a provincial framework to evaluate the impact of health research
- Standardize best practice research processes across B.C.

The WHO framework defines governance within a health research system as elements and activities that support the system to work as a whole — for example: vision, coordination, priority setting, ethics, and monitoring and evaluation.

The 2014 B.C. Health Research Strategy contained a vision statement and other actions related to this definition of governance. However, there has been limited collective implementation of the strategy since its release. Based on the interviews, there is a clear opportunity to revisit a system-level vision for health research in B.C. Prioritizing the needs, voices, and experiences of First Nations, Métis, and Inuit people and communities is an essential step toward reconciliation within the province's health research system.

Further, explicitly addressing equity, diversity and inclusion in such a vision is important. The provincial government's interest in and support for health research serves as an enabler for success.

Mechanisms for research priority-setting were not deemed critical by informants, in part due to the changing and nuanced priorities of those who use evidence, and already-determined research priorities of funders outside B.C., which dictate funding available. However, smaller-scale, thematic and program-based provincial mechanisms for identifying research priorities may be worth pursuing. This should include strong mechanisms for Indigenous Nations and organizations to influence and direct research.

> The work towards a single platform for ethics approval was seen as a breakthrough.

Broad understanding of the research underway in B.C. and its value and impact remains a challenge — and the importance of measuring and communicating the value of research to a range of audiences is recognized. It is not clear if a provincial framework or mechanism for measuring impact would be useful or feasible, but interest exists to explore developing a provincial approach. An initial step would be understanding how different organizations in the system currently measure research impact.

Ethical standards for health research are strengths of the B.C. health research system. Furthermore, the substantial progress on standardizing research ethics approvals processes since 2014 was noted. Collaboration among institutions was seen as a positive, including representation of First Nations, Métis, and Inuit ethics perspectives. The work towards a single platform for ethics approval was seen as a breakthrough. There is an opportunity to build on the work being undertaken by the British Columbia Network Environment for Indigenous Health Research (BC NEIHR) to further integrate First Nations, Métis, and Inuit perspectives into ethics guidelines and processes.

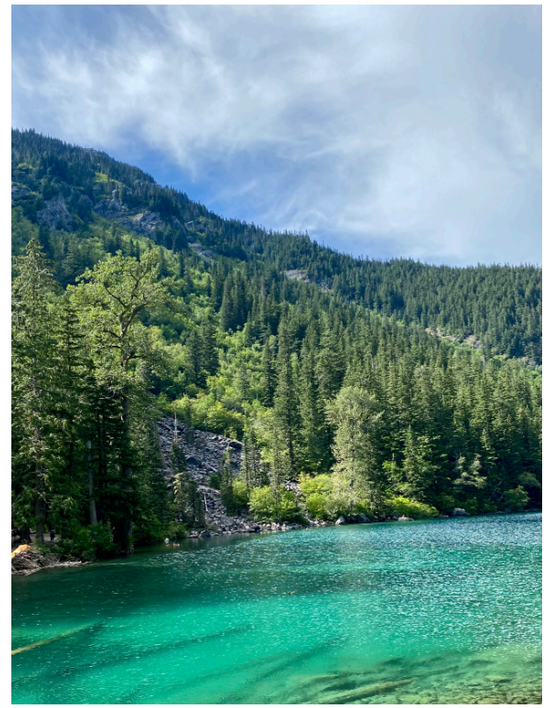
An opportunity exists to accelerate progress on standardized research processes. Challenges in this area were highlighted during COVID-19 and there has been a more concerted provincial effort to address them subsequently.

The RAPP, led by the Ministry of Health, covers ethics approval, operational approvals, privacy, data access and contracts/agreements. This effort is recognized as an important step to improve research efficiencies, but it is not without challenges given its large scope and the level of change required. It was noted that a key gap in standardized research processes is a provincial approach to consent-to-contact.

Attention is warranted to B.C.'s health research processes and the ways in which they may reinforce colonial biases and harms. Specific areas to be addressed include but are not limited to examining research grant criteria to ensure they recognize different types of expertise, experience, and ways of knowing; educating non-Indigenous researchers on how to engage with First Nations, Métis, and Inuit people and communities; and ensuring data management approaches are consistent with Ownership, Control, Access and Possession (OCAP) principles and facilitate collection of disaggregated race-based data.

Likewise, the lack of standardized guidance for researchers or Research Ethics Boards with respect to diversity and inclusion in research is considered a weakness. There are no widely endorsed standard requirements for diversity of research participants, and extremely limited budgetary accommodation to enable access to quality interpretation and translation. Finally, concern for "who is at the table" and whose voices get heard was a common theme across the interviews.

Overall, strengthening coordination, leadership, appropriate priority setting, ethics, and monitoring and evaluation are opportunities in the B.C. health research system.



Opportunities related to the WHO framework function of governance:

- A unifying vision for health research in B.C.
- A more coordinated approach to measuring and communicating research impact
- Identifying areas where provincial research priorities would be useful
- Maximizing the efforts of the RAPP and accelerating related harmonization efforts

> **"Harmonized ethics was a success story of the 2014 strategy."**
>
> –Research Institute Leader

Findings

Financing

The WHO framework defines the financing task for an effective research system as "secure research funds and allocate them accountably."

While no corresponding action exists in the 2014 B.C. Health Research Strategy, based on the interviews, financing is an area of strength for B.C.'s health research system, including the provincial government's long-term investments in health research through the B.C. Knowledge Development Fund and contributions to Genome BC and Health Research BC. According to those interviewed, B.C.'s researchers and institutions "punch above their weight" in terms of success rates in federal competitions, attracting industry funding, generating revenue from intellectual property, and attracting contributions from philanthropy, especially for buildings and equipment.

Despite important investments by the federal government through Canada's Biomanufacturing and Life Sciences Strategy (and others), it was noted that declining federal research funding, and the organization of that funding, is a threat to B.C. researchers' and institutions' continued ability to compete.

> **"The trend is that it's getting harder and harder for people to get external funding unless you're a big rockstar researcher."**
>
> –Health Authority Leader

Competition among researchers and institutions within B.C. was highlighted as a threat, as was the static nature of federal grant amounts.

The importance of protecting funds for research arose, particularly as these funds attract and retain research talent and build systems that could become financially self-sustaining. Attention to equity was raised as important, as in ensuring that research funding is distributed throughout the province, and to Indigenous Nations and organizations. First Nations, Métis, and Inuit researchers and communities are often entirely reliant on research institutions to hold research funds on behalf of their Nation serving as a barrier towards self-determination. Further investments in knowledge synthesis, knowledge translation, implementation science, and receptor capacity were also highlighted as needs.

The B.C. government is recognized as supporting and promoting a research positive culture, which should encourage opportunities to increase B.C.'s competitiveness. These could include more partnership funding models and catalyzing models of research support that will become self-sustaining.

Opportunities related to the WHO framework function of financing:

- A deeper understanding of research funding sources, flows and trends in B.C.
- Innovative ways to stabilize research operations in health authorities and research institutes
- Building on B.C.'s success with obtaining philanthropic funding for research

Findings

Building Capacity

2014 B.C. Health Research Strategy related actions:

- Continue to attract exceptional health researchers to B.C.
- Create a secure platform for and improve access to data

The WHO framework defines building capacity as "build, strengthen, and sustain the human and physical capacity to conduct, absorb, and utilize research."

There are many related strengths and opportunities for the provincial health research system, building on progress since the 2014 strategy.

The human capacity section here covers research talent and expertise. Physical capacity follows, including institutions and companies, space, platforms, and equipment.

Human Capacity

Researchers continue to be a strength of B.C.'s health research system. Academic institutions' ability to recruit high-quality researchers was noted, building on research excellence, outstanding facilities, the diversity of B.C.'s population, and the desirability of B.C. as a place to live. Health Research BC Scholar and Research Trainee Awards are seen to have contributed to recruitment and retention of high potential early career researchers.

However, interviewees felt that researchers not affiliated with one of the big major academic institutions, or in regional health authorities that do not have a research institute, are not competitive for funding in open competitions, regardless of their potential.

Interviewees mentioned several talent gaps. Health professional researchers was the most common, especially as a limitation in building provincial clinical research capacity. Organizations such as BC NEIHR are supporting the growth of First Nations, Métis, and Inuit research talent in B.C., but gaps remain. For example, First Nations, Métis, and Inuit communities often lack the human capacity to conduct their own research, instead relying on partnerships with non-Indigenous researchers at research institutions and health authorities for support.

Other talent gaps mentioned were rural researchers (especially clinicians), primary care researchers (especially clinicians), health data scientists, and health researchers specializing in AI methods and issues.

Two gaps in the pipeline of career support for researchers were highlighted: mid-career support (institutions' ability to translate awards into permanent roles has decreased) and graduate student support (stipends have not kept pace with the cost of living).

Interviewees highlighted opportunities to share specialist researcher roles between institutions, such as methodology experts, data scientists and health economists. However, variations across institutions in human resources processes do not currently enable this.

Overall, B.C.'s key health research strength is its people. However, a key threat is recruitment and retention. Human capacity issues in health research are thought to be most acute outside Vancouver.

Physical Capacity

Physical capacity to conduct, absorb and utilize research includes institutions and companies, space, platforms, and equipment.

B.C.'s research-intensive universities are seen as a key strength of B.C.'s health research system. While the University of British Columbia (UBC), Simon Fraser University (SFU) and the University of Victoria (UVic) are more well-established, the other three research-intensive universities (Thompson Rivers University, University of Northern BC [UNBC] and Royal Roads University) are making important and growing contributions, and other universities are developing strengths, especially in applied research.

As noted in the B.C. Life Sciences & Biomanufacturing Strategy and reinforced through these consultations, B.C. also has a strong life sciences sector, including pharmaceutical, medical, medical equipment and supplies manufacturing.

Other institutional strengths mentioned were research institutes that encourage linkages between research and care. However, despite growth of their research departments during COVID-19, institutional capacity for research and evidence-use in the regional health authorities was raised by a significant number of interviewees as needing attention.

Data infrastructure is thought to be improving. Existing data platforms and data infrastructure such as Health Data Platform BC, Population Data BC and the Provincial Health Services Authority (PHSA)'s Platform for Analytics and Data are strengths. The B.C. Ministry of Health, PHSA and the health authorities are working on a common data architecture within new information systems such as Cerner and Meditech.

A B.C. strength is the province's large disease-based data sets, which are focused on specific diseases and conditions, and high-quality health services and population data. However, the number of comments about data suggest there is an opportunity to communicate more clearly about the range of data-related work underway. Some of these comments were about the challenges of data access, including in primary care. Another topic was the lack of data disaggregated by race and ethnicity, including breakdown by First Nations, Métis and Inuit — which is only just starting to be addressed through implementation of the Anti-Racism Data Act (2022). Finally, there were comments encouraging solutions that allow researchers to have more flexibility in linking datasets.

Data issues were noted as more pressing with the explosion of AI, cybersecurity concerns and interest in tackling complex problems. Provincial government leadership through the RAPP is valued, but interviewees suggested the need for more concrete signs of progress given the mistrust, competition and confusion among agencies about sharing data and about the best ways to enable data access.

Finally, space, platforms and equipment were not a major focus of the interviews. Two opportunities noted were expanding clinical trials units in regional health authorities outside Vancouver, including dedicated wet lab space (acknowledging the B.C. Government's recent critical support for new facilities on Vancouver Island and in Vancouver) and a provincial biobanking platform.

> **"There's a need for real deliverables [from the RAPP], to give people on the ground some faith."**
>
> –University Leader

Opportunities related to the WHO framework function of building capacity:

- Assessing BC's talent and career pipeline gaps
- Expanding programs to support clinicians to do research that improves care
- Supporting research that allows researchers in under-represented parts of B.C. to compete successfully
- Partnering to improve funding opportunities for First Nations, Métis, and Inuit researchers
- Communicating more clearly about the range of data work underway in B.C.
- Maximizing efforts of the RAPP and accelerating related harmonization efforts (also noted under governance)

Findings

Producing and Using Research

2014 B.C. Health Research Strategy related actions:

- Accelerate translation of research with commercial potential
- Deliver opportunities for solution-oriented, team-based research and knowledge translation
- Facilitate public involvement in research
- Establish an academic health science network across B.C.
- Scale up and spread capacities for dissemination and use of knowledge

The final function of the WHO framework is producing and using research. This includes the production of outputs and the translation and communication of research to develop new services and products to inform health policy and practice and, ultimately, better health and health care.

Production of high-quality research outputs is a strength of B.C.'s health research system. Informants said the system produces world class research, particularly basic science and clinical research.

Although there are pockets of excellence in other areas, research production is concentrated in three research-intensive universities (UBC, SFU, UVic) and in health authorities and research institutes in Vancouver. An emerging strength is increasing recognition of research excellence across the province, especially since the onset of the pandemic; there is an opportunity to better support research in institutions with a shorter health research history.

> An emerging strength is increasing recognition of research excellence across the province.

Concentration of research production in Lower Mainland institutions is noted as a strength and a weakness, as research production does not necessarily reflect questions that are important in smaller/rural/remote centres or to First Nations, Métis, and Inuit people and communities. Research methods may prioritize certain types of validity that are less important in these contexts.

Finally, developing reciprocal relationships with First Nations, Metis and Inuit people and organizations is essential.

Areas highlighted as opportunities to increase research volume — based on where interviewees felt B.C. should be producing more research or where B.C. has a unique opportunity or advantage — are Phase 1 clinical trials; health services and health systems, including on virtual and hybrid care; population and public health; primary care; rural/remote health research; and research on issues of importance to First Nations, Métis, and Inuit people and communities.

Increasing institutional partnership in research production was noted as a key opportunity, particularly as a means of addressing the tensions between building on existing strengths and ensuring other parts of the province benefit from engagement in research. Involving industry earlier in the research process where appropriate would take advantage of industry capacity to accelerate progress from discovery to use.

There is also an opportunity to reduce barriers and improve timelines for approval of industry contracts through university technology transfer offices.

An enabler to the production of high-quality health research raised frequently was research support personnel — a broad category including research nurses and coordinators, research navigators, research ethics board coordinators, finance officers, compliance officers, grant facilitators, and knowledge translation specialists, to name just a few. While the quality of research support personnel is a strength overall, resourcing for research support roles in health authorities and research institutes is not consistent. Recruitment and retention of nurses trained to support clinical research was noted as a gap.

Mechanisms for collaboration are critical for the production and use of health research. Informants saw an opportunity to build on recent regionalized efforts to build small scale academic health science networks through MOUs between health authorities and local universities.

The MOU among Northern Health, UNBC and UBC for the Northern Clinical Research Centre was noted as a promising model. B.C. could also strengthen emerging networks among organizations representing First Nations, Métis, and Inuit health and health research interests and the broader research community. This includes First Nations Health Authority, Métis Nation British Columbia, BC Association of Aboriginal Friendship Centres and the BC NEIHR. The growing interest in inter-university collaboration in health research could be acted upon.

> **"The quality of our researchers [is a key system strength], in the big three universities but also in smaller institutions. B.C. is bountiful in this regard."**
>
> –University Leader

Team-based research is widely recognized as key to producing and using research aimed at addressing complex problems. However, the scarcity of interdisciplinary and transdisciplinary collaborations relative to the need is perceived as a weakness. Team-based research was identified through the interviews as being even more important in the context of climate change, AI, pandemic preparedness, and increased attention to the social determinants of health. B.C. has strong research networks, and opportunities for large-scale team-based research have emerged as part of the federal government's investment through Canada's Biomanufacturing and Life Sciences Strategy. An example is Canada's Immuno-Engineering and Biomanufacturing Hub at UBC, which includes multi-disciplinary teams in three of B.C.'s research-intensive universities plus the British Columbia Institute of Technology and several other universities across Canada.

Public and patient involvement is recognized as key to the successful production and use of health research in the province, given its focus on outcomes that matter to British Columbians. Patient involvement in research is not yet a systemic strength, but substantial progress in this area is recognized, largely due to CIHR's Strategy for Patient-Oriented Research initiative and the BC SUPPORT Unit.

REACH BC, a platform connecting patients and researchers for participation in research studies, is seen as a step in the right direction. REACH BC was launched with BC SUPPORT Unit funding and is now a Health Research BC program.

Public and patient involvement is recognized as key to the successful production and use of health research in the province.

Regarding the BC SUPPORT Unit, there is a perceived threat that gains may not be sustained following the decrease in federal funding in the second phase of the initiative.

Among the remaining challenges to patient and public engagement noted were lack of diversity (race/ethnicity, language and socio-economic status); communication back to patients after their engagement, particularly for First Nations, Métis, and Inuit patients; burdensome consent to contact and data release forms; and opportunities for participation outside the Lower Mainland.

Finally, Genome BC, Health Research BC and Life Sciences BC were acknowledged for providing strong support — beyond funding — for the production and use of health research in B.C. The merger of the Michael Smith Foundation for Health Research and the British Columbia Academic Health Science Network is perceived as a strength in this regard.

Overall, B.C. is seen as strong in research production. Despite the above enablers for the use of health research, those interviewed indicated that enabling evidence use is the area with the least progress since the release of the 2014 B.C. Health Research Strategy. The provincial government's support for research and the collective interest of the broad research community to address this issue provide a strong foundation; informants encouraged focused attention, supportive related policies and processes, and investment, including in knowledge synthesis, implementation science and knowledge translation resources.

Opportunities related to the WHO framework function of producing and using research:

- Formal partnerships between universities and health authorities, and more collaboration between established and emerging institutions
- Processes to strengthen provincial-level links between Indigenous Nations and organizations representing priorities for health and health research and the broader research community
- Incentivizing formation of interdisciplinary and transdisciplinary teams
- Mechanisms to involve industry earlier in the research process
- Mechanisms to increase diversity of patients involved with research
- Further exploration towards addressing the conditions for improved evidence use
- Investigating strengths and gaps related to health research space, platforms and equipment

Conclusion

The consultations for this rapid, high-level assessment of B.C.'s health research system suggest that coordination and leadership related to research in B.C. is a key area of opportunity.

Potential actions were identified for a collective vision, research priorities, development of standards and standardized processes, and monitoring of impact. The need to apply decolonizing and equity lenses was highlighted; this relates to all WHO framework functions (governance, financing, building capacity, and producing and using research). Similarly, concern for "who is at the table," and whose voices get heard, extends through all functions. A continued need exists to address systemic racism and discrimination, particularly for First Nations, Métis, and Inuit researchers and communities.

Those interviewed were clear that B.C. has world class institutions and people and produces world class research. When asked to identify key strengths of the system, "people" were consistently identified first; but people were also identified as the system's greatest need, particularly in the context of current health human resources challenges in the health care system. Resourcing research operations and clinical trials capacity were identified as pressing needs.

The topic of data for research was highlighted as an ongoing challenge. The Ministry of Health's leadership in this complex area is appreciated and there is a desire for this work to be accelerated where possible, as well as better communicated.

Finally, the use of research evidence in practice and policy was identified as an area where there is still a long way to go, and a concerted effort is required by the broad research community.

The provincial government's support for a strong role for health research, including alignment between key ministries and the Ministry of Health's leadership on projects to address fragmentation in the system, is valuable. Overall, findings from this rapid, high-level assessment suggest that the B.C. health research system is characterized by substantial goodwill and collective interest in collaborating to continue to build and sustain a strong health research system.

Appendix A: 2014 British Columbia Health Research Strategy (excerpt)

Vision:

"The best health for all British Columbians by excelling at research that we learn from and use to address priority health challenges."

Direction 1: Develop and enhance key foundations that support the creation and use of knowledge.

Actions:

- Create a secure platform for and improve access to data.
- Standardize best practice research processes across B.C.
- Establish ongoing provincial mechanisms for health research priority-setting.
- Develop a provincial framework to evaluate the impact of health research.

Direction 2: Create a culture of inquiry and innovation across sectors that encourages health research and its use.

Actions:

- Establish an academic health science network across B.C.
- Scale-up and spread capacities for dissemination and use of knowledge.
- Facilitate public involvement in research.

Direction 3: Make B.C. a hub for world-class research that makes a difference.

Actions:

- Continue to attract exceptional health researchers to B.C.
- Deliver opportunities for solution-oriented, team-based research and knowledge translation.
- Accelerate translation of research with commercial potential.
- Build B.C.'s capacity to evaluate health system innovations.

Appendix B: Health Research Council of BC Working Group Members

Julia Bickford, Regional Director, Research Evaluation & Analytics, Northern Health

Tania Bubela, Professor & Dean, Faculty of Health Sciences, Simon Fraser University

Ellen Chesney, Chief Administrative Officer, Research, Provincial Health Services Authority

Sarah Gray, Research Lead, Division of Medical Sciences, University of Northern British Columbia

Kate Keetch, Director, Evaluation & Research, Fraser Health

Kathy Lewis, Interim VP Research and Innovation, University of Northern British Columbia

David Patrick, Research Director, BC Centre for Disease Control

Victoria Schuckel, Executive Director, Research & Technology, BC Ministry of Health

Dee Taylor, Corporate Director, Research, Interior Health

Chen Wan, Director, Research & Innovation, Health, Genome BC

Michael Smith Health Research BC Members

Bev Holmes, President & CEO

Stirling Bryan, Chief Scientific Officer

Danielle Lavallee, Vice President, Research Programs

Kevin Sauvé, Science Program Manager

Appendix C: Consultation Participants

Krista Allan	Island Health
Fraser Bell	Northern Health
François Bénard	BC Cancer Research Institute
Tabatha Berggren	Métis Nation BC
Julia Bickford	Northern Health
Lori Brotto	BC Women's Hospital Research Institute
Stirling Bryan	Michael Smith Health Research BC
Tania Bubela	Simon Fraser University
Paul Burgener	Patient partner
Susan Burns	BC Ministry of Post-Secondary Education & Future Skills
David Byres	Provincial Health Services Authority
Lin Chen	Patient partner
Ellen Chesney	Provincial Health Services Authority
Fiona Dalton	Providence Health Care
Courtney Defriend	First Nations Health Authority
Linda Dempster	Fraser Health
Quynh Doan	BC Children's Hospital Research Institute
Don Grant	Patient partner
Sarah Gray	University of Northern British Columbia
Ilona Hale	University of British Columbia
Bev Holmes	Michael Smith Health Research BC
Wendy Hurlburt	Life Sciences BC
Lisa Kalynchuk	University of Victoria
Kate Keetch	Fraser Health
Darryl Knight	Providence Health Care
Cecile Lacombe	BC Ministry of Jobs, Economic Development & Innovation
Kathy Lewis	University of Northern British Columbia
David Llewellyn	STEMCELL Technologies
Sunny Loo	Patient partner
Julia McFarlane	BC Ministry of Health
Robert McMaster	University of British Columbia
Gail Murphy	University of British Columbia
Maureen O'Donnell	Provincial Health Services Authority
Dugan O'Neil	Simon Fraser University
David Patrick	BC Centre for Disease Control
John Pawlovich	University of British Columbia
Simon Pimstone	Xenon Pharmaceuticals
Jeff Reading	Simon Fraser University
Ian Rongve	BC Ministry of Health
Victoria Schuckel	BC Ministry of Health
Heidi Scott	Patient partner
Swapnil Shah	Patient partner
Rich Sobel	Patient partner
Krista Stelkia	Simon Fraser University
Dee Taylor	Interior Health
Cindy Trytten	Island Health
Cathy Ulrich	Northern Health
Shannon Wagner	Thompson Rivers University
Chen Wan	Genome BC
Stephanie Willerth	Axolotl Biosciences
Matt Zayhnacz	BC Ministry of Jobs, Economic Development & Innovation

An additional 3 consultation participants did not provide consent to include their name on this list. One participant provided an interview on behalf of the BC Ministry of Finance.

Michael Smith
Health
Research BC

healthresearchbc.ca
info@healthresearchbc.ca
604.730.8322 | 1.866.673.4722