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About this research project: context, team and partners

The *Profiles of Public Health Systems in Canada* are part of a research project titled *Platform to Monitor the Performance of Public Health Systems,* led by Principal Investigators Dr. Sara Allin, Dr. Andrew Pinto and Dr. Laura Rosella from the University of Toronto. The project involves the participation of knowledge users, collaborators and an inter-disciplinary team of scholars from across Canada, and aims to develop a platform to compare public health system performance across Canada. To achieve this aim, the project comprises three phases:

1. Produce detailed descriptions of the public health financing, governance, organization, and workforce in each of the 13 provinces and territories using a literature review with results validated by decision makers.
2. Conduct a set of comparative in-depth case studies examining implementation and outcomes of reforms, and their impacts on responses to the COVID-19 pandemic.
3. Define indicators of public health system performance with structure, process, and outcome measures.

The National Collaborating Centre for Healthy Public Policy (NCCHPP) joined the research project working group in the early months of the COVID-19 pandemic, and is now proud to publish their work as a series of 13 Canadian Public Health System Profiles, with supplementary methodological materials. The series of public health system profiles are available on the NCCHPP website at: https://ccnpps-ncchpp.ca/profiles-of-public-health-systems-in-canadian-provinces-and-territories/.

About the National Collaborating Centre for Healthy Public Policy (NCCHPP)

The NCCHPP seeks to increase the expertise of public health actors across Canada in healthy public policy through the development, sharing and use of knowledge. The NCCHPP is one of six centres financed by the Public Health Agency of Canada. The six centres form a network across Canada, each hosted by a different institution and each focusing on a specific topic linked to public health. The NCCHPP is hosted by the Institut national de santé publique du Québec (INSPQ), a leading centre in public health in Canada.

Contents

List of Abbreviations

BC	British Columbia
BCCDC	BC Centre for Disease Control
CSCs	Collaborative Services Committees
CEO	Chief Executive Officer
CMHO	Chief Medical Health Officer
CMO	Chief Medical Officer
DMCEM	Deputy Ministers' Committee on Emergency Management
DPHO	Deputy Provincial Health Officer
EPHOs	Essential Public Health Operations
FNHA	First Nations Health Authority
FNHC	First Nations Health Council
FNHDA	First Nations Health Directors Association
GBA+	Gender-based Analysis Plus
HSDA	Health Service Delivery Area
MHO	Medical Health Officer
MMHA	Ministry of Mental Health and Addictions
MNBC	Métis Nation British Columbia
MOU	Memorandum of Understanding
OPHO	Office of the Provincial Health Officer
PCN	Primary Care Network
PHO	Provincial Health Officer
PHA	*Public Health Act*
PHSA	Provincial Health Services Authority
PPH	Population and Public Health
RHA	Regional Health Authority

Introduction

Objectives

As Canada deals with the COVID-19 pandemic, one of the biggest public health challenges of our time, the need to strengthen public health systems has never been greater. Strong public health (PH) systems are vital to ensuring health system sustainability, improving population health and health equity, and preparing for and responding to current and future crises. There are considerable variations across provinces and territories in how public health is organized, governed and financed, as well as in how public health systems have been reformed and restructured in recent years. This report builds upon prior reports and describes British Columbia's public health system prior to the COVID-19 pandemic, including its organization, governance, financing, and workforce. It is part of a series of 13 public health system profiles[1] that provide foundational knowledge on the similarities and differences in the structures of public health systems across provinces and territories. In addition to summarizing what is known, these profiles also draw attention to variations and gaps to inform future priorities. This series will serve as a reference for public health professionals, researchers, students, and decision makers seeking to strengthen public health infrastructure in Canada.

Approach

Details on the jurisdictional review methodology are presented in the document *Profiles of Public Health Systems in Canada: Jurisdictional Review Methodology*.[1] The research team sought out information from peer-reviewed journal articles and publicly available grey literature (e.g., governmental and non-governmental organization reports, documents, webpages, legislation), and data sources (e.g., provincial/territorial budget estimates). The World Health Organization's essential public health operations (EPHOs) were used to define programs and services that constitute public health activities, and enabler EPHOs were used to define public health governance, organizational structure, financing, and workforce (Rechel, Maresso, et al., 2018; World Health Organization, 2015). The search terms were also informed by the research questions presented in a standardized data abstraction form adapted from the European Observatory for Health Systems and Policies (Rechel, Jakubowski, et al., 2018). A narrative synthesis was used to develop detailed profiles that were reviewed internally by the research team and externally by experts from each jurisdiction (e.g., public health policy makers and practitioners) for accuracy, completeness, and reliability. The reports were reviewed by public health key informants in each jurisdiction to assess the validity of our findings. We incorporated their comments and formally acknowledge their contributions at the start of each report.

Limitations

Despite this comprehensive iterative review process and our attempt to highlight information gaps, it should be noted that the process used to compile information was not a formal systematic search, and thus information sources may have been missed. Further, a detailed review of the role of the federal government and of First Nations, Inuit and Métis approaches to public health was beyond this project's scope and should be made a priority for future work. Moreover, by relying in large part on the published documents and websites of the key government actors and agencies in public health, we may not have fully captured how the system functions in practice, and whether and how actual roles and relationships may deviate from what is written in legislation and policy documents. Finally, these profiles describe the public health system prior to the COVID-19 pandemic; we do not review the governance structures, advisory groups and partnerships that were established in response to the COVID-19 pandemic.

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[1] The series of 13 public health system profiles and the jurisdictional review methodology document are available at: https://ccnpps-ncchpp.ca/profiles-of-public-health-systems-in-canadian-provinces-and-territories/.

1 Historical and Contextual Background

Public health is a key pillar of British Columbia's (BC) publicly-funded health system. The BC Centre for Disease Control (BCCDC) describes public health as the branch of the health system that is predominantly concerned with the health of the entire population and "is what we, as a society, do collectively to assure the conditions in which people can be healthy" (British Columbia Centre for Disease Control, 2015). Further, public health focuses on preventing illness and protecting and promoting health and well-being by addressing "upstream" social and environmental determinants of health and health behaviours, and by responding to emerging threats to the population's health (Government of British Columbia, n.d.-b). The values that guide public health in BC include the following: "1) Commitment to equity, social justice and sustainable development; 2) Recognition of the importance of the health of the community as well as the individual and; 3) Respect for diversity, self-determination, empowerment and community participation" (Government of British Columbia, n.d.-b).

The Provincial Health Officer (PHO) defined public health as:

> "[a]n organized activity of society to promote, protect, improve, and when necessary, restore the health of individuals, specified groups, or the entire population. It is a combination of sciences, skills, and values that function through collective societal activities and involve programs, services, and institutions aimed at protecting and improving the health of all the people"
> (Office of the Provincial Health Officer, British Columbia, 2019).

The timeline below (Figure 1) presents recent reform initiatives and relevant policy changes affecting the governance, organization, financing, and workforce of the public health system in BC. Since the consolidation of 52 Regional Health Authorities (RHAs) into five RHAs and one province-wide health authority in 2001, the organizational structure has been relatively stable in BC. Major reforms since then include the establishment of the province-wide First Nations Health Authority (FNHA) in 2013 and subsequent moves toward self-determination and cultural safety for Indigenous peoples, as well as expanded reporting of performance measures in public health.

Figure 1 Timeline of recent reforms impacting British Columbia's public health system

Sources: British Columbia Ministry of Health, n.d.-n, 2013; First Nations Health Authority, n.d.-b; First Nations Health Authority & Goss Gilroy Inc., 2020; First Nations Health Council, 2012; Vaccination Status Reporting Regulation, 2019; Health Council of Canada, 2014; Minister of Health (Canada) & Minister of Health (British Columbia), 2011; Ministry of Mental Health and Addictions, 2021; Murphy, 2007; NCCHPP, 2018; World Health Organization, 2020a, 2020b.

2 Organizational Structure

This section describes the organizational structure of BC's public health system as of June 2021. We present the roles, responsibilities, and supervisory relationships of governmental and arms-length governmental institutions with a legislated role in public health, including health authorities, public health units, and key figures within each that lead the planning and delivery of public health services. Federal actors and institutions are beyond the scope of this report. Our focus is on those with public health as their primary role; therefore, we do not provide a detailed description of organizations and service providers in other sectors (e.g., primary care, mental health and addictions, social services, and non-governmental organizations) that may perform essential public health functions as part of their work (e.g., immunization, health promotion).

2.1 Provincial

2.1.1 Ministry of Health

The Ministry of Health, led by the Minister of Health, plays a stewardship role, setting the overall direction for the health system, developing and maintaining the legislative and regulatory frameworks guiding service delivery, and planning for future workforce, capital and technological needs (British Columbia Ministry of Health, n.d.-a, 2018).

Through the Population and Public Health (PPH) Division, the Ministry of Health funds and provides policy and advisory support for public health programs and services which are primarily delivered by RHAs and Provincial Health Services Authority (PHSA) agencies (British Columbia Ministry of Health, n.d.-f; Government of British Columbia, n.d.-g; Public Health Physicians of Canada, 2019). The Office of the Provincial Health Officer (OPHO) operates under the *Public Health Act (PHA)* and is responsible for monitoring the health of BC's population and providing independent recommendations and advice to the Minister of Health and provincial government (see details below). The Minister of Health is responsible for the population's health under the *PHA* and has authority to establish: public health directives; health standards for facilities, persons or procedures; and standards for public health training and environmental health officer practice (British Columbia Ministry of Health, n.d.-i).

2.1.2 Population and Public Health Division

The Population and Public Health (PPH) Division is led by an Executive Lead who oversees the following branches: 1) Health Protection, which includes units for Regulatory Transformation, Healthy Community Environments, Food Safety, and Integration and Engagement; 2) Healthy Living and Health Promotion (includes physical activity, gambling and healthy settings), which includes the Office of the Provincial Dietitian, units focused on substance use and injury prevention, and screening ; and 3) Public Health Planning and Strategic Initiatives, which includes units focused on Communicable Disease (which includes Infection Prevention and Control), Women's and Maternal Health, and the Nurse Family Partnership program (Government of British Columbia, n.d.-e, n.d.-f, n.d.-g, n.d.-h, n.d.-i). The PPH Division works collaboratively with the FNHA on shared priorities determined through the annual Letter of Mutual Accountability (First Nations Health Authority et al., 2020).

2.1.3 Office of the Provincial Health Officer

The Office of the Provincial Health Officer (OPHO) reports directly to the Deputy Minister of Health. Fafard and colleagues describe the PHO as "Everyone's Expert" because the PHO fulfills an expert advisor role for the Minister of Health and has legislated authority to speak publicly (i.e., independently of the Minister); however, they lack the extensive managerial roles of a senior civil servant (Fafard et al., 2018). Under the *PHA*, the PHO reports publicly and through the Minister of Health to the legislature about the health of the population (British Columbia Ministry of Health, n.d.-b). The PHO collaborates directly with the FNHA's Chief Medical Officer (CMO) on public health measures for First Nations living in BC (e.g., COVID-19 vaccination planning and distribution).

The PHO is responsible for: monitoring the health of the population; recommending actions to improve health and wellness; providing independent advice to the Minister of Health and senior government officials on issues related to public health; establishing standards of practice and conducting performance reviews of medical health officers (MHOs); and working with the BCCDC and MHOs to fulfill their legislated mandates on disease control and health protection (Government of British Columbia, n.d.-b). They also have legislated authority under the *PHA* to order and enforce emergency public health measures aimed at protecting and promoting population health (British Columbia Ministry of Health, n.d.-i).

The OPHO includes four deputy provincial health officers (DPHOs) (Health, n.d.). One DPHO is a shared position with the FNHA and is responsible for representing and reporting to the FNHA. Another DPHO holds the Office of Vice President, Public Health and Wellness at BCCDC, and is responsible for leading the integration of population and public health promotion, planning and prevention across the PHSA's clinical programs. According to local experts, a third DPHO (acting, as of September 2021), is responsible for representing the OPHO on Federal/Provincial/Territorial committees, task forces, and working groups, including the National Advisory Committee on Immunization, and the Canadian Council of Chief Medical Officers of Health. Furthermore, local experts described a fourth DPHO (acting, as of September 2021), as responsible for providing expert advice on the *PHA*.

The OPHO also includes program management staff and specialists such as public health and drinking water officers, policy analysts, epidemiologists, and data scientists (Government of British Columbia, n.d.-c, n.d.-d). Among other duties, the office supports the production of the PHO's report that focuses on progress related to the thirty-six performance measures in the *Guiding Framework for Public Health*. Other reports prepared by the office address specific topics such as HIV prevention, gambling, women's health, First Nations health, and health promotion in children and youth (British Columbia Ministry of Health, n.d.-b). Most recently, the OPHO partnered with the FNHA to jointly release the inaugural *First Nations Population Health and Wellness Agenda* which presents a strengths-based view of First Nations peoples' wellness and resilience grounded in First Nations and Western ways of knowing (First Nations Health Authority & British Columbia Office of the Provincial Health Officer, 2021).

2.1.4 First Nations Health Authority

The signing of the *BC Tripartite Framework Agreement on First Nations Health Governance* on October 13, 2011 created a new First Nations Health Governance Structure that has built the foundation for the transfer of federal health programs and resources from Canada to First Nations' control and enabled First Nations in BC to participate fully in the design and delivery of these services.

In 2013, under this *Tripartite Framework Agreement* authority for financing, planning, and coordinating the delivery of health services, including public health programs and services, within Indigenous communities was transferred from the federal government to the FNHA (Minister of Health (Canada) & Minister of Health (British Columbia), 2011; NCCHPP, 2018; O'Neil et al., 2016). The FNHA is "a non-profit legal entity established with the process, powers and mandate set out in section 4.2" of the *Tripartite Framework Agreement*, which includes a mandate to plan, design, manage, deliver and fund the delivery of First Nations Health Programs (Minister of Health (Canada) & Minister of Health (British Columbia), 2011, p. 7). The FNHA works to transform the way health services are delivered to First Nations communities in alignment with BC First Nations perspectives on health and wellness. The FNHA seeks to achieve four goals: "1) enhance First Nations health governance; 2) champion the BC First Nations perspective on health and wellness; 3) advance excellence in programs and services; and 4) operate as an efficient and effective First Nations health organization" (Minister of Health (Canada) & Minister of Health (British Columbia), 2011; O'Neil et al., 2016). Each year, the FNHA develops priorities aligned to these four goals.[2]

The FNHA is led by a Chief Executive Officer (CEO) who reports to the FNHA Board of Directors. Each year, the FNHA CEO leads the development of a Summary Service Plan and Annual Report, which are presented to the FNHA Board for approval and made publicly available. The FNHA Board of Directors is regionally representative (Interim First Nations Health Authority, 2012).

The senior leadership team includes a CMO and a Deputy CMO, and regional activities are led by five Vice Presidents of Regional Operations (First Nations Health Authority, n.d.-c). These Vice Presidents of Regional Operations oversee planning and service delivery in mental health and wellness, primary health care, environmental public health, children and youth health, and communicable disease emergency (First Nations Health Authority, 2020; Minister of Health (Canada) & Minister of Health (British Columbia), 2011; O'Neil et al., 2016). The FNHA is one of three entities that form part of the First Nations Health Governance Structure in BC, which includes the FNHA (service delivery arm), the First Nations Health Council (FNHC) (political advocacy arm) and the First Nations Health Directors Association (FNHDA) (professional development arm). Together, the constituents of the First Nations Health Governance Structure share a vision of healthy, self-determining First Nations children, families and communities. In addition to partnering with the FNHC and the FNHDA, the FNHA facilitates broader health system innovation in partnership with federal and provincial governments (First Nations Health Authority, 2019c, 2020). According to their governance structure, "First Nations in BC collectively own the First Nations health governance structure and are together responsible for resolving concerns and issues, making key decisions and celebrating successes" (First Nations Health Authority et al., n.d., p. 2). The FNHA is also responsible for reporting on First Nations health in partnership with the OPHO, as outlined in the *Transformative Change Accord: First Nations Health Plan* (Government of British Columbia & First Nations Health Authority, 2005).

2.1.5 Provincial Health Services Authority

The PHSA's primary role is to ensure that BC residents have access to a coordinated provincial network of high-quality specialized public health and healthcare services delivered through 10 specialized agencies including the BCCDC (Government of British Columbia, n.d.-b). The PHSA is "responsible for managing the quality, coordination and accessibility of specialized provincial health services delivered across the province in collaboration with RHAs, such as cardiac, trauma, perinatal and stroke services" (British Columbia Ministry of Health, n.d.-k).

[2] FNHA Summary Service Plans are available on the FNHA website https://www.fnha.ca/about/governance-and-accountability/summary-service-plan.

The BCCDC provides public health leadership for the province, specifically, by providing analytical and policy support to government and health authorities, acting as the provincial reporting centre for disease and immunization, leading research and education activities, and coordinating harm reduction programs (British Columbia Centre for Disease Control, n.d.-a). The BCCDC is led by the Vice President of Public Health and Wellness who is also a DPHO. The BCCDC is the primary organization responsible for monitoring and evaluating the determinants, prevalence, incidence, and distribution of communicable and non-communicable disease, preventable injury, and other measures of population health and well-being (British Columbia Centre for Disease Control, n.d.-a, 2020; Office of the Provincial Health Officer, British Columbia, 2019). These analytical and epidemiological services operate in conjunction with the Ministry of Health, other PHSA agencies and RHAs, the BC Observatory for Population and Public Health and universities (British Columbia Centre for Disease Control, n.d.-a). The BCCDC also makes key contributions to public health information system and laboratory infrastructure.

2.2 Regional

2.2.1 Regional Health Authorities

Five Regional Health Authorities (RHAs) are responsible for the delivery of health services, including public health programs and services, in their respective region (British Columbia Ministry of Health, n.d.-l; Public Health Physicians of Canada, 2019). The planning, coordination and delivery of public health programs and services vary across RHAs, and broadly include health promotion, disease and injury prevention, environmental health, health protection, and research (Fraser Health Authority, n.d.-a; Interior Health Authority, n.d.-a, 2020i; Northern Health Authority, 2020a; Vancouver Coastal Health Authority, n.d.-a, 2020a; Vancouver Island Health Authority, 2019b).

Each RHA is led by a President and CEO, who is accountable to a Board of Directors, and who oversees a senior leadership team that has delegated responsibility for operationalizing the RHA's strategic plan. Each RHA has a regional Chief Medical Health Officer (CMHO) and a team of MHOs, to whom authority is given under the *PHA* (British Columbia Ministry of Health, 2019; Public Health Act, 2008). However, there is considerable variation in the leadership structure of public health divisions within RHAs. In Interior Health Authority, the CMHO reports to the CEO and leads the Population Health portfolio of specialized programs, teams and services. Delivery of patient/client-level public health services is under the direction of the Vice President for Clinical Operations (North and South) (Interior Health Authority, n.d.-b, 2019c). In Northern Health Authority, the Vice President for Population and Public Health leads the provision of public health services (Northern Health Authority, n.d.). Within Fraser Health Authority, the Vice President of PPH and CMHO oversee public health programs and services (Fraser Health Authority, n.d.-b). In Vancouver Coastal Health Authority, a recent restructuring (in October 2020) brought all public health resources under the Office of the CMHO and Vice President of Public Health (Vancouver Coastal Health Authority, n.d.-b). Vancouver Coastal Health also has a Deputy CMHO. In Vancouver Island Health Authority the Vice President for Population Health and CMHO, and the Vice Presidents for Clinical Operations (Central/North and South) provide leadership in public health program and service delivery (Vancouver Island Health Authority, n.d., 2017). Each RHA has partnership agreements with the First Nations in their region.

Within the RHA PPH portfolio, there are different programs, or units, for each broad public health function. Generally, an Epidemiology and Surveillance Unit, and Communicable Disease Unit work closely with the BCCDC to fulfill population health assessment, surveillance and communicable disease prevention and control functions (Interior Health Authority, 2020a). Health protection functions, such as community care licensing, food safety, drinking water protection, environmental

assessment, and major event planning services, are coordinated through local Health Protection Offices (Interior Health Authority, 2019b, 2020b, 2020e). Health promotion, and disease and community-based injury prevention services are administered through local health units, and in collaboration with various stakeholders (Interior Health Authority, 2015b). Mental health and substance use are not part of the public health portfolio. Regional teams provide specialist consultation to frontline services and build community partnerships, for example to create healthier communities and reduce harm from substance use.

Taking Vancouver Coastal Health Authority as an example, this RHA organizes public health programs and services into four programmatic units: 1) Public Health Surveillance – Surveillance and Health Assessments is led by the team of epidemiologists and analysts; 2) Population Health Promotion – this includes teams advancing healthy public policy and health promotion activities (primarily delivered through funded programs with non-governmental organizations); 3) Public Health Clinical Services – this includes targeted and universal programs such as maternal child health, immunizations, audiology, speech and language, communicable disease including HIV follow-up, harm reduction programs, etc.; and 4) Regulatory Services – delivered by the Health Protection team this includes licensing, environmental health, food safety, etc.

2.2.2 Medical Health Officers

In BC there are five regional CMHOs, one CMO for FNHA and the Deputy PHO with BCCDC. Within RHAs, MHOs provide specialist consultation, leadership and oversight for the planning, delivery and evaluation of public health programs and services (Public Health Physicians of Canada, 2019). Not all the MHO positions are full-time and, at times, there are additional contract positions. The MHOs are supervised by the Chief MHO, who is supervised by the PHO (British Columbia Ministry of Health, n.d.-g). The FNHA has six MHOs, inclusive of a CMO and Deputy CMO (First Nations Health Authority, n.d.-b).

MHOs have a wide range of responsibilities, with some variation across RHAs. Key responsibilities include:

- Carrying out statutory duties outlined in the provincial legislation guiding public health; providing direction to managers and health professionals;
- Informing public health budgeting and resource allocation (e.g., MHOs at Interior Health do not typically have their own program budgets or human resources to allocate, but play a role informing those of others);
- Monitoring population health and making recommendations to RHAs regarding strategic and emergency response planning; assisting RHAs in evaluating public health programs;
- Providing evidence-based advice to government and community stakeholders across sectors (e.g., healthcare, education, social care, environment);
- Serving as school MHOs;
- Licensing of community care facilities; and
- Drinking water safety. (British Columbia Ministry of Health, n.d.-e; Public Health Physicians of Canada, 2019)

There is variation across RHAs both in terms of MHOs' scope of responsibility and their relationship with an administrative program leadership partner (together, referred to as a dyad). Moreover, in some RHAs, (e.g., Vancouver Island Health Authority) there are program-specific MHOs, whereby each MHO is a specialist in their specific program area; whereas in other RHAs, the MHOs are generalists and are organized geographically; and in still others, there is a combination of the two.

2.3 Local

Each RHA is organized into health service delivery areas (HSDAs). There is variation in how RHAs organize and coordinate public health programs and services within HSDAs. For example, Interior Health Authority is divided into East Kootenays, Kootenay Boundary, Okanagan, and Thompson Cariboo Shuswap HSDAs within which the local health units (including public health offices, health units, and health centres) deliver services related to specific or multiple public health functions (Interior Health Authority, 2020g). In addition, each RHA has different supervisory structures with differences in practice and autonomy of the public health officers.

Key actors with roles and responsibilities in health promotion, protection, and prevention at the local level vary across RHAs, and generally include:

- Environmental Health Officers, who inspect and enforce regulations and standards for food premises and drinking and recreational (i.e., pools) water systems (British Columbia Ministry of Health, n.d.-i). Environmental Health Officers report to the CMHOs and VP of Public Health in the RHAs. They are part of the same public health team;
- Community Health Facilitators/Specialists, who, through the provincially sponsored Healthy Communities Initiative, work in partnership with local governments within 59 municipalities to design healthy public policy, facilitate intersectoral collaboration, and foster community development aimed at improving built environments, decreasing tobacco use and vape use, increasing health equity, and improving healthy eating, mental wellness and physical activity (Interior Health Authority, 2020c; Interior Health Authority & Healthy Families BC, 2012);
- Licensing Officers, who are responsible for licensing community care facilities including childcare, youth and residential care;
- Tobacco Enforcement Officers, who enforce regulations for tobacco and vaping products;
- Public Health Nurses who provide immunizations, pre- and postnatal information and consultation, sexual health services (e.g., pregnancy tests, sexually transmitted infections and cancer screening, contraception, and counselling) (Interior Health Authority, 2020c, 2020j) and;
- Public Health Dieticians, who work with local governments, community organizations, health professionals, and stakeholders within early childhood care and education sectors to promote healthy eating and food security through outreach, education, and advisory support for policy and programs (Interior Health Authority, 2020f).

Some key actors across RHAs have different specializations. Notably, Interior Health Authority, Fraser Health Authority, and Vancouver Coastal Health Authority have Environmental Health Officers that are specialized in their service areas (e.g., Tobacco, Healthy Built Environment, Drinking Water, Environmental Assessment, and Emergency Response). Similarly, Interior Health Authority and other RHAs have Licensing Officers who are specialized in areas such as Child Care and Adult/Long-Term Care. The differentiation among Environmental Health Officers and Licensing Officers was implemented because of the complexity of the work they complete and the results from the internal and external audits (including PHO and Auditor General reports on Drinking Water) (British Columbia

Office of the Provincial Health Officer, 2015, 2019; Office of the Auditor General of British Columbia, 2019). Furthermore, the variability extends beyond the roles of key actors as each RHA has a different process for implementing their Healthy Communities/Healthy Built Environment programs. Local health units also make referrals and deliver promotion and prevention services, including immunization, hearing, speech, language, and dental services (Interior Health Authority, 2020h).

First Nations governments/bands as well as Indigenous health departments and organizations also play key roles in delivering public health programs and services at the local level. For example, at a policy and program planning level, the Interior Health Aboriginal Health Team collaborates with First Nations, Métis, and the FNHA to design strategies for mitigating health inequities experienced by Indigenous peoples living within and away from their home communities (Interior Health Authority, 2015a). Moreover, formal partnerships enable band-run centres to serve some non-Indigenous communities and local-level practice collaboration to exist between FNHA and RHA public health nurses for programs related to childhood immunization (O'Neil et al., 2016).

2.4 Integration, Intersectoral Coordination and Inter-jurisdictional Partnership

Integrated health services involve seamless and easy navigation of the health system for users, and coordination of delivery (e.g., programs, services, information), governance (e.g., policies, stewardship), and financial arrangements (e.g., funding models and agreements) between providers and formal and informal partners (World Health Organization, 2008, 2018). Our search identified several programs and services that may constitute integration and intersectoral coordination within and beyond health sectors, as well as inter-jurisdictional partnerships aimed at supporting public health systems within First Nations communities.

2.4.1 Governmental Mechanisms

One formal mechanism for collaboration of actors within public health across the province is the Public Health Executive Committee which provides advice to the Ministry of Health to guide the strategic direction for public health (British Columbia Centre for Disease Control, n.d.-b; British Columbia Observatory for Population & Public Health, 2017). For instance, this committee approves work and strategic plans including the *2016/17 – 2020/2021 BC Observatory for Population & Public Health Strategic Plan* (British Columbia Centre for Disease Control, n.d.-b; British Columbia Observatory for Population & Public Health, 2017). The committee is composed of senior leadership from the RHAs, the PHSA, the FNHA, the PPH Division of the Ministry of Health, and the PHO. This committee is supported by policy advisory committees for environmental health, communicable disease, prevention and health promotion, and the BC Observatory for Population and Public Health. These sub-committees also bring together RHA and Ministry of Health representatives to discuss and provide advice on public health issues. Another mechanism to enable collaboration is the involvement of MHOs in Collaborative Services Committees (CSCs). There are 21 CSCs in BC, which are comprised of representatives from the divisions of family practice and from the health authorities. The members on the CSC collaborate to support primary care networks (PCNs), make decisions about the local PCNs, and address healthcare issues (General Practice Services Committee, n.d.). In addition, RHAs collaborate to standardize processes for some public health services and functions, e.g., for food premises and drinking water systems.

To enable collaboration in public health between the FNHA and the BC government, one DPHO serves as the primary liaison between the PHO and the FNHA CMO. The relationship between the FNHA CMO and the PHO was formalized through the signing of a memorandum of understanding (MOU) in October 2014 (Minister of Health (Canada) & Minister of Health (British Columbia), 2011). An updated MOU between the FNHA and the PHO was signed in May 2021. This document built on framework agreement commitments for the parties to work together through coordination and collaboration on strategies, reporting and responses to population and public health issues facing First Nations in BC (Minister of Health (Canada) & Minister of Health (British Columbia), 2011). The CMO and PHO further developed and reported on 15 new wellness indicators that illustrate how new venues for collaboration incorporate First Nations perspectives into BC public health approaches (Minister of Health (Canada) & Minister of Health (British Columbia), 2011). In 2021, the *First Nations Population Health and Wellness Agenda* report was published by the CMO at the FNHA and the PHO (First Nations Health Authority & British Columbia Office of the Provincial Health Officer, 2021). This report is a health status report and presents 22 indicators (7 original indicators outlined in the Transformative Change Accord: First Nations Health Plan and 15 new wellness indicators) that will be used to monitor the health and wellness of First Nations communities in BC for the next decade (First Nations Health Authority & British Columbia Office of the Provincial Health Officer, 2021).

At a policy and program planning level, the Interior Health Aboriginal Partnerships Portfolio and local operational leaders collaborate with First Nations, Métis, and the FNHA to design strategies for mitigating health inequities experienced by Indigenous peoples living within and away from their home communities (Interior Health Authority, 2015a). For instance, Fraser Health Authority has an Executive Director for Aboriginal Health who reports to the Vice President of Population and Public Health and CMHO. Engagement in planning and service delivery with First Nations partners occurs locally via Nation-Interior Health Letters of Understanding (LOUs) Joint Committees, and regionally via the Partnership Accord Technical Table, inclusive of seven First Nations technical representatives and Interior Health leadership, the Partnership Accord Leadership Table, inclusive of seven First Nations and Interior Health executives, and the Métis Nation British Columbia (MNBC) and Interior Health executives. Notably, there are many other collaborative approaches to Indigenous health in all regions, detailed in the case studies and Regional Partnership Accord evaluations (First Nations Health Authority, n.d.-a) as well as in the *Tripartite Committee on First Nations Health Annual Report* (First Nations Health Authority et al., 2020). In 2019, the MNBC, the OPHO, and the Ministry of Health formalized their commitment to advance the Métis Public Health Surveillance Program*,* enabling health and wellness reporting of Métis Citizens registered with the MNBC.

2.4.2 Intersectoral Partnerships Within and Outside Health System

The *Pandemic Provincial Coordination Plan* describes the coordinated response to a pandemic across multiple actors, including 13 provincial ministries, health authorities, BC Emergency Services, local governments, and federal agencies (Government of British Columbia, 2020). This Plan can be activated through consultation between the Deputy Ministers of Health and the Ministry Responsible for Emergency Management BC (Government of British Columbia, 2020). During a pandemic, the inter-ministerial Ministers-Deputies Emergency Committee provides guidance to the Deputy Ministers' Committee on Emergency Management (DMCEM) that leads "executive-level prioritization and alignment of provincial emergency management policy, legislation, and operations" (Government of British Columbia, 2020). This committee can activate the cross-governmental Assistant DMCEM which can then—on an as-needed basis—activate several other inter-ministerial and intersectoral entities including the Pandemic Cross-Ministry Policy Group, and provincial, regional, and local emergency response operations and coordination centres (Government of British Columbia, 2020). Health Emergency Management BC is a program under the PHSA that provides health emergency

management leadership, support, and advice to the Ministry of Health and all RHAs, before, during, and after an emergency event.

Additional examples of coordination and collaboration include the Tobacco Control Strategy and the Overdose Emergency Response Centre. Through BC's Tobacco Control Strategy (which has not been updated since 2004 and does not include vaping), health authorities, government actors (e.g., Ministries of Health and Finance), schools and non-governmental organizations (e.g., BC Lung Association, WorkSafeBC) collaboratively plan, support, and deliver programs aimed at commercial tobacco use prevention, protection, and cessation (British Columbia Ministry of Health, n.d.-n). Convened by the Ministry of Mental Health and Addictions (MMHA), the Overdose Emergency Response Centre is an inter-ministerial (e.g., Ministry of Heath) and intersectoral (e.g., including civil society, local governments, and organizations) partnership platform focused on addressing the opioid overdose emergency (British Columbia Ministry of Mental Health and Addictions, 2018). The MMHA and Vancouver Canucks substance use anti-stigma campaign represents one example of a public-private collaboration (British Columbia Ministry of Mental Health and Addictions, 2018). Furthermore, the FNHA partnered with the BC Centre on Substance Use to create the Integrated First Nations Addictions Care Initiative in 2018 (First Nations Health Authority, 2018). Also, Community Action Teams are part of the overdose response, who engage with local government, non-governmental organizations, public health, etc. in planning local responses to the overdose crisis.

The Comprehensive School Health Program represents a provincial partnership between public health and the education sector (British Columbia Ministry of Health, 2017b). Through this program, public health services within school settings are collaboratively planned, coordinated, and delivered.

The purpose of Healthy Living Strategic Plans, which are partnership agreements between local governments, the PPH Division of the Ministry of Health, and RHAs, is to collaborate in actions to create healthier community environments (British Columbia Ministry of Health, 2017b; Provincial Health Services Authority, 2015).

Vancouver's Healthy City Strategy is an example of how Vancouver Coastal Health Authority partners with local and regional governments to address the determinants of health through influencing public policies and programs in sectors outside healthcare. *Vancouver's Healthy City Strategy* is co-led by the City of Vancouver and Vancouver Coastal Health Authority and brings together stakeholders spanning multiple government departments, the RHA, non-governmental organizations, and private sector groups (Diallo, 2020). The Healthy City Strategy's objectives are to promote and protect population health and wellbeing by collaboratively designing and delivering programs and policies within 13 areas (Diallo, 2020). These areas include the following: healthy childhood development; food, housing, income and employment security; community safety; social connectedness and belonging; continuing education; physical activity; and natural environments (Diallo, 2020). The strategy is operationalized through the Healthy City for All Leadership Table founded upon an MOU between the City of Vancouver and Vancouver Coastal Health Authority. The leadership table is co-chaired by the CMHO and Vancouver's City Manager and is comprised of 30 individuals representing various government departments (i.e., municipal, provincial, federal), public and private sector agencies and foundations (Diallo, 2020). In addition to Vancouver's Healthy City Strategy, Vancouver Costal Health Authority has similar partnership agreements with the other 14 local governments in the region, and collaborates extensively with the six regional government agencies.

Additionally, all health authorities provide grant funding to community groups to identify and implement solutions for improved community health (e.g., food security, tobacco/vape use, and harm reduction).

There are also several examples of collaboration on public health programs and services between the FNHA and other sectors. These include:

- Canadian Red Cross, First Nations Emergency Services, BC Ambulance, Royal Canadian Mounted Police and Indigenous Services Canada: to ensure First Responder services and community infrastructure are integrated and aligned with provincial and federal health and emergency programs.
- Simon Fraser University and St. Paul's Hospital Foundation: established Dr. Jeff Reading, a leading national and international expert in Indigenous health, as the inaugural FNHA Chair in Heart Health and Wellness at St. Paul's Hospital (2016).
- BC Cancer, the BC Association of Aboriginal Friendship Centres and MNBC: developed the Indigenous Cancer Strategy, *Improving Indigenous Cancer Journeys: A Road Map* (2016-2017).
- Joint Steering Committee on BC's Overdose Response: led by the BC PHO and all provincial task groups in direct partnerships with RHAs and the BCCDC (Minister of Health (Canada) & Minister of Health (British Columbia), 2011).

3 Governance

Public health system governance comprises the legal, regulatory and policy frameworks (e.g., public health legislation, regulations, standards, guiding policies) which define the roles and responsibilities of key actors and the strategic vision, mission and goals directing the public health system (World Health Organization, 2015). Performance measurement and evaluation of public health activities are fundamental to assessing whether systems produce the intended outcomes and facilitate the continuous improvement of programs and services (World Health Organization, 2015).

3.1 Legal and Policy Framework for Public Health

The *PHA* of 2008 provides the overall legal framework for public health in BC. The *PHA*, in conjunction with 14 regulations, addresses health protection, environmental health, disease prevention, and health promotion (Public Health Act, 2008). The Ministry of Health operationalizes this legislation with other ministries, levels of government, and health authorities (British Columbia Ministry of Health, n.d.-e). The *PHA* consists of 10 parts, and broadly addresses current and emerging public health issues, clarifies the roles and responsibilities of public health officials, grants public health officials stronger powers (i.e., compared to previous acts governing public health), and provides additional functions and abilities necessary for responding to public health emergencies (e.g., ability to require public health planning and enable population health monitoring; issue orders; and updated inspection powers) (NCCHPP, 2018). Health protection and environmental health matters are main foci of the Act. For example, the *PHA* elaborates on the ability of public health officials to monitor, inspect, and prevent public health hazards and respond to emergencies (British Columbia Ministry of Health, n.d.-i). The *PHA* also describes the required mandatory reporting of public health indicators such as infections, exposures to environmental toxins and poisonings, health hazards, and other public health matters. Furthermore, the Act ensures that public health officials have the powers necessary to monitor for health hazards or impediments and enforce the *PHA* when necessary. Health officers are given the authority to inspect vehicles and places to investigate health hazards and ensure compliance with the Act. It also provides the minister with authority to designate a temporary quarantine facility to control communicable diseases and respond to environmental health hazards (British Columbia Ministry of Health, n.d.-i).

Several statutes complement the *PHA* in governing core public health functions. Health protection is addressed by legislation for food and water safety, and school and community safety. An example is the *Food Safety Act,* which is predominantly responsible for regulating food safety, processing, service and retail (British Columbia Ministry of Health, n.d.-e). The Ministry of Health works with the Ministry of Agriculture to regulate the slaughter of meat for food (through the *Food Safety Act*'s *Meat Inspection Regulation*) (British Columbia Ministry of Health, n.d.-e). According to the *Milk Industry Act* and the *Milk Industry Standards Regulation*, the Ministry of Health also works closely with the BCCDC to regulate the safety of dairy products (British Columbia Ministry of Health, n.d.-e). Moreover, the *Fish and Seafood Act* states that, with the federal government, the Ministry of Health administers regulations on the handling and processing of fish and seafood (British Columbia Ministry of Health, n.d.-e). As for water safety, the *Drinking Water Protection Act* and its regulations cover all water systems other than single-family dwellings and those on-reserve. It sets out certain requirements for drinking water operators and suppliers to ensure the provision of safe drinking water to their customers (British Columbia Ministry of Health, n.d.-d).

Specific acts and regulations aim to ensure health and safety in schools and community care facilities. The *School Act* and its regulations specify that school MHOs are designated by regional health boards, and are authorized to inspect school buildings and surroundings, may order school closures,

and examine the general health of students attending the schools (British Columbia Ministry of Health, n.d.-m). The *School Act* and its regulations also state that it is mandatory to provide School Boards with health services and outline the duties and responsibilities of the school MHO (British Columbia Ministry of Health, n.d.-m). Furthermore, the Vaccine Status Reporting Regulation (VSRR) supports the collection of immunization records for school-age children in grades kindergarten to grade 12 (Vaccination Status Reporting Regulation, 2019). The *Community Care and Assisted Living Act* and its regulations provide for licensing of community care facilities that offer care to vulnerable people (child daycare; child, youth, and adult residential settings). It also provides information about the powers and duties of MHOs, such as inspection duties and the authority to suspend or attach terms or conditions to a license if there is an immediate risk to the health or safety of persons in care (British Columbia Ministry of Health, n.d.-c).

Disease and injury prevention activities related to tobacco and vaping are regulated by several different acts. The *Tobacco and Vapour Products Control Act* and its regulations, administered by the Ministry of Health and the five RHAs, describes the restrictions of the display, sale and use of vapour products and are consistent with pre-existing laws related to commercial tobacco. The *Tobacco Tax Act,* administered by the Minister of Finance, deals with registration and taxation of tobacco (British Columbia Ministry of Health, n.d.-e). Finally, the *Tobacco Damages and Health Care Costs Recovery Act* was launched in 1998 (with subsequent introduction of the new legislation in 2000) following a BC Supreme Court challenge to address concerns from tobacco manufacturers, and enables the province to sue the tobacco industry (Government of British Columbia, n.d.-j).

The Government of BC has expressed its commitment to reconciliation with Indigenous peoples, as recently exemplified by the passage of the *Declaration on the Rights of Indigenous Peoples Act* (the Declaration Act) which seeks to align BC's laws with the articles of the United Nations (UN) Declaration of the Rights of Indigenous Peoples over time (Bill 41 – 2019: Declaration on the Rights of Indigenous Peoples Act, 2019). This impacts public health (and all health-related) legislation, regulation, and policies, as consultation and cooperation relating to the Declaration Act will now occur through pathways for engagement with Indigenous governing bodies, who are authorized to act on behalf of Indigenous peoples. The Tripartite Framework Agreement and the Declaration Act foundationally frame First Nations governance, and articulate new ways of operating with partners on reconciliation commitments. The First Nations Health Governance Structure in BC is comprised of three entities, the FNHA, the FNHC and the FNHDA, which is summarized in the Organizational Structure section of this profile.

3.2 Performance Management and Evaluation

Every RHA is required to follow the strategic expectations and goals for public health outlined in the RHA mandate letters and executive mandate letter. Monitoring efforts are adjusted to accommodate these expectations. Furthermore, the mandate letters state that RHAs are responsible for utilizing the *Health Sector Performance Management Framework* to drive continuous improvement and innovation (Fraser Health Authority, 2020b; Interior Health Authority, 2020d; Northern Health Authority, 2020b; Vancouver Coastal Health Authority, 2020b; Vancouver Island Health Authority, 2020b). This framework “sets out how an understanding of health needs at an individual and population level should inform service delivery design” (Fraser Health Authority, 2020b; Interior Health Authority, 2020d; Northern Health Authority, 2020b; Vancouver Coastal Health Authority, 2020b; Vancouver Island Health Authority, 2020b). The RHAs are required to use the framework to establish the range of their data collection and monitor their performance.

Specific information on how the RHAs should measure and evaluate performance is found in their respective service plans. Each RHA's service plan states broad goals which are accompanied by a list of specific objectives, strategies, and performance measures. These performance measures include quantitative data presenting the baseline, actual, and targeted values for upcoming years (Fraser Health Authority, 2020a; Interior Health Authority, 2020i; Northern Health, 2020; Vancouver Coastal Health Authority, 2020a; Vancouver Island Health Authority, 2020a). Also, some regions develop clinical practice standards to guide the work of public health practice.

Additionally, Vancouver Coastal Health Authority is undergoing a quality improvement and capacity-building initiative titled *Healthy Public Policy Renewal* to enhance the ability of public health practitioners in the Office of the CMHO to advance healthy public policies aimed at the determinants of health. Their work includes an evaluation framework for monitoring the impacts of efforts in the healthy living and healthy communities goal areas.

3.2.1 BC Guiding Framework for Public Health

In 2005, BC published *A Framework for Core Functions in Public Health* which contained a comprehensive set of core programs and strategies for public health in the province (Province of British Columbia, 2005). Building on these programs and strategies, in 2013, the province published *Promote, Protect, Prevent: Our Health Begins Here: BC's Guiding Framework for Public Health* (updated in 2017) (British Columbia Ministry of Health, 2017b). This report outlines the province's vision for public health, along with seven goals, and a strategic framework for their achievement. The Guiding Framework's vision is to promote "vibrant communities in which all people achieve their best health and well-being where they live, work, learn and play" (British Columbia Ministry of Health, 2017b, p. 12).

At the foundation of the Guiding Framework are "provincial-level public health functions and infrastructure" (e.g., human and financial resources, information systems, policy, legislation, regulations and accountability mechanisms) which support four "core programs" through four public health "strategies" (British Columbia Ministry of Health, 2017b). The Guiding Framework's seven visionary goals (Table 1) address key intersections of each core program and public health strategy (British Columbia Ministry of Health, 2017b). Stakeholders spanning provincial and local governments and councils, health authorities, non-governmental agencies, care providers, the private sector, and community members play roles aimed at achieving the visionary goals. Specific priority population groups include children, women (specifically, women during their childbearing years), First Nations communities, and individuals living in rural or remote areas (British Columbia Ministry of Health, 2017b). Each goal area contains a set of quantifiable performance measures to track progress over ten years.

It should be noted, that the *First Nations Population Health and Wellness Agenda* includes 22 indicators to be monitored over the next 10 years (2020-2030), and includes strengths-based targets that move away from the deficit-based perspective of "closing the gap" between First Nations and other British Columbians' health (First Nations Health Authority & British Columbia Office of the Provincial Health Officer, 2021). Among these indicators are those related to the social determinants of health including cultural wellness (i.e., traditional language, food, medicine and spirituality, and community belonging), self-determination, connection to the land, food security, housing, and education, and those traditionally used in public health (e.g., health behaviours, infant birth weight, mortality, hospitalizations).

Table 1 BC Guiding Framework

Goal	Goal Area	Aims
Goal 1: "Supportive communities that make it easier for people to make healthy choices at every stage of life"	"Healthy Living and Healthy Communities"	▪ Improve the health of children through health-education partnerships and programs; create health promoting environments and programs with local governments. ▪ Develop policies and programs that protect employee health through supporting activities led by employers.
Goal 2: "Families have the capacity to achieve and maintain good health at all stages of child development"	"Maternal, Child and Family Health"	▪ Improve maternal care by focusing on childbearing, perinatal health, and maternity care programming and activities. ▪ Concentrate on the physical, social and emotional development of infants, children and youth. ▪ Increase the accessibility of public health services for women in rural or remote areas (including First Nations communities).
Goal 3: "Optimal mental health and reduced harms associated with substances"	"Positive Mental Health and Prevention of Substance Harms"	▪ Promote mental health in all environments; address social, environmental and individual risk factors through programming. ▪ Promote a "culture of moderation in relation to alcohol".
Goal 4: "People living longer, higher quality lives free of preventable disease"	"Communicable Disease Prevention"	▪ Use public health measures and initiatives to control communicable disease transmission. ▪ Uptake screening, early detection, and rapid response approaches to monitor outbreaks and diminish morbidity and mortality.
Goal 5: "A safer province that reduces the risk of preventable injuries"	"Injury Prevention"	▪ Increase awareness of injury risks, employ prevention education, and create safe environments. ▪ Improve injury surveillance, community capacity building, and develop public information and prevention measures to diminish injuries and falls among seniors. ▪ Modify environmental factors and raise awareness surrounding safety-promoting behaviours to reduce injuries among children and youth.
Goal 6: "Environments that optimize and support good health"	"Environmental Health"	▪ Improve the safety of drinking water; reduce foodborne illnesses. ▪ Enhance stewardship of food, water, land and air. ▪ Employ inspections, risk assessments, and enforcing of guidelines to protect the health, safety and well-being of the population.
Goal 7: "Communities resilient to health emergencies"	"Public Health Emergency Management"	▪ Improve preparedness and responsiveness by implementing training and ensuring health authorities have access to public health emergency management plans. ▪ Enhance surveillance efforts to track, plan, prepare, and respond to minimize the impact of pandemic viruses. ▪ Develop public health responses to potential health risks from natural disasters.

Source*:* British Columbia Ministry of Health, 2017b

The Guiding Framework performance measures were drawn from existing (albeit unspecified) strategies to align public health activities provincially and improve data availability (British Columbia Ministry of Health, 2017b). These measures were defined with the intention of continually updating them as surveillance capacity and infrastructure improves and in order to ensure they appropriately

and effectively measure intended outcomes. Despite intentions to promote accountability through periodic performance reporting on the Guiding Framework's objectives, an accountability framework has not yet been developed. The first publication reporting on the Guiding Framework indicators was the 2019 PHO report, *Taking a Pulse on the Population. An Update on the Health of the British Columbians* (Office of the Provincial Health Officer, British Columbia, 2019).

The BC Ministry of Health reports on several measures of health status periodically to make sure that progress is being made towards the targets set for 2023. These include: geographic disparity in life expectancy between local health areas (in years); age-standardized incidence rate for diabetes (per 1,000); health-adjusted life years of the BC population; infant mortality rate (per 1,000 live births); the age-standardized rate of mortality due to preventable causes (per 100,000); and the percentage of British Columbians (age 12+) who report that they are very satisfied with life (British Columbia Ministry of Health, 2017a). These measures are also Guiding Framework indicators; however, some are also reported on separately from the Guiding Framework (e.g., infant mortality).

To measure the health equity implications of public health services and policies in BC, the PPH Program of the PHSA defined priority health equity indicators aligned with the provincial Guiding Framework (Provincial Health Services Authority, 2016). In addition to monitoring and reporting on these indicators, PPH Program of the PHSA works with the Ministry of Health, RHAs, and other organizations on health promotion and chronic disease prevention strategies aimed at reducing health inequities (Provincial Health Services Authority, 2016).

Progress on the BC *Tripartite Framework Agreement on First Nation Health Governance* is monitored through ongoing five year evaluations of the BC Tripartite Framework Agreement on First Nations Governance by the FNHA (First Nations Health Authority, n.d.-a). The FNHA also conducts a number of other evaluations, including an evaluation of the FNHA every five years, and also assesses its progress against annual performance measures. Progress on the FNHA's performance measures is captured in the FNHA's annual reports and plans that are available on the FNHA website (First Nations Health Authority, 2019a).

4 Financing

Among the EPHOs, financing refers to the "mobilization, accumulation and allocation of resources to cover population health needs, individually and collectively" (World Health Organization, 2015). Our search sought publicly available data from provincial budget reports and where public health expenditures were not specified, audited financial statements of key public health actors receiving provincial health funding (e.g., provincial, regional health authorities).

4.1 Provincial Public Health Spending

Provincial budget reports (i.e., "Main Estimates") present aggregated expenditure estimates for the Ministry of Health (Ministry of Finance, 2021a). It is thus unclear what proportion of the Ministry of Health's budget is and has historically been invested in public health. For example, budget lines for Executive Services and Support include OPHO expenditures and other administrative costs such as financial management, vital statistics program management, policy development and the Minister's salary (Ministry of Finance, 2021a). The Medical Services Plan budget line includes any provincially insured services provided by medical and other healthcare professionals which may include vaccine administration (Ministry of Finance, 2021a). The Health Programs budget lines include transfer funding which is allocated by RHAs to healthcare and public health services (Ministry of Finance, 2021a).

At the provincial level, Gender-Based Analysis Plus (GBA+) is used to assess the equity implications of ministerial and program-specific budgeting (British Columbia Ministry of Finance, 2020). GBA+ is an analytical tool developed by the federal government to assess the potential impact of policy on the experiences of women, men, and non-binary peoples at various intersections of age, race, ethnicity, ability, and other sociodemographic factors (Status of Women Canada, 2018). It is unclear whether GBA+ or other equity-related criteria are used to inform public health resource allocation specifically at the provincial or health authority levels. However, there is some evidence that GBA+ was used to inform the decision to levy provincial sales taxes upon purchases of naturally and artificially sweetened carbonated beverages (British Columbia Ministry of Finance, 2020). More generally, it remains unclear what criteria are used to allocate resources to and across public health program areas.

RHA annual audited financial statements are available online through the provincial public accounts archive (Ministry of Finance, 2021b) and can be used to estimate provincial public health spending because they present program-specific expenditures. Also, in 2019, the OPHO published the *Taking a Pulse on the Population* report that presented RHA "population health and wellness" (i.e., related to health promotion and disease prevention) operations expenditures from fiscal year 2012/13 to 2015/16 (Office of the Provincial Health Officer, British Columbia, 2019). The analysis suggests that over this period, the absolute amount and proportion of health authority budgets dedicated to public health decreased (Canadian dollars; not adjusted for inflation; figures do not include the FNHA expenditures) (Office of the Provincial Health Officer, British Columbia, 2019). In 2012/13, 4.0% (approximately $529.0 million) of health authority budgets were directed towards public health (Office of the Provincial Health Officer, British Columbia, 2019). This figure gradually decreased to 3.6% (approximately $525.3 million) for 2015/16.

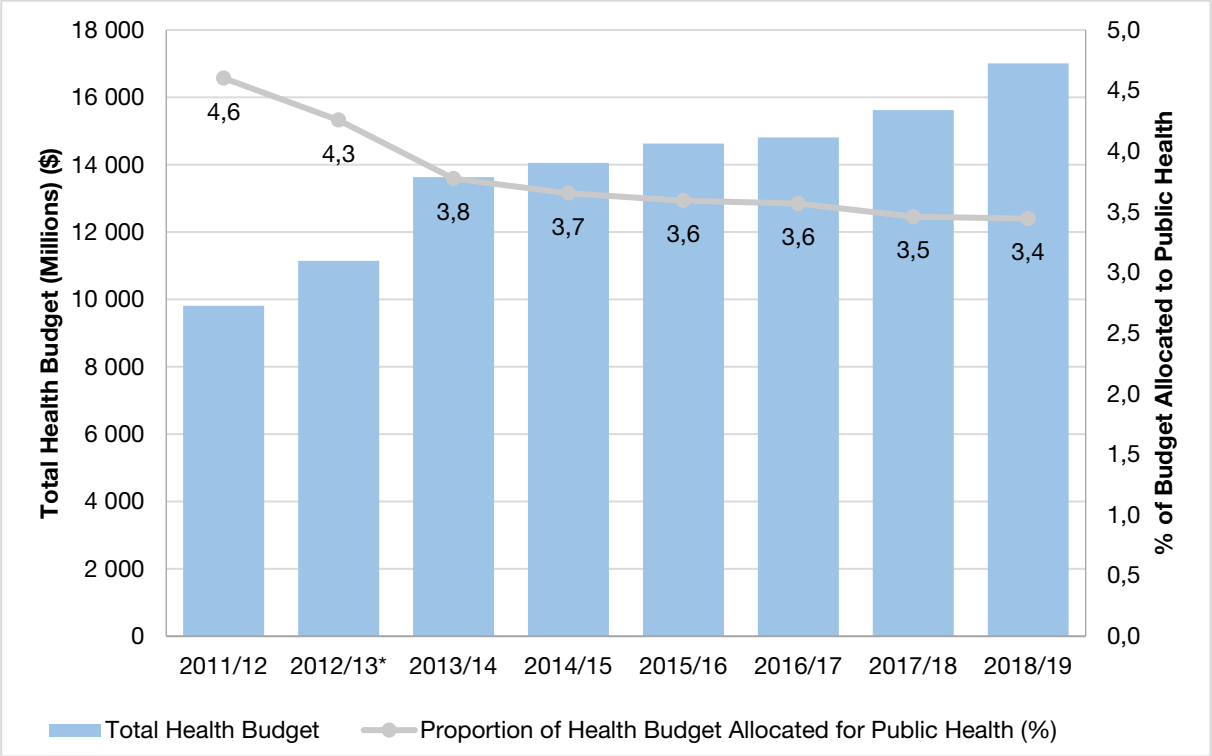
Updating this analysis of RHA budgets to 2018/19 also shows a gradual decrease in public health spending as a proportion of the total health authority budgets from 4.2% ($524.1 million) in 2011/12 to approximately 3.4% ($586.0 million) in 2018/19 (Figure 2). There is some regional variation in public health spending across health authorities, which likely reflects differences in how public health is defined, ranging from 2.5% of Vancouver Coastal Health Authority's total health expenditure to 3.1% of Northern Health Authority's total expenditure in fiscal year 2018/19 (Table 2). The PHSA allocates

6.1% of its budget to public health (Table 2), however the latest available financial statements for each agency within the PHSA indicate that the BCCDC accounts for the majority of this public health spending.

In addition to receiving funding from the federal government, the FNHA receives provincial funding to support and carry out its mandate under the Tripartite Framework Agreement. Much of FNHA's funding is shared. In addition to the Canada Funding Agreement, the FNHA also receives funding from the province through program based or topic-specific grants. The FNHA's allocation of funding, including funding provided to regional teams and directly to First Nations communities, is described in its public- facing annual Summary Service Plan. Progress on the FNHA's work, including its delivery of services, management and governance is described in the FNHA's annual reports. Both the Summary Service Plan and annual reports are available on the FNHA's website.

Organizations are primarily reimbursed for public health services through historical budgets and block grants (Auditor General of British Columbia, 2017; First Nations Health Authority, 2019d; Office of the Provincial Health Officer, British Columbia, 2019). Service providers may also be reimbursed (i.e., fee for service) for delivering immunization and screening services through the Medical Services Plan (Health Sector Information, Analysis and Reporting Division, 2019). Assessing the type of expenditures (e.g., salaries, equipment, sundry) is difficult at the health authority level because expenditures are disaggregated for the overall health system but not by program (e.g., Population Health and Wellness). However, for the BCCDC, disaggregated operations expenses indicate that supplies and salaries account for the largest share of their budget (British Columbia Centre for Disease Control, 2018).

Figure 2 **Regional health authorities and PHSA budget estimated operating expenditures, fiscal years 2011/12 to 2018/19 (CAD$, not adjusted for inflation)**



Notes: Actual operating expenditures presented are not adjusted for inflation and do not include capital expenditures.

Sources: Fraser Health Authority, 2013, 2014, 2015, 2021; Interior Health Authority, 2021; Island Health, 2021; Northern Health Authority, 2021; Provincial Health Services Authority, 2021; Vancouver Coastal Health, 2013, 2014, 2014, 2021, 2021; Vancouver Coastal Health Authority, 2015, 2016; Vancouver Island Health Authority, 2013, 2014, 2015.

* Vancouver Island Health expenditure estimates are not available.

Table 2 Health authorities' overall and population health and wellness expenditures for fiscal years 2017/18 and 2018/19 (expressed in thousands, CAD$)

	Total		Population Health and Wellness		% of Total Expenditure	
	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18
Fraser Health	3,814,993	3,617,911	95,577	88,959	2.5	2.5
Northern Health	896,683	839,639	28,063	27,273	3.1	3.2
Vancouver Coastal Health	3,730,985	3,513,024	108,989	104,051	2.9	3.0
Interior Health	2,355,979	2,203,473	65,105	61,379	2.8	2.8
Vancouver Island Health	2,563,487	2,419,726	64,575	61,973	2.5	2.6
Provincial Health Services Authority	3,645,442	3,025,671	223,413	196,754	6.1	6.5
TOTAL	17,007,569	15,619,444	585,722	540,389	3.4	3.5

Note: Actual operating expenditures manually abstracted from audited financial statements published on health authority websites and not adjusted for inflation.

Sources: First Nations Health Authority, 2019b; Fraser Health Authority, 2019; Interior Health Authority, 2019a; Northern Health Authority, 2019; Provincial Health Services Authority, 2019; Vancouver Coastal Health Authority, 2019; Vancouver Island Health Authority, 2019a.

* FNHA not included because financial statements present consolidated expenditures.

5 Public Health Workforce

The core public health workforce includes "all staff engaged in public health activities that identify public health as being the primary part of their role" (Rechel, Maresso, et al., 2018). This excludes professionals such as midwives, community pharmacists or family physicians who may promote public health, but only as part of their job. Our search sought information detailing the size and professional discipline composition of, and recruitment and retention trends and strategies for, the public health workforce in BC.

5.1 Size, Composition, Recruitment and Retention

As per the Public Health Agency of Canada Core Competencies, BC defines four general categories of public health professionals: 1) MHOs, 2) consultants and specialists, 3) frontline providers, and 4) managers and supervisors (Public Health Agency of Canada & Workforce Development Division, 2008). The precise number of employees designated as public health professionals along with the proportion of each category in relation to the total public health workforce across BC vary by health region.

MHOs are experts in public health and preventive medicine; almost all have their fellowship in this medical speciality of the Royal College of Physicians and Surgeons of Canada (British Columbia Ministry of Health, n.d.-f). Included in the public health workforce are consultants and other specialists with expertise in epidemiology and statistics, research and evaluation, environmental health, and nursing (British Columbia Ministry of Health, n.d.-f). Frontline providers constitute the largest proportion of the public health workforce. They are responsible for most day-to-day activities including service delivery, outreach and community engagement, program planning and evaluation, inspection and enforcement, and administrative duties. Frontline providers have post-secondary education and work experience in public health and related fields such as occupational health, health promotion, nursing, dietetics, dental hygiene, social work and environmental health (British Columbia Ministry of Health, n.d.-f). Managers and supervisors are responsible for leading and administrating major programs and public health functions. The importance of strategy as well as service delivery is being incorporated in at least one health authority. These professionals come from diverse professional backgrounds, however, those with public health training and experience tend to fulfill roles requiring greater content expertise (British Columbia Ministry of Health, n.d.-f).

Our search identified some data for specific professional designations: specifically, inspectors and physicians. The Canadian Institute for Health Information (CIHI) Health Workforce Database suggests that between 2015 and 2019, around 186 to 228 environmental public health professionals (e.g., public health inspectors) were employed in BC (Canadian Institute for Health Information, 2021). However, while some inspectors work within RHAs, others work in private corporations (e.g., Loblaw's, Tim Horton's), and still others work at WorkSafeBC. BC has approximately forty-one MHOs and additional public health physicians working in other capacities (British Columbia Ministry of Health, 2019).

Some public health physicians hold positions outside of the traditional MHO's role (e.g., physician epidemiologists involved in academic and consultation roles with the BCCDC; public health and preventive medicine trained physicians who provide public health and clinical services in occupational medicine for WorkSafeBC or fulfill clinical roles with a focus on vulnerable populations [e.g., addictions]) (Public Health Physicians of Canada, 2019). Public health and preventive medicine specialists make up a small proportion of the overall public health workforce (Canadian Institute for Health Information, 2020). As of 2018, there were 67 (about 1.0 per 100,000 population) Public Health

and Preventive Medicine Specialists working in BC with some sub-regional variation (Canadian Institute for Health Information, 2020). The following numbers indicate MHOs employed by RHAs: Fraser Health Authority, 6 (2 on leave); Interior Health Authority, 6; Northern Health Authority, 5; Vancouver Coastal Health Authority, 7; and Vancouver Island Health Authority, 6 (British Columbia Ministry of Health, 2019).

5.1.1 Workforce Capacity

There are a variety of programs that have been created to attract health professionals, although little information specific to public health professionals was identified. For example, the Skills Immigration category of the BC Provincial Nominee Program helps physicians, specialists, nurses and other health professionals work in BC and gain permanent residence (Province of British Columbia, Welcome BC, 2020). It appears that rural or remote communities face greater difficulty in recruiting and retaining staff. An evaluation of the BC *Tripartite Framework Agreement on First Nation Health Governance* highlighted the availability of qualified candidates as a barrier to recruitment and retention of employees linked to limited project implementation (Minister of Health (Canada) & Minister of Health (British Columbia), 2011). More information is needed on other public health professionals (British Columbia Ministry of Health, n.d.-j).

BC does not have a formal provincial public health workforce development strategy in place. BC's *Framework for Core Functions in Public Health* identified professional competencies needed for fulfilling core public health functions (Province of British Columbia, 2005). This document was succeeded by the *Guiding Framework for Public Health* which presents limited information regarding the role of competencies within each core program and public health strategy (British Columbia Ministry of Health, 2017b). It remains unclear how widely implemented competency-based job descriptions and workforce standards have been over the past decade (Regan et al., 2014). BC's *Guiding Framework for Public Health* does however express a commitment to "…an ongoing focus on strengthening… Public health human resources, training, and development" (British Columbia Ministry of Health, 2017b). Earlier evidence suggests the province had implemented strategies to strengthen post-secondary education (e.g., integrating public health competencies into undergraduate programs and increased funding for scholarships and internship training opportunities) and increase the profile of careers in public health (Regan et al., 2014). Detailed information on programs in place to develop and modernize the deployment of the public health workforce were not identified by our search.

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