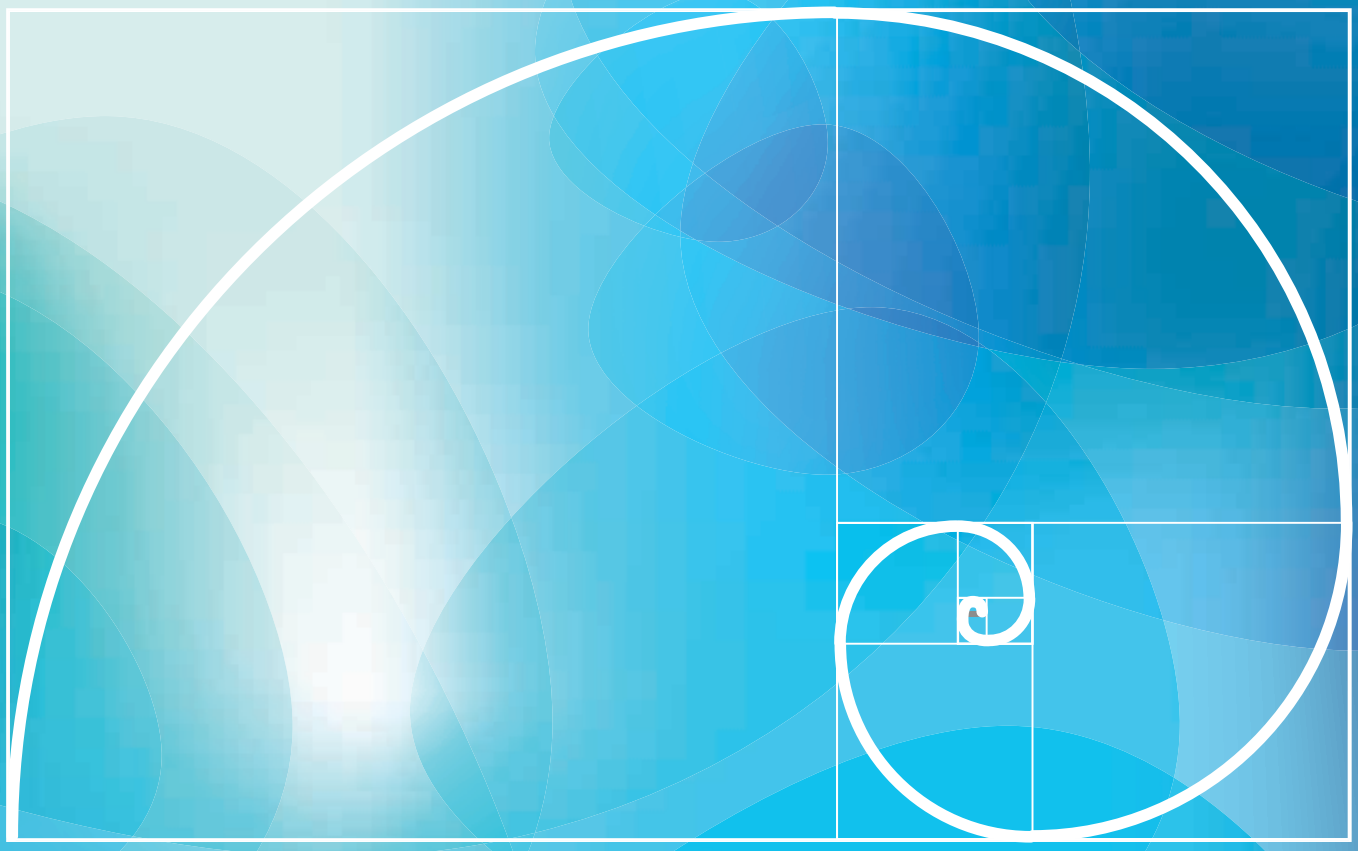
Putting Our Minds Together:

Research and Knowledge Management Strategy



BRITISH COLUMBIA | Ministry of Health

"..the Ministry of Health should be the centre of independent, non-conflicted health information and health research that results in the best possible spending of health dollars and the best health for all British Columbians." [1]

— The Honourable Adrian Dix
British Columbia Minister of Health

1 SHAW, November 30, 2017, 19:00, Dix – BC health care system, Channel 4, Vancouver BC, Voice of BC

British Columbia. Putting Our Minds Together: Research and Knowledge Management Strategy. Ministry of Health, 2018.

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Foreword

This document serves as the response to the Ombudsperson's recommendation 35 of *Misfire: The 2012 Ministry of Health Employment Terminations and Related Matters:*

> *By December 31, 2017, to the extent that such gaps are found to exist as a result of the review under the preceding recommendation, the Ministry of Health publicly release a plan, with a reasonable timeline and transparent objectives and deliverables, to address the gaps.*

It provides a plan, with timelines and milestones, to address each gap. It goes further and takes the opportunity to set a new approach for strengthening the culture and infrastructure for research use and knowledge management Ministry-wide. And, it signals the Ministry's commitment to work with the research community, including the Michael Smith Foundation for Health Research, as well as other stakeholders, to co-develop solutions for the health system's toughest challenges. Further information on the Ministry's response to the Ombudsperson's preceding Recommendation 34 is included in Appendix 1.

Introduction

In the nineteenth century health was transformed by clear, clean water. In the twenty-first century, health will be transformed by clean clear knowledge.

– Muir Gray, Director UK NHS National Knowledge Service & NHS Chief Knowledge Officer

As stewards of B.C.'s health system, the Ministry of Health (Ministry) must take a view of policies, practices and services that will benefit and provide the best outcomes for the people of the province and make decisions that support effective, accessible, safe and equitable health care for all British Columbians. Ministry policies, planning and decision making are ideally informed by strong, unbiased evidence[2] from the ever-growing body of international health research literature; and, from research directly commissioned when necessary. The Ministry works with research partners in a variety of ways to enhance the quality of funding and policy decisions made by the Ministry. We are committed to expanding our organizational efforts to do more.

The work of the Ministry and the services delivered by the partners represents close to $20 billion of taxpayer funds every year to provide health care services to the people of the province. These dollars are approximately half of what the province has available to spend on all public services, including areas such as education, social assistance, transportation infrastructure and the environment. That is a great deal of money. And even still, it does not provide optimal health care services for every British Columbian. Careful and difficult decisions need to be made every day to ensure that the health care investments are well informed and have the intended impact. The Ministry's responsibility is to ensure there is value for the investment of taxpayer dollars and improvements in the health of British Columbians. Some of the types of difficult policy decisions that need research include:

- What kinds of service delivery models work best to help people manage their chronic illnesses?
- Is there sufficient evidence (and benefit) to publicly fund a particular new surgical technology across the province?
- What pharmaceutical therapies work and for what groups of people?
- How do people at the end of their lives think about quality of life and how can we use that information to support them and their families?
- What services should public health nurses provide to support young, vulnerable mothers so that the mothers and their babies will thrive and have the best chance of good health?
- What are the best ways to pay health professionals to support the best outcomes for patients?
- What kinds of virtual care are most effective for people living in rural parts of British Columbia?
- How can we use science and research evidence to more rapidly help us identify the source of a salmonella outbreak in poultry that ends up making people sick?

2 The Ministry uses many kinds of evidence to inform its work. In the context of this strategy, we refer to evidence from scientific research, which is based on systematic investigation, designed to develop generalizable knowledge.

The Ministry's *Research and Knowledge Management Strategy* (the Strategy) acknowledges and values the expertise and contributions of the health research community – past and present – and affirms the Ministry's commitment to use research evidence in health care policy development, implementation and evaluation. It recognizes that research evidence, increasingly and where appropriate, will be developed by and with researchers in partnership with clinicians, policy makers and patients[3]. The Strategy recognizes that internal structures, people and processes are required to make it easier for Ministry staff to base decisions on the latest body of knowledge and to ensure the right policy related research questions are being asked.

This document sets out the plan to address gaps in programs focused on evidence development in the areas of pharmaceutical and public health services, data access and infrastructure to study and integrate evidence into practice. These gaps were previously identified in response to Recommendation 34 of the Ombudsperson's report *Misfire: The 2012 Ministry of Health Employment Terminations and Related Matters*.

It also further clarifies how the Ministry will approach research and demonstrate a commitment to evidence-informed processes across *all* programs. Despite the events of the investigation, and because of it, the Ministry has always and must now reaffirm that it needs and values the work of the research community and the expertise and rigour that scientific methods bring to our understanding of the health care system. The Strategy details Ministry activities to repair existing gaps, to prevent other gaps in the future, and to strengthen the use of research evidence in Ministry policy and decision making across all program areas; it also details how progress will be measured. This transparency is important for Ministry staff, the health sector, for the research community and for the public.

The Ministry has a vision for how evidence is used to support the best health outcomes for British Columbians, now and in the future. In order to make the best decisions possible, the Ministry, working with its partners and others impacted by its decisions, must use learned experience and be informed by high-quality evidence from health research.

3 Considerable effort is underway in BC and across the country to advance patient-oriented research. Patient-oriented research is defined as research that is done in partnership with patients, answers research questions that matter to patients and aims to improve healthcare.

Ministry Mandate and Responsibility

The Ministry directly manages a number of provincial programs and services. These programs include PharmaCare, which provides prescription drug insurance for British Columbians, and the B.C. Vital Statistics Agency, which registers and reports on vital events such as a birth, death or marriage. The Ministry also manages the Medical Services Plan on behalf of the Medical Services Commission, which has legal authority under the *Medicare Protection Act.*

Ministry policy and funding activities impact the work of those mandated to manage and deliver health care services: five regional health authorities in B.C. are responsible for delivering a full continuum of health services to meet the needs of the population within their respective geographic regions; a sixth health authority, the Provincial Health Services Authority is responsible for managing the quality, coordination and accessibility of province-wide health programs such as the Renal Agency. Additionally, the Ministry works in partnership with the First Nations Health Authority and Health Canada to improve the health status of First Nations in B.C. and to build a better, more responsive and more integrated health system that will benefit all Indigenous peoples.

The following Ministry research related functions/ responsibilities *are* the subject of this strategy:

- Internal capacity development (people, processes and structures) to support access, use and application of research;
- Commissioning of research and evidence syntheses to support policy development, implementation and evaluation; and,
- Evidence development processes that guide decisions regarding publicly funded benefits and programs.

The Ministry also has the following research responsibilities that *are not* the explicit focus of this strategy:

- Funding and government performance oversight for provincial research organizations (Michael Smith Foundation for Health Research (MSFHR) and Genome British Columbia);
- Strategic support/influence/resources to the provincial research ecosystem; and,
- Contributions to government's interests related to research.

B.C.'s Health Research Environment

B.C. is a site of world class health research with approximately 2500 health researchers and over 100 health research centres, units and centres of excellence. Most are affiliated with one of the six research intensive universities: University of British Columbia, Simon Fraser University (SFU), University of Victoria (UVic), University of Northern British Columbia, Royal Roads University and Thompson River University. The province is also home to Canada's first fully distributed medical school at UBC. As part of their training, UBC medical students are immersed in the province's vibrant, inter-professional research community.

B.C. has made a sustained investment through MSFHR, the provincial health research funding organization, in people, organizations and networks in order to support long-term stability and short-term flexibility and responsiveness in health research. The funds invested in MSFHR are catalytic in creating capacity in B.C.'s health research ecosystem, and especially in developing the talent B.C. needs to advance health research and grow the knowledge economy. Over 90 percent of MSFHR funded researchers stay in B.C. where they train an average of 11 next-generation innovators and hire an average of three full-time staff.

The Ministry has collaborated with a range of centres, institutes and networks in B.C. and beyond. For example, the Institute on Aging & Lifelong Health and Canadian Institute for Substance Use Research at UVic; the Centre for Applied Research in Mental Health and Addiction and Children's Health Policy Centre at SFU; the Therapeutics Initiative (TI), the Centre for Clinical Epidemiology and Evaluation, the Centre for Health Services and Policy Research, the Centre for Health Evaluation and Outcome Sciences, the Women's Health Research Institute, the BC Centre of Excellence in HIV/AIDs, the BC Injury Prevention Unit and PopData at UBC; and the University of Northern BC Health Research Institute. Many others have also made significant contributions and have advanced the quality of health sector policy.

Partnerships have developed and deepened between the province's health authorities and B.C.'s post-secondary institutions, providing new opportunities for applied health research in health delivery systems. The nascent Academic Health Science Network (AHSN) is promoting new relationships between clinicians, researchers, patients, administrators and policy makers to accelerate the translation and application of research into clinical practice throughout the province and to shift academic and practice education to better align with patient and health system needs.

Embedded within the AHSN is the Strategy for Patient Oriented Research BC SUPPORT Unit, a multi-partner initiative[4] co-funded by the Canadian Institutes of Health Research (CIHR). It represents a major provincial resource with $80 million in financial and in-kind support over five years and is beginning to change the research paradigm to

4 BC SUPPORT Unit, funding partners include: BC Children's Hospital Research Institute, BC Ministry of Health, BC Patient Centred Measurement, Canadian Institutes of Health Research, Centre for Clinical Epidemiology & Evaluation, Centre for Health Evaluation and Outcome Sciences, Clinical & Systems Transformation, First Nations Health Authority, Fraser Health, Interior Health, Island Health, Michael Smith Foundation for Health Research, Northern Health, Patient-Centred Measurement, Population Data BC, Providence Health Care Research Institute, Provincial Health Services Authority, Rural Coordination Centre of BC, Simon Fraser University, University of Northern BC, Vancouver Coastal Health.

more intentionally and regularly include patients in all aspects of the research process (e.g., helping to inform research priorities, participating on research teams). The BC SUPPORT Unit has two main roles: providing services to researchers, patients, health care providers and health system decision makers; and facilitating initiatives identified as provincial priorities.

The health data platform, partly funded through the BC SUPPORT Unit, will be a shared common data environment that will enable better use of health data, using leading privacy and security practices. Goals for this initiative include:

- Improved timeliness, efficiency and greater range in researcher data access;
- Positioning B.C. for excellence in data-driven evidence for health and health research sectors; and,
- Increased security and functionality in data capture, storage and retrieval for health researchers.

The health data platform is discussed further in the document.

Ministerial direction to the health authorities in the annual Service Plan and Mandate letter affirms the expectation that they will support health research and innovation, including the B.C. SUPPORT Unit and the AHSN in order to foster improved patient outcomes and health system performance.

How This Report Was Developed

This Strategy was developed through internal assessment, consultation and research evidence. Ministry staff undertook the following activities/ processes:

Understanding and using learned experience

1. The Ministry acknowledged the experiences shared by individuals interviewed by the Ombudsperson as well as the collective experience of the events by accepting all of the report's recommendations and beginning a process to respond to every recommendation.

2. A researcher consultation was held in June 2017 with affected researchers and with a broader group of researchers who have worked with the Ministry, to explore the issue of the Ministry's engagement with the research community.

3. A consultation with affected employees, researchers and contractors was held in September 2017, inviting response to the initial gaps (as per Recommendation 34) identified by the Ministry.

4. Input was garnered from key Ministry program staff through review of the gap analysis.

5. The Ministry's *Review and Assessment of the Termination of Evidence-based Programs in Pharmaceutical and Related Health Services: Ministry of Health Response to Ombudsperson's Recommendation 34* was published in October 2017.

6. As planned and in response to the assessment of the Ministry's response to Recommendation 34, post-publication, the Ministry held a second set of consultations with the researchers invited to the June 2017 event and with individuals directly affected by the investigation, requesting feedback on the gap analysis and advice on the development of this strategy.

7. All Ministry Assistant Deputy Ministers and Executive Directors were invited to have their division comment on the report during its development.

Understanding and using evidence

8. The Ministry completed a jurisdictional scan and evidence review to understand best practices, processes, policies and resources for supporting evidence-informed policy and decision making.

9. The Ministry completed its own and commissioned an independent rapid synthesis of the research literature on supporting organizational change to an evidence-informed culture.

10. The Ministry consulted with five external experts[5], identified by the Michael Smith Foundation for Health Research, in the use and integration of evidence in health systems. The international experts were asked to provide advice on leading practices from around the world that have proven effective in creating an organizational culture that values evidence and has the capacity and capability to incorporate evidence into the policy making process.

5 External researchers who provided advice included: Dr. Steve Hanney, Senior Research Fellow, Brunel University, London, England; Dr. Moriah Ellen, Assistant Professor at the Institute of Health Policy, Management and Evaluation at the University of Toronto, and Investigator at McMaster University and Senior Lecturer in the Jerusalem College of Technology; Dr. Sarah Thackway, Executive Director, Epidemiology and Evidence, at New South Wales Health, and Conjoint Associate Professor, School of Public Health and Community Medicine, at the University NSW, Australia; Dr. Jeremy Grimshaw, Senior Scientist, Clinical Epidemiology Program, Ottawa Hospital Research Institute, Full Professor, Department of Medicine University of Ottawa; Dr. Hans van Oers, Chief Science Officer at National Institute of Public Health and the Environment, (RIVM), Tilburg University, the Netherlands.

What We Heard

When we spoke with some of B.C.'s health researchers, with experts outside of the province, and with Ministry staff they highlighted the shared interest of the health research community and the Ministry in improving the health and well-being of British Columbians. This shared interest has built a strong foundation for a sustained relationship between the two communities. In some cases, it has even fostered the integration of Ministry priorities into a researcher's program of research. Researchers shared the view of the Ministry, that health research is fundamental to the work of the Ministry, and highlighted new opportunities for how health research had been and could be integrated.

When asked what improvements the Ministry could make to our structures, policies, programs and processes, expert advisors from outside B.C. advised us to focus on the following areas:

Building Relationships

- Don't underestimate the importance of informal and sustained relationships (sometimes even more important than formal structures).
- Provide support for early career researchers – in rotation, mentorships, short projects that build a future informal relationship, finding opportunities to meet with people, and opportunities to share/make a case for how their research informs policy. Over time, this will create stronger, more productive relationships.
- Create opportunities for researchers to understand the needs of the health system/ the needs of policy makers *and* for policy makers to use researchers' expertise.

Integration of Research with Policy

- Integrate health research into health care at all levels. An entity such as the AHSN provides this opportunity.
- Incorporate an implementation and evaluation plan early in policy development for the best information and outcome.
- Build internal capacity for accessing and using evidence in policy and decision making through push and pull efforts.
- Pay attention to human factors and change management, as well as the importance of communicating with stakeholders.
- Identify specific groups (Ministry program areas/ research centres) that can model the behavior of productive collaboration.

Planning and Prioritizing

- Focus on areas that you are confident will be successful and create necessary change.
- Plan for the relationship and policy to evolve, so that you can continue to anticipate, plan and adapt.

Beyond external expert advice, Ministry staff and B.C. researchers all highlighted the value of supportive leadership in promoting an evidence-informed organization. Fortunately, we are at a moment in time where researchers and Ministry's staff and executive are all in agreement: people should be supported through training, collaboration and the exchange of learned experience and health research to make the best policies and decisions for B.C.'s health system.

Addressing the Gaps

Efforts are underway to address the gaps identified by the Ministry in the report *Review and Assessment of the Termination of Evidence-based Programs in Pharmaceutical and Related Health Services: Ministry of Health Response to Ombudsperson's Recommendation 34.* A table with additional details about the objectives, milestones and timelines for addressing these gaps is included in Appendix 3.

In a public assessment of this response to Recommendation 34, it was noted by Justice Thomas Cromwell, who is overseeing government's response to the Ombudsperson's report, that the Ministry's gap analysis fulfilled the requirement of the Ombudsperson but that some researchers and contractors had noted it "does not, in fact, identify the most serious gaps and that the report does not reflect the advice provided by some of the people most familiar with the impact of these events on evidence-based research in the Ministry."

In conducting the gap analysis, the Ministry attempted to identify the research projects underway that were supporting evidence- based[6] decision making at the Ministry of Health. In addition to effects on evidence-based programs, the Ministry has noted several research projects that had been identified for future consideration, whose planning may have been impacted at the time of the investigation – some of these are now complete, some are underway, and some are no longer considered priorities (see Appendix 3). As reported in the gap analysis, based on this analysis, we concluded that there were some evidence-based programs that were impacted during the time of the investigation that have largely been restored (e.g., Population Health Surveillance) and there are some programs, most notably the optimum drug usage programs in the Pharmaceutical Services Division and the capacity for efficient and timely systematic evaluation, where gaps remain. Additionally, we acknowledged that the restrictions and delays in access to Ministry data during the investigation had an impact on other research projects underway for purposes other than supporting Ministry decision making. These were acknowledged under intangible impacts and researcher access to data.

The information that follows provides details about the Ministry's plan to address each of the 10 identified gaps.

1 Intangible gaps – rebuilding and strengthening the relationships between the Ministry and the research community

Rebuilding and restoring the relationships and networks between the Ministry and the research community will require communication and clear processes that engender and sustain goodwill. This plan is in itself a public commitment to strengthen the existing and new relationships between the Ministry and the research community. Examples of the practical actions the Ministry is taking to do this include:

- Establish *Research Links,* a service to provide a single point of contact for researchers desiring information about Ministry priorities, requiring support in concept for grant proposals and other applications, or otherwise interested in establishing or maintaining connections with the Ministry and its staff. This will not replace existing relationships between researchers and

6 The term evidence-informed is more frequently used in recognition that other factors such as clinical expertise and public values in addition to scientific evidence are also considered in the development of policy. We use the term evidence-based throughout this report to be consistent with the Ombudsperson's recommendations.

policy makers; it will strengthen it. It will also serve as a place where Ministry staff can identify their needs for researcher participation in Ministry projects and committees. The Ministry will identify staffing for *Research Links* in February 2018, provide information to the research community on the point of contact by the end of fiscal year 2017/18 and establish a web presence by the end of 2018.

- Participate as a host site for Scholars in Residence (for established career researchers) and for Policy Fellowships (for early career researchers), in recognition of the value of researchers in policy and decision making. The Ministry will post expressions of interest to identify researchers by the end of March 2018, with the goal of having those Scholars in Residence by September 2018. The Ministry has already submitted its expression of interest to two policy fellowships programs. Pending federal processes, identifying matches for fellows and priority projects will begin in April 2018, with the goal of hosting our first fellows in September 2018.

- Explore opportunities, where possible and feasible, to enter into agreements with research centres that provide flexibility as well as some degree of certainty so that researchers and research organizations can act as trusted and supported partners in pharmaceutical and health care services. The Therapeutics Initiative has signed the first of these multi-year agreements. These activities are ongoing.

2 Quality prescribing (optimal drug use) support for health professionals

To enhance existing initiatives in quality prescribing and building upon the previous Education for Quality Improvement in Patient Care (EQIP) program, the Ministry is developing a new optimal drug use program in collaboration with the Therapeutics Initiative (TI). The EQIP program provided family physicians with tools for self-evaluation, including personalized prescribing portraits for a particular disease or health topic. The program was implemented in phases to enable rigorous evaluation. The new program, which will be designed with adequate stakeholder engagement, is expected to compare prescriber specific data with a cohort of peers and the current evidence base (e.g. prescribing portraits). The Ministry's Pharmaceutical Services Division will operationalize this program by the end of 2018/19 fiscal year and target at least two topics per year over the next five years to facilitate improved quality of prescribing. Additionally, the Ministry will continue to operate the Provincial Academic Detailing Service and ensure its integration with this new program, and undertake other initiatives to identify suboptimal patterns of drug use and interventions to improve use.

3 Systematic approach to utilization and therapeutic reviews to inform decision making

The Ministry, in collaboration with the Therapeutics Initiative (TI), will establish a program for systematic drug utilization reviews and systematic monitoring for select targeted drugs and drug classes, to expand its capacity for generating and using evidence reviews to inform policy and decision making. Utilization reviews will include trend analysis and reporting, rapid responses to specific inquiries, and advice on possible areas of further evidence review. The program is designed to align with the work of the Drug Benefit Council, to supplement the Ministry's existing monitoring and analytical work, to support evidence-informed decisions, and to ensure contemporary and cost-effective PharmaCare programs. This new program will be launched in summer 2018 and based on utilization reviews and monitoring, the TI will

complete at least five evidence reviews per year over the next five years.

4 Optimal utilization of the expertise of researchers to inform PharmaCare policies, programs and drug listing decisions

There are evidence-informed PharmaCare policies, programs and drug listing decisions, but these will be further enhanced through more independent research. By September 2018, the Pharmaceutical Services Division will systematically review opportunities for collaboration and engagement between the Ministry and pharmaceutical policy researchers to inform PharmaCare policies, programs, and drug listing decisions. As part of the commitment to the Drug Safety and Effectiveness Network (DSEN), the Ministry will be facilitating timely data access by April 2018 and has already approved an approach that provides DSEN with pre-approval for projects meeting particular criteria.

5 Sufficient internal capacity focused on the integration of evaluation and research outputs

The Pharmaceutical Services Division will evaluate capacity needs and ensure that any gaps filled by summer 2018. Approvals for new positions/roles will be obtained from the Ministry and positions and roles will be filled through a competitive process. All eligible applicants will be able to apply. Capacity needs will be regularly assessed and adjusted going forward.

6 Access to the Canadian Community Health Survey

The Canadian Community Health Survey (CCHS) is a cross-sectional survey that collects information related to health status, health care utilization and health determinants for the Canadian population. To restore access to CCHS data and connect it with the Ministry's administrative health data, the Ministry will enter into a data sharing agreement with Statistics Canada enabling the transfer of B.C. CCHS data to the Ministry. Subject to the approval of Statistics Canada, the Ministry will store the CCHS data in a secure environment and provide access to approved personnel. Planning for the reacquisition of CCHS data has begun. Security requirements will be reviewed and related processes and supporting technologies will be established by the end of fiscal year 2017/2018. Access to CCHS data is expected to be restored by December 2018.

7 Systematic evaluations

Development of B.C.'s AHSN provides the necessary infrastructure to support health system level evaluation, on a much more robust and sustainable level than the Monitoring, Evaluation, and Learning System[7] that was discontinued in 2012. The Ministry can leverage the AHSN's network of researchers, health authorities, policy makers and patients to support collaborations that will increase the rigour of evaluations and the applicability and value of their findings.

7 In 2010, the Ministry, working with the MSFHR and the health authorities, collaborated on the Monitoring, Evaluation and Learning System (MELS) initiative, a project to develop capacity to undertake provincial evaluations of major health care initiatives. MELS featured a provincial network of 15 evaluators embedded in the 5 regional health authorities, external expert advisory groups and initial work on a secure data collection and reporting system. MSFHR made a significant investment in funding and staffing to support the initiative.

As a an initial step, the Ministry will commission a proof of concept for a new initiative, HealthWISER, that will serve as an evaluation platform for rapid-cycle evaluation of services, programs, and policies at a provincial level by:

- Promoting implementation in waves: first, pilots, then designed delays;
- Using outcome data from the health data platform for comparisons of early versus delayed groups; and,
- Enabling economies of scale and efficiency that are not possible when evaluations are done as one-off projects.

An initial trial of 'designed delay'[8] evaluation of drug reimbursement policy showed significant cost savings as well as clinical benefits for patients however, the potential applications are much broader (Schneeweis, Maclure, et al, 2004). In many cases despite the robustness of our evidence syntheses processes, the Ministry is faced with making decisions when there is incomplete or unclear evidence. HealthWISER provides a strategy for moving forward judiciously with incomplete evidence while allowing for any necessary course correction after each cycle of evaluation and re-evaluation. This could be applied to:

- Rigorous, transparent evaluations of impacts resulting from service changes, particularly when these changes are controversial and contested;
- Identification of promising local and regional innovations that should be evaluated in real time and with mechanisms for spread and scale up;
- 'Coverage with evidence development', a middle path between covering promising services, drugs, and technologies when evidence is lacking versus delaying until evidence is absolutely solid; and,
- Identification of areas for cost savings through reductions in over-use and low value services.

The proof of concept for HealthWISER will be tested in 2018/19 as an internal Ministry project with a commissioned researcher and using the existing administrative data in Health*ideas*. During this time, an implementation plan will be developed for approval addressing governance (potentially within the AHSN), budget, project selection, and work plan.

8 Optimized development and maintenance of Health*ideas*, the Ministry data warehouse, to support secondary data access

Optimizing the development and maintenance of Health*ideas* will support secondary data access for Ministry analysts as well as researchers who will access the data through PopData.

To date, investments have been made in installing leading edge privacy protections. The next areas of focus will be to make the complex health data sets easier for people to understand and work with. This will include embedded information about the data elements, analysis-ready data sets and summary indicators of health system performance.

9 Ready access for Ministry staff to aggregate statistics

Before and since the investigation, the Ministry has invested in powerful business intelligence tools (i.e. advanced SAS and MicroStrategy) that can enable visual display and support the effective interpretation of data. These reports can be generated in response to stakeholder and program area needs, and new reports will continue to be developed to meet current and evolving business priorities. A self-service portal that gives Ministry staff ready access to policies, routine reports and key indicators has been

8 Design delay is a methodology in which service changes are phased in and rigorously evaluated.

developed and is in the pilot stage. By April 2018 the portal will be fully established making select aggregate reports available to Ministry users.

10 Appropriate and timely data access for Ministry internal staff, health authorities and researchers

The Ministry is taking a number of steps to eliminate barriers to appropriate and timely data access. The development of a Health Data Platform that enables health data from multiple health organizations and sources to be linked, de-identified and analyzed within a secure research and analytics environment is being led by the Ministry and financially supported by the BC SUPPORT Unit. Work on a proof of concept for the technical environment is underway and scheduled to be delivered by March 2018.

BC Data Scout™ will be a data query service that provides information in the form of highly aggregated, approximate results to researchers who are planning a study using Ministry data. The information provided in the report is intended to be complete enough to determine if a study is feasible, but not detailed enough to replace the need for a full Data Access request. Data Scout™ was made available to researchers through PopData in February 2018.

To ensure appropriate and timely access to Ministry data, work is underway to support PopData, as a trusted research organization, to extract data directly from the Ministry's Health*ideas* environment. PopData direct access to PharmaNet data has been established and is in the pilot stage. Planning is currently underway to provide direct access to other sets of Ministry data in Health*ideas*, which is expected to be operational by October 2018. This access will provide more up-to-date data than what is available through the annual Ministry data extracts PopData currently receives.

The Ministry contracted David Loukidelis, former BC Information and Privacy Commissioner, to provide services related to the Ministry's policies and processes for the use and disclosure of personal information and associated data for research and analysis. Based on this work the Ministry has developed new policies and processes for the use and disclosure of de-identified health data for research and analysis. The new policies and processes will ensure an appropriate balance of the obligation to protect personal information with the benefit of authorizing access to data for public interest research. The policy, which will be released in April 2018, is expected to reduce the time and complexity associated with applications for access to Ministry data for academic research.

In addition, a proposed model for streamlining data access across all the health authorities and Ministry will be developed by April 2018.

Strengthening the Ministry's Culture and Infrastructure for Research and Knowledge Management

In undertaking the gap analysis in response to the Ombudsperson recommendations, it was evident that there was considerable variability in research engagement across the Ministry. Some areas, most notably the Pharmaceutical Services and the Population and Public Health Divisions, had well established processes for integrating evidence into decision making, trusted and long standing relationships with researchers, and dedicated resources to research production. It was these program areas with the strongest commitment and investment in evidence-based decision making that were most impacted by the events of 2012. The Ministry is committed to restoring evidence-based programs in these divisions as described in the preceding section. The Ministry is equally committed to using this opportunity to ensure that rigorous evidence-based processes are in place across all programs and, moreover, that there is integrated coordination so that decisions in one program area are not made in isolation of potential impacts in other program areas.

The Ministry is guided in these efforts by the large and growing literature on knowledge translation, implementation science, and evidence-based decision making. From the literature review and consultations with international experts, there is an emerging consensus on the organizational structures and processes that are most effective in integrating research evidence into policy and decision making.

In order of importance, these are:

- Organizational leadership and culture that values evidence-based policy and decision making ("Climate for research use");
- Positions, processes, and programs that synthesize and curate research findings and make them easy to access and integrate into policy and decision making ("Push and pull efforts");
- Formal and informal relationships between Ministry staff and researchers ("Linkage and exchange activities"); and,
- Direct participation in and funding of research projects ("Research production").

The Ministry already has many of the elements of a research knowledge infrastructure in place:

- Research and knowledge management branches with dedicated staff resources;
- A full service library with professional librarians who provide assistance in conducting literature searches;
- A continuing education program *Retool for Research* that provides staff training in accessing and using research evidence;
- Regular opportunities to interact with researchers through *Research Rounds;*
- A monthly e-letter *Health Evidence Flash* that provides links to just-published reports from Canadian and international jurisdictions, journal articles, book reviews, and upcoming events; and,
- Commissioned generation of syntheses of existing knowledge and new knowledge through general service agreements or end of year grants with researchers and research organizations. Additionally, the Ministry provides a multi-year funding grant to MSFHR.

These activities represent an investment and commitment to the use of research evidence; however, the collective impacts of these commitments and investments could be greatly enhanced and leveraged. The many resources available to support staff in accessing and using research evidence are not well known, participation is voluntary, and in some cases, supports are not sufficient enough to have a significant impact on the Ministry's work. Each division makes its own decisions about involvement and resources for research, largely based on historical patterns of investment and the tendencies of divisional leadership and staff. There is no forum for cross-divisional information sharing and priority setting.

Going forward, under leadership of the Partnerships and Innovation Division, the Ministry will undertake a number of actions described below. These are described in further details with objectives and milestones in Appendix 3.

Building a Climate that Values and Supports Research Use

The literature is clear that leadership is the most important element in setting the cultural climate of an organization, including the climate for research use. In recent consultations with staff, the Ministry's commitment to research and evidence was identified as a strength of the current culture that staff wanted to see maintained. There is a window of opportunity right now in the Ministry as part of the Culture Change Initiative[9] underway to explicitly set the expectation that acquisition, assessment, adaptation and application of research evidence is a necessary part of all policy and decision making at the Ministry. The Ministry Research Advisory Committee (MRAC) will be re-established to provide a working level forum for communication. The value of research and knowledge management will be more fully articulated in the Ministry 2018/19 – 2020/21 Service Plan, and this expectation will be formalized in letters of expectation for Assistant Deputy Ministers and in divisional plans.

Push and Pull Efforts

Knowledge Management

Knowledge management (KM) is the discipline of creating and managing processes to get the right knowledge to the right people at the right time, and to help people share and act on information in order to improve organizational performance. KM challenges identified by staff in annual surveys within the Ministry have been: access to key information, problems with capture and transfer of knowledge, and a culture that does not consistently use or share knowledge. In 2016, the Ministry launched its Knowledge Management Strategy with the objective of supporting the effective use of evidence and organizational knowledge in policy development and decision making. The KM strategy provides opportunity for solutions by:

- Developing a hub or central repository for connecting people, providing evidence sources, and core information;
- Better capturing and transferring completed work and "what works;" and,
- Developing a culture that encourages and supports sharing of information, using evidence and working collaboratively.

9 The Culture Change project in the Ministry was developed in response to the Ombudsperson's Report. Recommendation 33 requires the Ministry to take steps to change the workplace culture of the Ministry and re-establish "positive, respectful professional relationships." The project will involve a series of steps, from employee consultation sessions, cross ministry action planning, prioritization and ministry-wide implementation of recommendations resulting from staff consultations.

The Evidence Service

An *Evidence Service* will be established to improve organizational and individual capacity for evidence-informed policy and decision making and promote a culture of evidence informed practice within the Ministry.

The *Evidence Service* will provide a single point of contact to access a flexible menu of tailored products/services to address the Ministry's needs as well as provide navigator support to ensure staff has the evidence they need to answer decision and policy questions. These will range from self-directed to rapid evidence reviews and syntheses, to realist[10] and systematic reviews. Through the *Evidence Service*, comprehensive research and economic analyses that include patient and clinician input will be available to support the development of strategic health services, health human resources and information management policy, just as they are currently available for drug benefit and health technology decisions.[11]

Capacity Building

The Ministry plans to build on existing strengths in its internal organizational capacity. These efforts will be bolstered by a number of programs at MSFHR, which the Ministry can access to advance its research and knowledge management culture and infrastructure. These include: evidence-based policy training programs for researcher-policy maker teams; knowledge exchange forums on specific emerging issues; targeted components of MSFHR funding programs, i.e., convening and collaborating awards; health policy fellow placement (partnership between CIHR and MSFHR); and targeted research in priority areas (e.g., MSFHR's current work on opioid response). The Ministry and MSFHR will discuss areas of collaboration by the end of February 2018. The Ministry can also strengthen its capacity through two aspects of the BC SUPPORT Unit:

- By accessing the BC SUPPORT Unit methods clusters. These include real-world clinical trials, data science and health informatics; health economics and simulation modelling; knowledge translation and implementation science; patient engagement; and, patient-centred measurement. The methods clusters are set up to advance the science of the methodologies used within the field, promote the use of the knowledge generated by the methods clusters, and promote the field of research.
- By leveraging the network of learning and new knowledge that is being developed in the BC SUPPORT Unit regional centres. Regional centres, **corresponding with regional health authorities and their affiliated universities,** provide a key *integration* function, ensuring that patient-oriented research is conducted and research evidence is used to improve patient experience and outcomes – and that patients are engaged in these efforts. The BC SUPPORT Unit has a provincial hub in the Vancouver Coastal region and a regional centre in each of the four other health authority regions: Northern, Fraser, Island and Interior.

Similarly, the Ministry can optimize opportunities for evidence generation through the collaborative SPOR Networks in areas such as primary care and chronic kidney disease.

10 Realist synthesis is an increasingly popular approach to the review and synthesis of evidence, which focuses on understanding the mechanisms by which an intervention works (or not).

11 In this context, technology is defined as devices, diagnostics and clinical procedures.

Evidence Flash

The *Evidence Flash* is an electronic newsletter that is published monthly by the Health and Human Services Library within the Ministry. It provides links to evidence resources such as just-published reports from Ministry research partners, Canadian and international jurisdictions, organizations and research groups; relevant journal articles; book reviews; innovative and useful online resources and upcoming events (e.g., conferences).

The *Evidence Flash* also provides an opportunity for Ministry staff to communicate about completed letters of support, research using Ministry data, internal research projects and collaborative work with external researchers. The *Evidence Flash* will be refreshed to explicitly include and communicate research projects in which the Ministry is involved. This central gathering and the dissemination of information about research projects (commissioned research, letters of support, research findings) will enable information sharing and the leveraging of research across Ministry program areas.

Linkage and Exchange

There are strong, long-term relationships between members of the research community and some areas of the Ministry. Maintaining and building on these relationships, the Ministry aims to support integrated knowledge exchange between Ministry staff and researchers. This will occur both informally and formally; however, there will be systematic efforts to move beyond the current ad hoc nature of engagement which currently ranges from low intensity collaborations to higher ones.

Two new initiatives that will strengthen the Ministry's capacity for linkage and exchange are: *Research Links*, a service to connect researchers and Ministry staff with necessary supports, and a Scholar/Fellowship program that will bring early and established scholars into the Ministry.

Research Links

Research Links will support both Ministry staff and the research community with the information and resources they need to promote and sustain productive connections. *Research Links* will provide:

- A single contact point for letters of support and information requests;
- Facilitation of new connections;
- Support for the administration of external opportunities, partnerships and co-applicants;
- Direction of researchers to the appropriate program contacts (and vice versa); and,
- A single, trusted Ministry source to support researchers conducting research of value to the health system.

Research Links will augment, rather than replace, existing relationships between researchers and policy makers.

Scholars in Residence and On-site Fellowships

The Ministry will engage with researchers through a Scholars in Residence Program (for established researchers) and a Health System Policy Impact Fellowship Program (for early career researchers) to:

- Generate new connections;
- Support the integration of research into policy; and,
- Train early career researchers/use the expertise of established researchers in health system policy and decision making.

Building on the best practice model for a scholar in residence developed in Island Health, the expected outcomes of these programs will be the effective translation of research into policy and the fostering of collaborative conversations and policy development. Researchers will be based in the Partnerships and Innovation Division, to receive mentorship and support, and will have the opportunity to work with a variety of Ministry program areas on topics of strategic importance.

These opportunities will extend the traditional role of researchers as external partners, to trusted colleagues.

Ministry Innovation Hub

In order to support innovation and collaboration across divisions, the Ministry is looking at creating an Innovation Hub at its main building. The development of the Hub is a cross-divisional collaboration in and of itself. It is staff-driven and designed to promote access to the resources and supports (e.g., library collection, librarians, evidence service, etc.) required to do their work, including a collaborative workspace where researchers, health care partners, and members of the public could interact and potentially co-create policy with Ministry staff. A proposal was completed in February 2018 with implementation of the hub to begin in April 2018.

Research Production

Primary production of research is not a core function for the Ministry but the Ministry will commission research and evaluation where this is required through ad hoc and multi-year agreements with research centres. The Ministry also has the opportunity to influence the research agenda through the provision of research funding to MSFHR and by providing letters of support and participating as a knowledge user for research grants in areas aligned with Ministry priorities.

Research Agenda

To date, the Ministry has not set an agenda of its own research priorities that is accessible to the research community. Going forward the Ministry will clearly communicate its research interests and will solicit input from partners. This is discussed later in this document.

Governance – Oversight and Accountability

In order to implement the Strategy, the Ministry will implement streamlined and coordinated processes to access Ministry data, research syntheses, and commissioned research.

Role of the Ministry's Senior Executive Team

The Ministry's Senior Executive Team (SET) will:

- Provide oversight and direction for an integrated portfolio of research investment that supports sustained and tangible outputs for evidence-informed policy and decision making. SET will have the overall responsibility for resource allocation.
- Receive the results of a coordinated research priority setting process and make decisions on annual and multi-year research priorities. Information about the results of research priority setting and lessons learned from Ministry research investments will be presented and discussed with SET on a bi-annual/ quarterly basis.
- Set expectations for the Ministry's divisions regarding participation in the strategy, staff development and the use of evidence in policy and decision making.

Role of the Ministry's Partnerships and Innovation Division

It is the role of the Partnerships and Innovation Division (PID) to:

- Work across all program areas to promote and support a high performing balance of research investment and engagement;
- Lead activities related to building and maintaining the Ministry's research infrastructure and culture;
- Manage the corporate research and knowledge management files; and,
- Serve as the primary liaison with the research community, research funders and other parts of government on issues related to research.

PID will provide support to the Ministry's research *governance structure*, a health *research agenda* and a *research, evaluation and knowledge management fund*. PID will have corporate responsibility for monitoring and implementing this strategy.

Role of Other Ministry Divisions

Program divisions have responsibility for health policy development and have understanding about the objectives of specific initiatives and connections to relevant stakeholders, including patients, clinicians, and provincial networks. Divisions will maintain and increase engagement with the research community where this is helpful in advancing program goals. They will access both the *Research Links* program and the *Evidence Service* to strengthen the use of evidence in their work.

Divisions will be responsible for their staff's development in accessing, adapting and adopting research evidence into policy and decision documents, including active participation in Research Rounds and other relevant Knowledge Exchange opportunities. They will also be responsible for addressing their identified gaps, as detailed in this strategy.

Divisions identified a staff representative for research and knowledge management within their teams to participate in the Ministry Research Advisory Committee by January 2018.

Role of the Ministry Research Advisory Committee (MRAC)

MRAC will enable participation from all divisions of the Ministry and provide a working level forum for communication and coordinated exchange of information related to research and engagement with researchers in ways that support program work and are mutually beneficial. Members will be the divisional contacts described earlier or working closely with these contacts. In terms of knowledge management, MRAC members will provide and support their staff members' professional development of research skills, including active participation in Research Rounds and other relevant Knowledge Exchange opportunities.

MRAC members will collaborate to provide decision support for SET on the Ministry's research agenda. A Terms of Reference for this committee will be in place by April 2018.

Role of the Partners

The Ministry will rely on trusted research funders such as the MSFHR, research centres and institutes, health authorities and the AHSN (including the BC SUPPORT Unit) to provide expertise and capacity in research and evaluation.

Resources

The Research, Evaluation & Knowledge Management Fund

A Ministry Research, Evaluation and Knowledge Management Fund in the amount of $7 million, including $2 million for the Therapeutics Initiative, has been established to support the work laid out in this strategy and ultimately, positions the Ministry as an example for evidence-based health policy.

Rather than each Ministry division or program area bringing forward annual priorities and drawing a proportion from a shared common fund, Ministry executive will act as an institutional investor: deciding upon investments with a three-year mixed portfolio of strategic and operational investments in research and evaluation. Additionally, a small portion of the research investment portfolio will be reserved for shorter term emerging issues.

Principles for Ministry investments in research

In recognition of the Ministry's long standing investments in B.C. research funding organizations, primary research in areas of strategic and operational needs will be commissioned based on the following **principles**:

- Directly aligns with Ministry strategic and/or operational priorities and mandate;
- Fills a gap in knowledge required for critical policy, planning or decision making;
- Is ethical and patient-centred and provides value to patients, families and the population;
- Considers the overall health benefits, harms and costs of policies and decisions;
- Does not replace funding for researchers available through MSFHR or other provincial funding bodies or through CIHR or other national health research funders. May be used for matched funding where aligned and applicable. Complements the award programs of the MSFHR to address health system priorities;
- Assesses scientific merit with the support of the MSFHR as required; and
- Is able to enter multi-year agreements for efficiency, when feasible.

Research agenda setting

Organizational transparency requires internal collaborative efforts. The Ministry and other organizations like it have used different models for setting an agenda of research priorities that could then be communicated to the research community.

Firstly, the Ministry will set an agenda that will be fundamentally different from our past efforts:

- In recognition of the time required to develop and conduct high quality, relevant, participatory research, the agenda will be focused on the current and future needs of our health system.
- While the health system priorities will be articulated by government in Service Plans, the research agenda will reflect both individual programs as well as cross-program collaboration, supporting the real-life connections that exist across programs in service delivery and in patients' experiences.
- Mechanisms that allow staff, clinicians, patients and researchers to identify areas of research they believe are important.
- Ministry staff will have a defined mechanism for using the research before it is commissioned.

Monitoring Implementation of this Strategy

The Ministry is committed to continuously improving the way it approaches the integration of research in policy. MSFHR will convene, on the Ministry's behalf, an external panel of experts from outside the province to provide advice to the Ministry on implementation. The panel will be in place for an estimated two years, from April 2018 through March 2020. During that time, there will also be opportunities for the B.C. research community to provide input and feedback on Ministry's programs and overall strategy meant to support researchers.

Indicators of Strategy Performance

The Ministry will monitor and evaluate its progress in implementing this strategy, and will specifically measure its progress against the following indicators over the next two years:

1 **Promote productive engagement between Ministry staff and relevant researchers in all program areas, such that:**

- Staff attendance at Research Rounds and Knowledge Exchange events will consistently be above 70 staff.
- All Ministry divisions will represent their support of the B.C. research community (where there is clear relevance and benefit) in letters of support and as co-applicants on grants by the end of fiscal year 2018/19.
- B.C. researchers, through semi-annual continuation of the consultations of 2017, will be asked to report on the relationship between the Ministry and research community along domains that are important to them.

2 **Promote timely access to quality administrative health data, such that:**

- Data ScoutTM will be available to researchers before the end of fiscal year 2017/18.
- Researchers will have secondary access to current, high quality PharmaNet data through PopData at the beginning of fiscal year 2018/19.

3 **Promote faster translation and diffusion of evidence within the Ministry, such that:**

- The *Evidence Service* will begin operations by the end of fiscal year 2017/18 and will double the number of expedited systematic reviews (from 2 to 4) and rapid reviews (from 15 to 30) to support policy and decision making by year two.
- By the end of 2018/19, the Ministry will have at least one talented early career researcher in fellowships and two scholars in residence, which will augment Ministry capacity to bridge the gap between evidence generation, translation and policy making.

4 **Ensure Ministry research priorities are transparent to the research community and where needed, are backed by funding support, such that:**

- The Ministry's Research, Evaluation & Knowledge Management Fund will commence in April 2018.
- The Ministry's Research and Evaluation Agenda will be overseen by SET and will be available to the research community by the end of fiscal year 2018/19.

5 **Ensure Ministry policies and decision making are evidence-informed, such that:**

- Over the next two years, Ministry policies move from an average score of 20% to 50% as defined in the UK's *Evidence Transparency Framework*.
- A majority of Ministry staff report they have the supports they need to develop evidence-informed policy and decision support in the Ministry's Knowledge Management Survey.
- Leadership's assessment of research engagement and use, as measured by staff's assessment of engagement with evidence[12] will increase by 50%.

The Ministry will report annually on its research activities and performance based on the above indicators. Baseline data collection will begin in April 2018.

12 SAGE (Staff Assessment of enGagement with Evidence) is a measure that combines an interview and document analysis to evaluate how policymakers engaged with research (i.e., how research was searched for, appraised, or generated, and whether interactions with researchers occurred), how policymakers used research (i.e., conceptually, instrumentally, tactically, or imposed), and what barriers impacted upon the use of research, in the development of a specific policy product.

Conclusion

The Ministry has a role in supporting the ability of the health system to explore, act and evolve through processes that are shared, standardized, and informed by the best evidence available. To accomplish this, the Ministry will need the help of its partners, including its research partners.

This document serves as the response to the Ombudsperson's recommendation 35 of *Misfire: The 2012 Ministry of Health Employment Terminations and Related Matters:*

> *By December 31, 2017, to the extent that such gaps are found to exist as a result of the review under the preceding recommendation, the Ministry of Health publicly release a plan, with a reasonable timeline and transparent objectives and deliverables, to address the gaps.*

It provides a plan, with timelines and milestones, to address each gap. It goes further and takes the opportunity to set a new approach for strengthening the culture and infrastructure for research use and knowledge management Ministry-wide. And, it signals the Ministry's commitment to work with the research community, including the Michael Smith Foundation for Health Research, as well as other stakeholders, to co-develop solutions for the health system's toughest challenges.

The Ministry serves the people of British Columbia. To maintain their trust, British Columbians should feel confident that the Ministry is supporting, using, interpreting and wisely integrating high quality, relevant research evidence to inform policy development and health system delivery.

Appendix 1: Background Information Related to Ombudsperson's Report and Recommendation 34/35

B.C.'s Ombudsperson was asked by the Select Standing Committee on Finance and Government Services to investigate issues arising from the 2012 Ministry employee termination matter.

The B.C. Ombudsperson's report: *Misfire: The 2012 Ministry of Health Employment Terminations and Related Matters*[13] addresses the investigations and decision making (hereafter referred to as the investigation) that resulted in actions that had significant consequences.

The Ministry of Health (the Ministry) accepted the Ombudsperson's Report and its 41 recommendations to government. In September the Ministry responded to Recommendation 34.

R 34 - By September 30, 2017, the Ministry of Health review and assess the extent to which the ***termination of evidence-based programs during the internal investigation may have created gaps that now remain in providing evidence-informed, safe, effective and affordable drug therapy and related health care services to British Columbians****.*

In the gap analysis, *Review and Assessment of the Termination of Evidence-based Programs in Pharmaceutical and Related Health Services: Ministry of Health Response to Ombudsperson's Recommendation 34*[14] the Ministry identified the following gaps:

1. Intangible Gaps – Restoring and strengthening the relationships between Ministry and the research community
2. Quality prescribing (optimal drug use) support for health professionals
3. Systematic approach to utilization and therapeutic reviews to inform decision making
4. Optimal utilization of the expertise of researchers to inform PharmaCare policies, programs and drug listing decisions
5. Sufficient internal capacity focused on the integration of pharmaceutical evaluation and research outputs
6. Access to the Canadian Community Health Survey
7. Systematic evaluations
8. Optimized development and maintenance of Health*ideas* to support secondary access for research use
9. Ready Ministry staff access to aggregate statistics
10. Timely data access

13 "Misfire: The 2012 Ministry of Health Employment Terminations and Related Matters," BC Ombudsperson, last modified April 17, 2017, https://www.bcombudsperson.ca/documents/misfire-2012-ministry-health-employment-terminations-and-related-matters/.

14 BC Ministry of Health "Review and assessment of the termination of evidence-based programs in pharmaceutical and related health services: Ministry of Health Response to Ombudsperson's Recommendation 34," last modified October 5, 2017, https://www2.gov.bc.ca/assets/gov/british-columbians-our-governments/organizational-structure/public-service/review_and_assessment_-_termination_of_evidence-based_programs.pdf/.

Appendix 2: Table of Plans for Addressing the Gaps

Identified Gap	Objective(s)	Deliverable	Timeline/ Milestones
Intangible Gaps – Rebuilding and strengthening the Relationships between Ministry and the Research Community	To support both researchers and Ministry staff with the information and resources they need to promote and sustain lasting relationships.	Establish *Research Links* service – a single point of contact for researchers seeking information, letters of support or Ministry contacts and for Ministry of staff seeking researcher participation in Ministry projects and committees.	Staffing identified for *Research Links* in February 2018; service point of contact to research community in place by end of FY 2017/18; web presence established by the end of 2018.
	To generate new connections, support the integration of research into policy, and use the expertise of established researchers in health system policy and decision making.	Establish the *Scholar in Residence Program* (for established researchers).	Expressions of interest to identify researchers posted by the end of March 2018, with the goal of having Scholars in Residence in place by September 2018.
	To generate new connections, support the integration of research into policy, and train early career researchers.	Establish the *Health System Policy Impact Fellowship Program* (for early career researchers).	The Ministry has submitted expressions of interest to two policy fellowships programs. Pending federal processes, and identifying matches for fellows and priority projects, which will begin in April 2018, with the goal is to host the first fellows in September 2018.
	To explore opportunities, where possible and feasible to enter into responsive multi-year agreements with research centres.	Develop agreements that provide flexibility as well as some degree of certainty so that researchers and research organizations can act as trusted and supported partners in pharmaceutical and related health care services.	The Ministry and the TI have signed the first of these multi-year agreements. Activities are ongoing.
Quality prescribing (optimal drug use) support for health professionals	To enhance existing initiatives in quality prescribing (optimal drug use) to support health professionals.	Establish a new program in collaboration with the Therapeutics Initiative (TI) building upon the previous EQIP program and ensuring it is integrated with the ongoing Provincial Academic Detailing Services.	Pharmaceutical Services Division to operationalize, in collaboration with the Therapeutics Initiative (TI), this program by the end of FY 2018/19. Under a contract with the TI target at least two topics per year over the next five years.
Systematic approach to utilization and evidence reviews to inform decision making	To expand the use and generation of therapeutic reviews that inform PharmaCare program policy and decision making.	Establish a program for systematic drug utilization reviews and systematic monitoring for select targeted drugs and drug classes.	Launch this new program, in collaboration with the Therapeutics Initiative (TI), by summer 2018. Based on utilization reviews and monitoring, under contract with the TI, complete at least five evidence reviews per year over the next five years.

Identified Gap	Objective(s)	Deliverable	Timeline/ Milestones
Optimal utilization of the expertise of researchers to inform PharmaCare policies, programs and drug listing decisions	To strengthen PharmaCare policies, programs and drug listing decisions through more independent research.	Systematically review the PharmaCare drug plan and identify areas where the Ministry and the Therapeutics Initiative, as well as other pharmaceutical policy researchers located in B.C. or those who are part of national collaborations (e.g. DSEN) could productively collaborate.	Systematic review of opportunities for collaboration and engagement with pharmaceutical policy researchers by September 2018. Process for timely data access for the DSEN facilitated by April 2018.
Sufficient internal capacity focused on the integration of evaluation and research outputs	To ensure there is sufficient internal capacity to effectively integrate evaluation and research outputs into evidence-informed policy and decision making.	Increase capacity to support research knowledge translation.	Sufficient capacity in place by summer 2018 and regularly assessed and adjusted thereafter.
Access to the Canadian Community Health Survey (CCHS)	To restore access to CCHS data and enable linkage with the Ministry's administrative health data.	Enter into a data sharing agreement with Statistics Canada to enable the transfer of B.C. CCHS data to the Ministry; and, subject to the approval of Statistics Canada, store the CCHS in a secure environment and provide access to personnel approved for access.	Planning for the reacquisition of CCHS data has begun. Security requirements will be reviewed and related processes and supporting technologies will be established by the end of FY 2017/2018. Access to CCHS data is expected to be restored by December 2018.
Systematic Evaluations	To expand efforts on the evaluation of implementation and impact of strategic policies and to support collaborations that will increase the rigour of evaluations and the applicability and value of their findings.	Establish an evaluation platform for rapid-cycle evaluation of services, programs, and policies at a provincial level.	Proof of concept for HealthWISER will be tested in 2018/19 as an internal Ministry project with a commissioned researcher and using the existing administrative data in Health*ideas*. Implementation plan to be developed for approval addressing governance (potentially within the AHSN), budget, project selection, and work plan by the end of FY 2018/ 2019.

Identified Gap	Objective(s)	Deliverable	Timeline/ Milestones
Optimized development and maintenance of Health*ideas*, the Ministry data warehouse, to support secondary data access	To enhance the Health*ideas* data holdings in the areas of metadata management, summary indicators and sets of analysis-ready data, to support high quality analytics.	Procure a metadata management solution for the Health*ideas*.	Enhanced metadata and supporting processes will be implemented for Ministry staff by the end of FY 2018/19.
		Develop summary indicators to allow for consistent aggregate and summary reports.	Complete indicator set by April 2018.
		Identify and develop high value sets of analysis-ready data.	Ongoing, iterative process. The first set of analysis-ready data, for MSP data, will be available by April 2018.
		Enhance the Ministry's population grouping methodologies, significantly increasing the level of granularity.	Data to be made available to Ministry staff through Health*ideas* in the fall of 2018.
Ready access for Ministry staff to aggregate statistics	To ensure access to readily available aggregate reports in a visual display that supports the effective interpretation of data.	Continue to leverage the Ministry's business intelligence tools to create consistent and reliable data products, and make routine aggregate reports available to specific people via a self-service portal.	Self-service portal for Ministry staff established by April 2018; new aggregate reports will continue to be developed to meet current and evolving business priorities.

Identified Gap	Objective(s)	Deliverable	Timeline/ Milestones
Appropriate and timely data access for Ministry internal staff, health authorities and researchers	To ensure appropriate and timely access to linkable health data held across health organizations for research and analytics.	Develop a secure data environment to enable access to linkable data across health organizations.	A Proof of Concept is scheduled to be delivered by March 2018.
		Refresh data application and access policies and processes to ensure efficiency, appropriateness and timeliness.	An expert review of the current state is underway and recommendations for a future state will be complete by April 2018 for development and implementation by Dec 2018.
		Develop and test a proposed model for streamlining access to Ministry and sector data to enable more timely access to more up-to-date Ministry data for researchers.	PopData direct access to PharmaNet data is in the pilot stage. Planning is underway with a goal of providing direct access to additional sets of Ministry data in Health*ideas* by October 2018.
		BC Data Scout™ will be a data query service that provides cohort information in the form of highly aggregated, approximate results to researchers who are planning a study using Ministry data and need help determining the feasibility of the study.	BC Data Scout™ will be made available through PopData BC before the end of FY 2017/18.

Appendix 3: Research Projects Planned and Underway in 2012 Supporting Evidence-based Programs in the Ministry

Evidence based program	Area of research	Project description	Effects of investigation	Status
Drug Use Optimization and Drug Review Process	**Alzheimer's Drug Therapy Initiative (ADTI)**	ADTI was a "coverage with evidence"development project. The ADTI was a series of research studies launched in 2007 to examine and confirm the real-world effectiveness, safety, and cost-effectiveness of a class of Alzheimer's drugs, the cholinesterase inhibitors. The research was intended to address gaps in clinical evidence and to make an informed listing decision. Temporary coverage of the cholinesterase inhibitor drugs was provided for British Columbian patients while the research was ongoing.	ADTI research studies were delayed	**Complete.** ADTI project concluded and PharmaCare formulary decisions were announced for the cholinesterase inhibitor drugs on April 1, 2016.
	Education for Quality Improvement in Patient Care (EQIP)	EQIP was a quality prescribing program. It provided family physicians with personalized computer-generated prescribing portraits and educational messaging. The EQIP program's educational materials and messages were also used in the prototype learning sessions of Doctors of BC Practice Support Program (PSP) initiative called Optimal Prescribing Update and Support (OPUS). OPUS' aim was to improve prescribing of selected medications by providing assistance to physicians to develop action plans to prompt reviews of a patient's use of selected medications.	EQIP was not continued and a formal launch of OPUS did not occur	**In mitigation.** Ministry is developing a new optimal drug use program in collaboration with the Therapeutics Initiative (TI). The Ministry's Pharmaceutical Services Division will operationalize this program by the end of 2018/19 fiscal year. Additionally, the Ministry will continue to operate the Provincial Academic Detailing Service and ensure its integration with this new program.

Evidence based program	Area of research	Project description	Effects of investigation	Status
	Medication Management Program (MMP)	MMP was a pilot project established in 2009. MMP was intended to support specific changes to dispensing practices and pharmacists' reviews of patient medications in order to evaluate specific impacts of patient prescription adaptation and the costs to pharmacies of providing patient consultations related to prescription adaptation.	Project evaluation planning was delayed pending data access	**Complete.** Pilot project concluded.
	Provincial Academic Detailing (PAD)	PAD is a program that disseminates health research so that doctors and pharmacists can make evidence-informed decisions on prescribing and dispensing practices. A national evaluation project called Professional Academic Detailing Partnership Team (ADEPT) was conducted.	Some planned evaluations of selected topics and the contribution of BC research towards ADEPT were not continued	**Ongoing.** PAD program continues. BC contributed an evaluation of one topic to the completed CIHR-funded national evaluation of academic detailing.
	Canadian Network for Observational Drug Effect Studies (CNODES)	CNODES, funded by the Canadian Institute for Health Research, is intended to examine drug safety and effectiveness through collaborative, population-based approaches. It is one of the arms of the Drug Safety and Effectiveness Network (DSEN).	Researcher data access was not streamlined, hampering BC-based researchers' effective participation in CNODES	**In mitigation.** As part of the commitment to the Drug Safety and Effectiveness Network (DSEN), the Ministry will be facilitating timely data access by April 2018 and has already approved an approach that provides DSEN with pre-approval for projects meeting particular criteria.
Research projects from the 2012 Pharmaceutical Services' Research Team Prioritization List	**Dabigatran Pharmaco-epidemiological group(PEG)**	Pharmacoepidemiological evaluation of atrial fibrillation drug.	Not directly affected by investigation.	**No longer prioritized.** At the time, this project was on hold pending more time needed post-listing decision to gather more utilization data.
	Bisphosphon-ates PEG	Pharmacoepidemiological evaluation of bisphosphonates.	Not directly affected by investigation.	**No longer prioritized.**

Evidence based program	Area of research	Project description	Effects of investigation	Status
	BGTS = Blood Glucose Test Strips	Process and impact evaluations were performed to evaluate the success of educational interventions to change the rate of BGTS usage.	Not affected by investigation	**Complete.** Internal initial evaluation was completed. The policy for BGTS reimbursement was changed in 2015 and utilization monitoring is ongoing.
	Benzodiaze-pines PEG	Pharmacoepidemiological evaluation of benzodiazepines.	Possibly affected by investigation.	**No longer prioritized.** At the time, this was a possible new project under consideration.
	Prasugrel and clopidogrel	Pharmacoepidemiological evaluation of prasugrel and clopidogrel.	Not affected by investigation	No longer prioritized. Not approved to start, prior to investigation.
	Opioids	Collaborate with TI on high level paper on opioid trends in utilization and mortality.	Delayed pending reinstatement of TI contract	**Restored.** 3 pharmacoepidemio-logical evaluations are underway[15] under the current agreement with the TI. This is complemented by surveillance by the Ministry which was restarted in 2015/16. Ongoing opiate use surveillance using administrative data sources, where complementary to opiate crisis response activities.
	Insulin pumps	Intended to evaluate new PharmaCare coverage of insulin pumps in children.	Not affected by investigation	**No longer prioritized.** Not approved to start, prior to investigation.
	Evidence-based formulary	Intended to assess the degree of coverage based on the strength of supporting evidence.	Possibly affected. This was a new project under consideration	**Under consideration.** Part of ongoing national discussions around essential meds and national PharmaCare approaches.
	PharmaCare Immunization	Evaluate pharmacy based immunization in rural communities.	Not affected	**Completed.** Work published in 2014 by UBC researcher.[16]

15 Metrics of problematic opioid use, Influence of opioid policies on drug use and health outcomes [chronic pain, cohort study] and Influence of opioid policies on drug use and health outcomes [chronic users, interrupted time study]).

16 Marra F, Kaczorowski J, Gastonguay L, Marra CA, Lynd LD, Kendall P. Pharmacy-based immunization in rural communities strategy. Can Pharm J 2014;147(1):33-44. http://journals.sagepub.com/doi/10.1177/1715163513514020

Evidence based program	Area of research	Project description	Effects of investigation	Status
	Coverage with Evidence Development (CED)	Explore developing a CED framework approach to other potential drugs under review.	Possibly affected. At the time, PSD had not yet determined future approach using CED	**In Mitigation** Evaluation platform will enable efficient coverage with evidence development projects for both drugs and other health technologies Potential consideration on selected drugs under review.
	RePORTR	Project funded by CIHI, involving specific views of quality prescribing data at an aggregate level.	Possibly affected. Project was underway in 2012	**In mitigation.** Ministry is developing a new quality prescribing program; work related to RePORTR will be considered in the new program going forward.
	Prescription Adaptation by Pharmacists	Effects of prescription adaptation by pharmacists.	Not affected	**Completed.** Work published in 2016 by UBC researchers.[17]
	e-Drug	Develop evaluation strategy for PharmaNet modernization funded by College of Pharmacists.	Possibly affected. Project was underway in 2012	**Completed.** Done by external researchers at UBC/UVic; a public report is not available.
	Generic drug policy impacts	Assess impacts of generic drug policies with UBC researcher.	Not impacted	**No longer prioritized.** Project was not started.
	Atypical Antipsychotics	Pharmacoepidemiological evaluation of atypical antipsychotics.	Possibly affected. Project was underway in 2012	**Not currently prioritized.** May be considered in the future.

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Evidence based program	Area of research	Project description	Effects of investigation	Status
Public Health Surveillance	**Canadian Chronic Disease Surveillance System (CCDSS): Federal Agreement**	Signing of new 3-year MOA (2012/13-2014/15) between Ministry and Public Health Agency of Canada to complete work related to national chronic disease surveillance.	Delayed by six weeks	**Restored.** MOA signed after 6 weeks of delay; proportion of funds lost due to delay ($26,800 of $255,000 for 2012/13). CCDSS work currently continues under new 3-year MOA.
	National Population Health Study of Neurological Conditions: Federal Agreement	3-year project on neurological conditions in British Columbia for contribution to national study.	Project activities in year 3 halted for 10 months	**Restored.** PHAC extended project from March 31, 2013 to July 31, 2013 to accommodate delays. National project now complete.
	Health Care Costs by BMI Category	2-year project to describe health care utilization and costs for different categories of BMI and for chronic diseases.	MOA extended 5 months but Ministry unable to complete Phase 3 of the project in that time frame	**In mitigation.** MOA was terminated – Phase 3 deliverables not completed, $11,305 of Phase 3 funds not received. Mitigation in process to establish project to link CCHS (Share File) data with chronic disease and utilization data to understand relationship between BMI (and other risk factors), chronic disease, utilization and costs. Described in further detail in report (6. Access to Canadian Community Health Survey).
	Identifying intentional injury cases and utility of physician billing data in the CCDSS	6-month project with Public Health Agency of Canada.	Delay in data access not congruent with completion	**No longer prioritized.** Project cancelled and funds ($15,000) redirected by PHAC. Ministry in discussion with PHAC to participate in current national longitudinal injury surveillance working group, feasibility and pilot projects.
	Natural Unintentional Injury Pilot	Planned follow up project to **Identifying intentional injury cases and utility of physician billing data in the CCDSS**	Not started	**No longer prioritized.** Ministry in discussion with PHAC to participate in current national longitudinal injury surveillance working group, feasibility and pilot projects.
	Provincial Chronic Disease Surveillance (Ministry, iFNHA)	Supporting chronic disease surveillance for Status Indians under direction of the Tripartite Partners to be used for iFNHA planning and monitoring.	Delayed by 7 months	**Restored.** Annual chronic disease surveillance for general and First Nations population currently underway.

Evidence based program	Area of research	Project description	Effects of investigation	Status
	PHO Report development (PHO)	Preparing data, analysis, presentation materials to be used in PHO reports (e.g., joint PHO/iFNHA report on the Health of Aboriginal Women, Motor Vehicle Report, etc.).	Report release delayed (time estimate not available as release date is contingent upon full completion of report)	**Complete.** Reports published.
	RCY Pathways Research Initiative (Representative for Children and Youth)	Chronic disease information for mother and child cohorts as requested by RCY.	Delayed (time estimate not available, project was in a priority queue)	**No longer prioritized.** No longer a priority for the Representative for Children and Youth. Ministry prepared to re-initiate if requested.
	Health Impact of Problem Gambling (PHO)	Extraction and analysis of data for preliminary report to PHO.	Delayed (time estimate not available, project was in a priority queue)	**Complete.** Report completed July 2013.
	Child/Maternal Health Risk Analysis (PHO)	Extraction and analysis of data for preliminary report to PHO.	Delayed (time estimate not available, project was in a priority queue)	**No longer prioritized.** No longer a priority for the PHO. Ministry prepared to re-initiate if requested.
	Opiates Addiction Surveillance (PPH)	Development of a surveillance stream to understand the magnitude of opiate addiction in the population.	Delayed (time estimate not available, project was in a priority queue)	**Restored.** Restarted in 2015/16. Ongoing opiate use surveillance using administrative data sources, where complementary to opiate crisis response activities.
	Evaluation of BC Smoking Cessation Program	Cohort analysis to understand the impacts of BC`s Smoking Cessation Program.	Evaluation delayed and then restarted	**Complete.** Evaluation completed in 2015. This evaluation used a different methodology than what was originally reviewed in 2012
	Surveillance of Mental Health and Substance Use Disorders	Project to establish surveillance streams for significant mental illnesses.	Project design delayed and then transferred	**Restored.** In 2016, Ministry contracted Simon Fraser University (CARMHA – Centre for Applied Research in Mental Health & Addiction) to assess feasibility to perform surveillance using administrative data for 12 mental health conditions.
	Surveillance of Neurological Conditions	National project to establish surveillance streams for significant neurological conditions.	Delayed for 10 months	**Restored.** Surveillance for selected neurological conditions has been implemented and BC participates in national surveillance.

Evidence based program	Area of research	Project description	Effects of investigation	Status
	Risk Factors and Health Care Costs	Project to develop utilization and cost estimates for populations with risk factors.	Not completed due to lost access to CCHS	**In mitigation.** Mitigation in process to establish project to link CCHS (Share File) data with chronic disease and utilization data to understand relationship between BMI (and other risk factors), chronic disease, utilization and costs. Described in further detail in report (6. Access to Canadian Community Health Survey).
	Health Surveillance for Seniors	Project to create a surveillance data source focused on the health needs of seniors.	Not completed due to lost access to CCHS	**No longer prioritized.** No longer a priority for PPH. Ministry prepared to re-initiate if requested.
	Flu Surveillance	Process to prepare and maintain daily data streams to monitor the population during flu season and other acute situations (e.g., H1N1, forest fires).	10-week "outage" of flu surveillance streams to BCCDC before re-establishment at the end of November 2012	**Restored.** BCCDC is currently responsible for flu surveillance.
	Provincial Fall Surveillance	Extracting/summarizing data for falls for yearly and quarterly reporting.	Delayed (time estimate not available, project was in a priority queue)	**Restored.** Responsibility transferred to HSIAR for concurrent management of all quarterly and annual reporting.
	VIHA Mental Health Report	Creation and analysis of treatment of mood and anxiety cohorts in the population.	Delayed for 2 years (due in part to priority queue)	**Complete.** Scope adjusted, report completed.[18]
	Ad Hoc Epidemiology Support for PPH and PHO	Low team capacity to respond to ad hoc requests.	Low capacity until January 2014	**Restored.** Capacity restored.
	Surveillance SharePoint site	Development of a SharePoint site to assemble surveillance products, share documents and manage projects.	Delayed (time estimate not available, project was in a priority queue)	**Restored.** Restarted in 2016, currently in progress.
	Re-engineering of chronic disease surveillance processes following 2014 hardware technology change	Process redevelopment to support continued use of surveillance products developed before technology change.	Low capacity until January 2014	**Restored.** Process changes underway, depending time available and need.

Appendix 4: Table of Plans for Strengthening the Culture and Infrastructure for Research and Knowledge Management in the Ministry

	Objective(s)	Intended Deliverable to Address	Timeline/ Milestones
Building a climate that values and supports research use	To build on staff's pride in the use of evidence and knowledge management and explicitly set the expectation that acquisition, assessment, adaptation and application of research evidence is a necessary part of all policy and decision making at the Ministry.	Ministry leadership sets the expectation that acquisition, assessment, adaptation and application of research evidence is a necessary part of all policy and decision making at the Ministry.	Release of this Research Strategy by March 2018 and ongoing support.
		More fully articulate the value of research and knowledge management in the Ministry Service Plan.	2018/19 – 2020/21 FY Service Plan.
		Formalize expectations in ADM Letters of Expectation and divisional plans.	FY 2018/19.
		Re-establish the Ministry Research Advisory Committee (MRAC) as a working level forum for communication.	All divisions identify MRAC members by January 2018; terms of reference in place by April 2018.

18 "Changes and Challenges: A Decade of Observations of the Health and Well-Being of Young Adults in British Columbia". https://onlineacademiccommunity.uvic.ca/vhys/wp-content/uploads/sites/1967/2016/08/indicators-report-aug-13-16-links-in-intro-compressed.pdf

	Objective(s)	Intended Deliverable to Address	Timeline/ Milestones
Push and pull efforts	To support ability of staff to access and use research evidence.	Refresh monthly *Evidence Flash* electronic newsletter to include information about research projects the Ministry is involved in (commissioned research both internal and collaborative work with external researchers, letters of support, research findings).	Refreshed *Evidence Flash* by March 2018.
		Create *Evidence Service* with a flexible menu of products/ services available to Ministry staff. Services will include: • Rapid evidence reviews • Expedited systematic reviews • Jurisdictional scans • Literature searches • Reference lists • Self-directed evidence searches.	To begin operations by the end of FY 2017/18.
		Leverage programs and training materials (e.g. evidence-based policy training programs for researcher-policy maker teams, knowledge exchange forums on emerging issues, health policy fellow placement, etc.) developed through MSFHR and the new knowledge being generated through the BC SUPPORT Unit networks (e.g., methods clusters and regional centres) and SPOR Networks.	Ministry staff is already participating in the methods clusters. The Ministry and MSFHR to discuss areas of collaboration in February 2018.

	Objective(s)	Intended Deliverable to Address	Timeline/ Milestones
Linkage and exchange	To promote and sustain the relationships between the research community and the Ministry.	Establish *Research Links* service - a single point of contact for researchers seeking information, letters of support or Ministry contacts and for Ministry of staff seeking researcher participation in Ministry projects and committees.	Staffing identified for *Research Links* in January 2018; information to the research community on the point of contact by the end of FY 2017/18; web presence established by FY 2018/19.
		Establish the *Scholar in Residence Program* (for established researchers).	Post expressions of interest by the end of March 2018; scholars in place by September 2018.
		Establish the *Health System Policy Impact Fellowship Program* (for early career researchers).	Pending federal processes, fellows in place by September 2018.
		Create the Ministry Innovation Hub at 1515 Blanshard – where Ministry staff can access resources and supports, and include a dedicated collaborative workspace where researchers, members of the public and former employees can interact and potentially co-create policy with Ministry staff.	Develop hub proposal in February 2018. Implement hub in April 2018. Complete 5-10 project collaborations by FY 2019/20. Complete 10-15 project collaborations by FY 2020/21.

Appendix 5: Table of Plans for Strengthening Oversight and Accountability

	Objective(s)	Deliverable(s)	Timeline/ Milestones
Governance	To provide oversight and accountability through SET and clarity of responsibilities for the Ministry research activities.	Establish the roles/terms of reference for the SET, the Partnerships and Innovation Division, other Ministry divisions, and the Ministry Research Advisory Committee and partners.	Governance structure in place by early FY 2018/19.
Resources	To support the activities described in this strategy.	Research, Evaluation and Knowledge Management Fund will provide additional resources to fund the activities described in this report, including funding of high quality, independent research and evaluation where appropriate.	Fund to commence in FY 2018/19.
Agenda Setting	To develop and maintain a research agenda based on current Ministry priorities and operational needs.	Set an agenda of research priorities that is then communicated to the research community.	Agenda established and transparently communicated to the research community by mid-year FY 2018/19.
Monitoring Implementation	To continuously improve the way the Ministry approaches the integration of research in policy and decision making.	Convene an expert panel to provide advice to the Ministry on implementation over at least two years.	Panel in place by early FY 2018/19 to end of FY 2019/20.
		Report annually on performance indicators	Baseline data collected April 2018.

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