Evaluation of the National Collaborating Centres for Public Health Program 2018-19 to 2022-23

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TO PROMOTE AND PROTECT THE HEALTH OF CANADIANS THROUGH LEADERSHIP, PARTNERSHIP, INNOVATION AND ACTION IN PUBLIC HEALTH.

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List of Acronyms

Acronym	Definition
AMR	antimicrobial resistance
CPHO	Chief Public Health Officer
COVID-19	Coronavirus disease
EIDM	evidence-informed decision making
HiAP	Health in All Policies
NCC	National Collaborating Centre
NCCDH	National Collaborating Centre for Determinants of Health
NCCEH	National Collaborating Centre for Environmental Health
NCCHPP	National Collaborating Centre for Healthy Public Policy
NCCIH	National Collaborating Centre for Indigenous Health
NCCID	National Collaborating Centre for Infectious Diseases
NCCMT	National Collaborating Centre for Methods and Tools
NCCPH	National Collaborating Centres for Public Health
OCSO	Office of the Chief Science Officer
PHAC	Public Health Agency of Canada
PHN	Pan-Canadian Public Health Network
PMQ	Performance Measurement Questionnaire
SARS	Severe acute respiratory syndrome
STBBIs	Sexually transmitted and blood-borne infections

Executive Summary

Background

The National Collaborating Centres for Public Health (NCCPH) Program was created in 2005 alongside the Public Health Agency of Canada (PHAC) and the Pan-Canadian Public Health Network (PHN) in order to support evidence-informed decision making at all levels of Canada's public health system. The aim of the six National Collaborating Centres (NCCs) is to fulfill this mission by identifying knowledge gaps, fostering collaborative networks, and creating and disseminating knowledge translation resources and services.

Each NCC specializes in a different priority area of public health practice, but they share the same model. Each is hosted in a university or provincial public health agency that is supported with contribution agreement funding from PHAC, led and staffed by subject-matter experts, and guided by an external advisory board.

Since 2017, the Program has been managed by the Office of the Chief Science Officer (OCSO). The NCCs each continue to receive $974K annually in core funding from PHAC, an amount set in 2015. Additional short-term project-based funding also supplemented the core budget.

Conclusions and Recommendations

Since the 2018 evaluation, the NCCs have continued to perform well in delivering on their three core functions and leveraging their strengths and connections to support a wide audience, including: front-line practitioners and service providers, regional, provincial and territorial public health decision-makers, non-governmental and academic organizations, and PHAC itself. This included pivoting from their established work plans during COVID-19 to leverage their strengths, expertise and networks to support the planning, response, mitigation and recovery of PHAC and other public health actors across Canada.

In addition, the NCCs have continued to produce a wide array of relevant knowledge translation products and activities over the last five years in response to identified knowledge gaps and have continued to collaborate with many public health practitioners and entities across Canada, including PHAC. Many examples of NCC contributions were noted by interviewees, including leadership on issues like health equity, reconciliation with Indigenous peoples and climate change. They have also increasingly collaborated with PHAC units, notably on the Chief Public Health Officer's (CPHO) annual reports. The work of the NCCs has been facilitated by their

maturity, expertise, credibility within organizations across jurisdictions, and adaptability to new public health priorities. The NCC model is a key factor in promoting these strengths. This includes the Contribution Agreement mechanism that provides structure to the PHAC-NCC relationship and flexibility to address emerging or changing priorities.

Despite the achievements of the NCCs and strength of the Program model, the NCCs have been facing increasing challenges in meeting the expectations of all key program beneficiaries without supplementary funding from PHAC and external funders. Relying more on short-term supplementary funding affects both annual work plan commitments and the ability to address long-term capacity gaps. As noted in the 2018 evaluation, this situation has led to uncertainty regarding PHAC's expectations for this long-standing Program, i.e., what constitutes success in fulfilling its mission.

The PHAC-NCC relationship, facilitated by the Office of the Chief Science Officer (OCSO), is mutually supportive. The OCSO coordinated meetings between the NCCs and PHAC senior leadership and managers, and organized collaborative work between PHAC units and individual NCCs. However, PHAC could make better use of the information gathered by the six NCCs via their extensive networks from external partners and collaborators. PHAC could also share its own corporate and program-level strategic priorities, and those of the Pan-Canadian Public Health Network, with the NCCs in a systematic manner, contributing to the collaborative development of NCC priorities and work plans. Lastly, despite some streamlining of the NCC performance measurement reporting framework since 2018, there is still room to improve the framework to better tell the story of the Program results and impacts.

The findings discussed in this report have led to the identification of three recommendations.

Recommendation 1: Reassess PHAC expectations of the NCCPH Program in light of funding, PHAC and public health renewal. Program objectives have remained the same since 2005, although the public health environment has changed, especially following the COVID-19 pandemic. The evaluation findings suggest that PHAC's definition of success for this long-standing Program need to be clarified. At the same time, there are partners and collaborators inside and outside of PHAC who also have expectations for the Program given its design to serve public health practitioners and policy makers across Canada. Therefore, there is a need to review the present-day alignment of the NCCPH Program model and mandate with the current public health environment, as well as PHAC's own mandate and resources, especially in terms of public health renewal.

Recommendation 2: Enhance the two-way information-sharing relationship between PHAC and the NCCs.
Despite previous efforts to re-establish a structure to enhance coordination between PHAC and the NCCs, there remains an opportunity to improve strategic engagement with the NCCs regarding PHAC and PHN priorities. At the same time, PHAC and the PHN could take more advantage of the expertise and extensive networks of the NCCs to inform their own strategic priorities and actions.

Recommendation 3: Improve the NCCPH performance measurement framework to better tell the Program results and impacts story.
The six NCCs continue to meet or exceed PHAC requirements for annual performance measurement reporting. However, it was difficult to use this information to fully portray the results of the six NCCs and the Program's impact as a whole. Although streamlined since 2018, suggestions for improving the performance measurement framework have been made in recent reviews and echoed by interviewees. Enhancements to performance measurement should take into consideration any changes resulting from the first recommendation.

Program Description

The mission of the NCCPH Program is to promote the use of scientific and other knowledge for evidence-informed decision making (EIDM) by public health practitioners, program administrators and policy makers across Canada, at all levels of the public health system.[1] It is a cross-cutting program that contributes to the three current core responsibilities of PHAC: Health Promotion and Chronic Disease Prevention, Infectious Disease Prevention and Control, and Health Security.[2]

There are six National Collaborating Centres (NCCs) located across Canada, each focused on a different priority area of public health practice as profiled in **Appendix A**:

- National Collaborating Centre for Indigenous Health (NCCIH), University of Northern British Columbia, Prince George, British Columbia;
- National Collaborating Centre for Environmental Health (NCCEH), British Columbia Centre for Disease Control, Vancouver, British Columbia;
- National Collaborating Centre for Infectious Diseases (NCCID), University of Manitoba, Winnipeg, Manitoba;
- National Collaborating Centre for Methods and Tools (NCCMT), McMaster University, Hamilton, Ontario;
- National Collaborating Centre for Healthy Public Policy (NCCHPP), Institut national de la santé publique du Québec, Montréal, Québec; and
- National Collaborating Centre for Determinants of Health (NCCDH), St. Francis Xavier University, Antigonish, Nova Scotia.

All six NCCs carry out the mission of the Program using a common model. Each NCC is hosted in a provincial public health institute or university that holds a contribution agreement with PHAC and is headed by a scientific or academic lead. The leads are supported by a manager and small team; all are employees of the host institution. Each Centre has an advisory committee consisting of stakeholder representatives who give input on annual work plan priorities and access to broader networks. All the NCCs perform three key functions to achieve their mission as shown in the original logic model, which can be found in **Appendix B**:

- Identifying knowledge gaps to encourage research in public health priority areas.
- Networking for collaboration to facilitate knowledge exchange and mobilization among a wide range of stakeholders across the public health system, i.e., practitioners, researchers and policy makers at the local, provincial, territorial and federal levels.
- Translating new and existing knowledge and research into useful and accessible formats tailored to different audiences, drawing on regional, national and international expertise.

Since 2015, the Program budget provides $973,666 per fiscal year to each of the six NCCs. They have received additional funding, mostly through ad hoc projects with various PHAC units and surge funding during the COVID-19 response. See the Funding Mechanism section for more details.

The Program has been managed since 2017 by the Office of the Chief Science Officer (OCSO) who administers the contribution agreements and reporting requirements. It also serves as a 'single window' for other PHAC units seeking to collaborate with any of the NCCs. This is discussed in the PHAC-NCC Relationship section. The Program aligns with PHAC's core responsibilities via the knowledge translation support it provides on a variety of priority topics to PHAC and public health-related organizations across Canada.[3] It also supports PHAC's commitment to applying a Sex- and Gender-Based Analysis Plus (SGBA Plus) lens given that each NCC has incorporated health equity and reconciliation with Indigenous peoples into their work.[4]

Origin of the National Collaborating Centres for Public Health Program

The SARS epidemic of 2003 revealed inabilities in Canada to quickly mobilize existing knowledge to inform responses to a public health emergency. It also showed a lack of coordination and collaboration on priorities for existing knowledge development. Expert consultations prior to 2003, and the SARS experience itself, underlined a need to strengthen public health expertise and rapidly transfer knowledge among all levels of government, academia and non-government organizations.[5] Post-2003 reviews, including the Naylor report Learning from SARS, called for the building of capacity to develop and apply public health evidence in practice.[6,7]

Following the SARS epidemic, the federal government committed to investing in the renewal and strengthening of the public health system. Subsequently, the NCCPH Program was announced in 2004 and launched in 2005 alongside the creation of the Public Health Agency of Canada (PHAC) and the Pan-Canadian Public Health Network (PHN). The initial core PHAC funding level was $1.5 million per NCC.

The NCCPH Program was initially designed to help improve joint Federal/Provincial/Territorial actions on public health, in parallel with the PHN. Prior to the launch of the Program in 2005, the scope was broadened to include local governments, academia, public health practitioners and non-government organizations, i.e., all levels and sectors of Canada's public health system.[8] A timeline of events shaping the Program is provided in **Appendix C**.

Evaluation Scope and Approach

This evaluation focused on the performance of the NCCPH Program over the 2018-19 to 2022-23 period, i.e., just prior to the COVID-19 pandemic and then over the course of the national public health response It was also intended to consider the relevance of the Program in the context of the federal public health role and to satisfy *Financial Administration Act* requirements. The evaluation drew on findings from multiple lines of evidence, listed in **Appendix D**, to address the following questions on achievements, design and implementation:

Achievement of expected objectives

- How effectively have the NCCs achieved their expected objectives of engaging with and supporting key Program partners and collaborators, including PHAC, over the last five years, including the COVID-19 pandemic response?
  - What challenges, barriers and facilitators exist to achieving Program objectives?
  - Are the objectives reasonable given the Program budget?

NCCPH model

- How well is the NCCPH Program model suited to respond to ongoing and emerging needs for knowledge translation in the Canadian public health system? How have the NCCs evolved to meet demonstrated needs and changing priorities?

Funding mechanism

- To what extent is the funding mechanism appropriate to meet the Program's objectives and partner/collaborator expectations for support from the National Collaborating Centres?

PHAC-NCC relationship

- How well are PHAC supports for the NCCPH Program working, including facilitating NCC engagement with PHAC and measuring Program performance?

Previous Evaluations

The NCCPH Program was previously evaluated in 2009, 2014 and 2018.[9] The 2018 evaluation found that the NCCs were continuing to meet a need for knowledge translation services to make evidence-based information accessible and useful and that the NCCs occupied a unique niche. Moreover, the Program had evolved from a front-line focus to supporting all levels of the public health system and the NCCs were seen to be very collaborative, productive, credible and efficient in their use of limited resources. Their ability to foster relationships was seen as a significant strength as were the benefits of the Program model of arm's-length Centres. However, questions were raised about the alignment of NCC work plans with PHAC and working-level priorities, the limited interaction between PHAC and the NCCs and the usefulness of the requirement for all six NCCs to collaborate on joint projects.

The evaluation made recommendations on i) developing a collaborative two-way partnership between PHAC and the NCCs, ii) ensuring that each NCC remains relevant to emerging knowledge needs, and iii) exploring options to maximize efficient resource use.[10]

Evaluation Findings

Achievement of expected objectives

Overall, each of the six NCCs delivered a large number of activities based on their three core functions, both before and during the COVID-19 emergency response, including identifying knowledge gaps, facilitating collaborative networks and translating knowledge. Similar to what was found in the 2018 evaluation, the NCCs:

- showed that they are able to rapidly detect and respond to new priorities;
- have maintained extensive networks of public health actors at all levels of government, across relevant sectors and audiences; and
- have well-developed public health knowledge resources on new and longstanding public health issues.

The subsections below provide an overview of Program achievements and challenges for the three main functions as well as NCC support for evidence-informed decision making over the last five years.

Knowledge gap identification

The six NCCs continued to identify public health knowledge gaps related to existing and emerging public health issues, even during the COVID-19 pandemic health emergency.

The NCCs have continued to gather information regarding knowledge needs in a variety of ways. They all sought input from their respective advisory committees and regularly liaised with OCSO to understand PHAC's priorities and identify opportunities for specific collaborations. Furthermore, the six NCCs held 97 focus groups and undertook beneficiary surveys as well as 64 environmental scans over the evaluation period. In addition, the NCCs logged 674 requests for information over the evaluation period. The NCCs set annual work plan priorities and focused their activities based on this intelligence.

Existing and emerging public health issues prioritized by the NCCs

The table below, derived from the document review, provides examples of existing and emerging issues addressed by each NCC over the course of the last five years as a result of identifying knowledge gaps.[11]

NCC focus	Examples of existing and emerging public health issues examined by the NCCs
NCCDH: social determinants of health and health equity	Organizational capacity and training for integrating health equity in public health practice; addressing structural racism; ethics of health equity; mental health promotion.
NCCEH: environmental threats and environmental health practice	Carbon monoxide exposure in long-term care facilities; food environments and access; Indigenous community planning; healthy built environments; radon exposure and testing; wildfire smoke exposures and community health impacts; emergency response to oil spills; urban heat islands, extreme heat and other health impacts of climate change; community health adaptation capacity-building efforts related to climate change
NCCHPP: capacity for policy analysis, policy approaches for public health issues	Public health governance; Health in All Policies; wellbeing budgeting and policymaking; cannabis legalization and the opioid crisis, mental health promotion.
NCCIH: Indigenous-informed evidence on First Nations, Inuit and Métis health	Determinants of Indigenous health; Indigenous built environments, tuberculosis; methamphetamine use; forced and coerced sterilization of Indigenous women and girls; vaccine confidence; Alzheimer's disease and related dementias; climate change; sexually transmitted and blood-borne infections (STBBIs); trauma-informed health and healthcare practice; cultural safety and Truth and Reconciliation Commission Calls to Action.
NCCID: mobilizing infectious disease research and evidence	Emerging diseases and outbreaks (e.g., Zika virus outbreaks, resurgence of the MERS Co-V, tuberculosis, STBBIs); vector-borne illnesses; antimicrobial resistance and stewardship; population migration and mobility; inequities in public health responses to communicable diseases in rural and remote communities; use of big data and mathematical modelling.
NCCMT: evidence-informed decision making (EIDM) in public health	Access to evidence on what works, including a rapid evidence service for emerging public health issues or emergencies; capacity development for EIDM (such as the Knowledge Broker Mentoring Program); and Indigenous approaches for evidence synthesis. Incorporating evidence at a systems level, including community-based evidence.

Many NCC, board, host and user interviewees reported that the NCCs are nimble enough to refocus priorities and produce KT activities rapidly in response to emerging needs, enabled by leveraging relationships/networks to address emerging needs and gaps in knowledge. For example, in the case of NCCID, this flexibility allowed a focus on underserved populations in shelters and experiencing poverty in the urban core, realities and public health dynamics which PHAC would not otherwise access easily.[12] Out of the 69 participants surveyed, 70% strongly agreed that NCC knowledge products and activities have consistently been pertinent and timely over the past five years and that the topics covered by the NCCs are appropriate and relevant given current and emerging public health issues.[13]

Many PHAC, advisory board and user interviewees noted that the NCCs often assume a leadership role in public health, championing emerging areas like work on racism and discrimination, equity, climate change and the healthy built environment, well-being budgeting, population migration, and capacity for critical appraisal of evidence. In one example, the NCCIH is leading a conversation on privileging Indigenous ways of knowing alongside a Western biomedical view, recognizing that health and illness cannot simply be measured empirically but that local Indigenous wisdom, knowledge and history are equally valid tools for inquiry in the health field.[14]

Some NCCPH users, along with other interviewees, highlighted public health priorities which they felt were not being addressed by any of the NCCs. These included the One Health concept[15], community investment and intersectoral collaboration, populations at risk such as youth, chronic diseases, substance use, antimicrobial resistance (AMR), vector-borne diseases, and mental health promotion. However, a quick sample of the six NCC websites showed that these topics have been previously addressed to lesser or greater extents. For example, the AMR project – which includes One Health approaches – at NCCID[16] is an ongoing priority as are various vector-borne diseases which are also addressed by NCCEH; NCCHPP's intersectoral collaboration work through Health in All Policies and Health Impact Assessment, as well as clarifying the roles of public health in promoting population mental health and wellness[17]; and NCCDH and NCCHPP are supporting a university-based Knowledge Development and Exchange Hub on mental health promotion which is also funded by PHAC through a different program.[18]

Focus on COVID-19

The NCCs picked up early signals of public health sector needs related to the COVID-19 pandemic. The NCCs consulted their advisory committees and continued listening throughout the public health emergency to their diverse networks of partners and collaborators to understand COVID-19 knowledge needs. Early responses included a COVID-related evidence review on school closures (NCCID) and guidance resources on different ethical issues faced by public health practitioners responding to a pandemic (NCCHPP). With the support of OCSO, the NCCs adjusted their annual work plan priorities accordingly, within the scope of their specific areas of practice.[19] The following key examples of COVID-19 knowledge translation needs were identified by the NCCs and added to their work plans:

- NCCDH: equity issues in the public health response to the COVID-19 pandemic, such as measuring differential impacts on diverse communities and highlighting equity-informed public health strategies.
- NCCEH: prevention of indoor and outdoor transmission of the SARS-CoV-2 virus that causes COVID-19.
- NCCHPP: public health ethics during a pandemic response and planning for the public health system post-pandemic.
- NCCID: essential and reliable information on coronavirus disease (COVID-19) for public health practitioners, and mathematical modelling.
- NCCIH: reliable information on the COVID-19 pandemic for Indigenous communities, including countering COVID-19 misinformation, and supporting the use of Indigenous-informed evidence and knowledge in public health decision-making.
- NCCMT: rapid reviews of evidence, coordination to reduce duplication of effort on evidence syntheses, and having an accessible repository of Canadian COVID-19 evidence reviews.

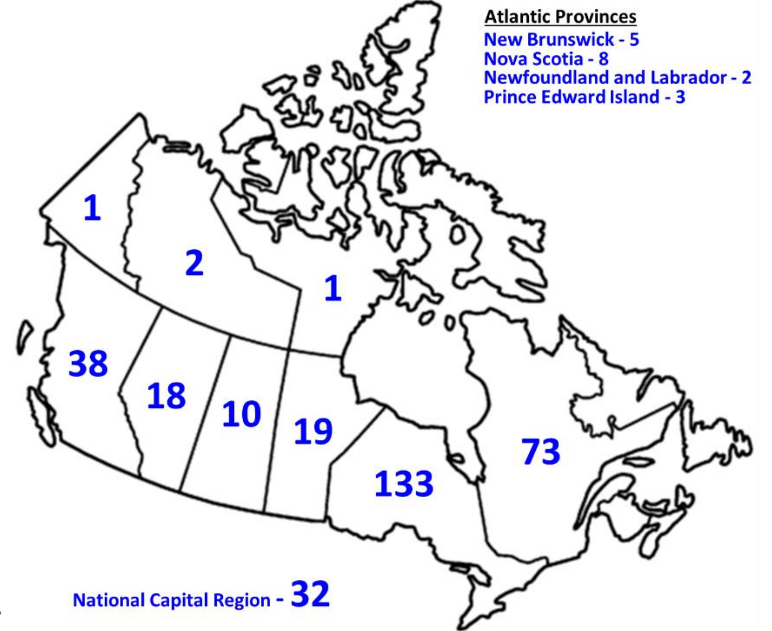
One PHAC interviewee observed that the "NCCs were at the forefront of the work at the right time, because of how well connected they are."

Networking for collaboration

Similar to what was observed in the 2018 evaluation, the NCCs continued to connect with many different groups. Collaborations are one of the strongest mechanisms the NCCs have to achieve the Program's mission.

An analysis of NCC reporting data showed that the NCCs combined had 523 organizational partner or collaborator relationships in one fiscal year, 2022-23, with 345 unique organizations across Canada.[20] Figure 1 gives a sense of the geographic distribution of these unique organizations in Canada. There were also 50 unique organizations outside of Canada connected to the NCCs.[21]

Figure 1: Number of unique NCC organizational partners and collaborators by province and territory, 2022-2023



NCCs have continued to use a variety of collaborative mechanisms:

- The members of the advisory boards for each NCC represent a variety of different regions and public health organizations, allowing the NCCs to quickly gather intelligence on emerging needs for knowledge resources and establish annual work plan priorities. These relationships also benefit the participants.[22] For example, NCCMT reported having regular and ongoing contact with 215 senior decision-makers across Canada, such as Medical Officers of Health and senior managers of government public health services, leading to new projects in the last five years. Routine communication with 27 public health programs and schools in academic institutions has resulted in the integration of resources into curricula, and also 14 student practicum placements with the NCCMT.[23]

- The NCCs have a strong relationship with the Office of the Chief Science Officer (OCSO), which administers the Program contribution funding agreements and facilitates collaborations with other units across PHAC[24], as highlighted in the Funding Mechanism and PHAC-NCC Relationship sections below. A good example is the Office of the Chief Public Health Officer's annual report team, who have consulted different NCCs each year according to the report theme, including those on a health equity view of COVID-19 in 2020 and on the future of the Canadian public health system in 2021. Notably, all six NCCs were involved in publishing and disseminating four reports building on different aspects of the 2021 CPHO Report on A Vision to Transform Canada's Public Health System. The NCCIH led the creation of one of the reports, Visioning the Future: First Nations, Inuit, and Métis Population and Public Health.[25] In addition, PHAC has commissioned the NCCs to update the national core competencies for public health.[26]

- The NCCs have long-standing relationships with different public health professional associations, including a presence at major conferences, particularly the Canadian Public Health Association's annual conference and the francophone Journées annuelles de santé publique. NCCs continue to engage with practice-based or professional associations to support the needs of their members, such as the Canadian Paediatric Society (NCCIH), the Canadian Institute for Public Health Inspectors (NCCEH), the Canadian Pharmacists Association (CHNCNCCID), the Community Health Nurses' Initiatives Group (NCCMT), the Ontario Public Health Association (NCCHPP) and the Urban Public Health Network (NCCDH).

- NCCs have also convened topic-focused stakeholder groups on priority topics such as NCCHPP's Canadian Network for Health in All Policies. Furthermore, NCCHPP hosts the secretariat of the Global Network for Health in All Policies, a country-led initiative, whose mission is to work with governments and institutions across different

sectors to address the determinants of health, by strengthening the Health in All Policies (HiAP) approach, with the aim of supporting the implementation of the United Nations Sustainable Development Goals and universal health coverage.

- The NCCs continue to collaborate with each other based on their areas of expertise and priorities. The leads and managers of the six NCCs also meet on a regular basis to share priorities and identify opportunities for joint projects. In addition to supporting the 2021 CPHO report mentioned above, examples of recent projects that involved all six NCCs included public health responses for long-term evacuation and recovery[27], and collaborating to hold a February 2023 Winter Institute conference on the potential for partnerships between shelters and public health organization.[28]

The NCC model strengthens the ability of the NCCs to develop and maintain extensive networks, enabling them to create and mobilize collaborations to address emerging public health issues. Many NCC board and host organization interviewees emphasized that the ability of the NCCs to collaborate is supported by their host universities and provincial public health institutes who are themselves seen as credible and trustworthy. See the section below on Suitability of the NCCPH Program Model for further discussion.

Many interviewees from PHAC, NCCs and the Advisory Boards explained that the NCCPH model of Centres hosted outside of PHAC, as 'arm's length' entities, allows the six NCCs the flexibility to connect with practitioners, researchers and decision-makers across the public health system and jurisdictional lines in a way that federal government organizations may find difficult to replicate. Despite these strengths, several interviewees stated that there are opportunities to expand the reach of the NCCs, with suggestions such as voicing a pan-Canadian perspective on public health priorities, using public health conferences or gatherings to have open exchanges, and engaging more with researchers and PHAC itself. There are examples across the NCCs where these types of activities have happened and are continuing to be implemented.

Focus on COVID-19

The NCCs maintained their networks of public health partners and collaborators throughout the entire COVID-19 emergency despite a rapidly shifting workforce. An NCC host and a PHAC interviewee described how pre-existing networks gave the NCCs the advantage of being simultaneously 'on the ground', while also remaining connected to decision-making and academic organizations. This enabled the NCCs to communicate issues experienced by communities and front-line workers in crisis. Their extensive connections also informed how the NCCs adapted their annual work plans to rapidly engage with and respond to emerging needs during the COVID-19 emergency response and recovery.

The NCCs supported PHAC units and structures, including by conducting rapid evidence reviews, helping to quickly prepare and post information online on their behalf,[29] and presenting

insights to the federal, provincial and territorial Special Advisory Committee in 2020 and to the Pan-Canadian Public Health Network in 2022.[30] That said, despite there being a very positive response to their work and contributions, a few interviewees noted that there were difficulties integrating NCCs into important PHAC COVID-19 information-sharing structures.[31] Beyond PHAC, one key example of NCC work on COVID-19 was the role of NCCMT and NCCIH in supporting COVID-END, a global knowledge-translation platform hosted in Canada that was designed to support decision-makers in using evidence while reducing the duplication of effort.[32]

Knowledge translation

Similar to the findings of the 2018 evaluation, performance measurement reports submitted annually by the six NCCs attest to the substantial number and variety of knowledge translation activities accomplished over the last five years. These activities included online training, webinars, workshops, as well as content production for various social media channels.

A summary of annual performance measurement data from five fiscal years, April 2018 to March 2023, showed that the NCCs:

- produced 137 tools, 1,559 publications, including 195 that were peer reviewed, 218 podcasts, 389 webinars and 405 conference presentations; and
- facilitated 117 workshops and 849 training activities.

The six main NCC websites garnered 4.73 million unique visitors and 1.26 million downloads.[33] The number of unique visitors to all NCC web sites has increased since the last evaluation. For the most part, NCC website traffic in 2022-23 saw more visitors than some PHAC websites with similar themes. A more detailed analysis is presented in **Appendix E**. The NCCs also reported around 905,000 YouTube views, most of which consisted of communicating recorded webinars and shorter issue spotlights.[34]

Most of the resources produced by the NCCs are online and free of charge in order to make them as accessible as possible. Of note, the NCCIH released a second edition of Determinants of Indigenous Peoples' Health, Beyond the Social in 2018, the first book of its kind written primarily by Indigenous authors. Building on this publication, the NCCIH released an Introduction to Determinants of First Nations, Inuit, and Métis Peoples' Health in Canada in 2022, for those new to the idea of decolonization in health.[35] Most documents appear to be available in French and English, however, not all resources are easily translated, such as webinar recordings. A couple of interviewees felt that the use of the full suite of NCC products and activities could be increased by raising public health practitioners' and researchers' awareness of these products, including within PHAC.[36]

Focus on COVID-19

The six NCCs produced a wide array of knowledge translation resources and services related to COVID-19 – some within weeks of a pandemic being declared. In general, they built libraries of reliable and curated information on priority topics,

developed new guidance documents, and took advantage of their existing communications and networking capacities to disseminate information in a variety of formats. For instance, the NCCID created a "Quick Links" resource for practitioners in January 2020, updating it over time bi-weekly as new information became available, until the pandemic was declared.[37] As well, the NCCDH launched a COVID conversation series connecting public health practitioners, other NCCs and policy-makers.[38]The NCCs provided knowledge translation support for CIHR's rapid research response grants. Lastly, the NCCMT provided evidence syntheses in response to requests from decision-makers at all levels of public health. It also was a key collaborator in the creation of COVID-END, a network of over 50 Canadian and international research groups specializing in evidence synthesis, health technology assessment, and guideline development.[39] A more detailed inventory of the NCC COVID-19 activities is provided in **Appendix F**.

Support for Evidence-Informed Decision Making in public health

Multiple lines of evidence show that, overall, the three core functions delivered by the six NCCs have continued to support the capacity of public health practitioners and decision-makers across Canada for evidence-informed decision making.

In general, two types of impacts were observed in the evidence gathered for this evaluation. Firstly, public health actors are accessing NCC knowledge products to use within their own organizations. Secondly, many interviewees and survey respondents related how participating in NCC-led training or in collaborative efforts enhanced their own individual or organizational capacity. Examples by core function include:

- Knowledge Gap identification: The 2018 forum Towards Tuberculosis (TB) Elimination in Northern Indigenous Communities, co-hosted by NCCID, NCCIH, NCCHPP and NCCDH, provided inspiration for prioritizing health as a theme in a Privy Council analysis of First Nations on-reserve housing issues. [40]
- Networking for collaboration: Global and national-level projects on Health in All Policies (HiAP) led by NCCHPP[41] since 2017 have resulted in the creation of a Canadian Network for HiAP in collaboration with PHAC, supporting an Agency priority to support intersectoral action on the social determinants of health.
- Knowledge translation: The suite of EIDM capacity-building resources and training created and refined over the years by NCCMT has been praised by participants for having enhanced their skills. Those materials have been incorporated into post-secondary curricula and adapted by local public health organizations to build the capacity of their own teams. [42] NCCEH partnered with the Intact Centre on Climate Adaptation in the development of national guidance to reduce the risk of extreme heat.[43]

"The NCCs have done a lot of work delivering on the original vision for the Program, which is to strengthen the evidence

base in public health with a strong focus on translation and developing tools that can then help different public health actors who are working at different levels as well as to implement policies." – NCC advisory board member

Despite a multitude of examples of public health actors supported by the NCCs, there are broader challenges faced by potential users of NCC products and activities in support of EIDM. These include demanding workloads, competing priorities, and the political context of decision making in public health organizations.[44]

Focus on COVID-19

The NCCs refocused their efforts to assist public health actors during the COVID-19 pandemic. Some examples of resources with high uptake include the following:

- NCCIH adapted and updated two vaccine confidence publications in collaboration with NCCID and Indigenous Services Canada. It reached over 800 Indigenous health clinics in rural, remote and urban locations.[45]
- The World Health Organization used the NCCMT risk communication rapid evidence review[46] to inform its work on public health mitigation measures in the aviation sector in 2020-21.
- NCCHPP adapted their previous work on ethical frameworks for public health early in the pandemic to support the focus on COVID-19, including an updated course for practitioners and annotated resources on applying ethics to specific aspects of the COVID-19 pandemic.[47] More than 3,000 people took the course. A majority of participants who gave feedback felt that the course was applicable to their work and that they were now more prepared to apply ethics in support of decision making.[48]
- NCCEH produced COVID-19 guidance on reducing transmission in multi-unit residential buildings which influenced provincial-level and private-sector decision-making on precautionary members and risk communications to residents.[49]
- NCCID and NCCDH collaborated with several public health organizations to implement jointly-produced guidance indicators for public health organizations to assess resilience and understand health equity issues in the face of emergencies.[50]

A 2022 NCCPH network analysis study, based on a survey of 200 public health professionals, showed that the NCCs ranked very high as a trustworthy COVID-19 information source. The analysis showed that stakeholders referred to the NCCs for COVID-19 evidence-based information at a comparable rate to the World Health Organization, PHAC, Health Canada and the US Centers for Disease Control and Prevention (CDC).[51]

Suitability of the NCCPH Program Model

The NCCPH model has remained the same since 2005, and this model is a source of strength for the NCCs. The model allows them to be trusted sources of public health knowledge for a wide range of stakeholders, and to remain nimble enough to meet evolving knowledge needs within both their individual subject areas as well as through joint endeavors.

Alongside the Program mission profiled above in the Program Description, the important features of the NCCPH model are as follows:

- Each NCC is hosted outside of PHAC, in a university or provincial public health organization. The host organizations have largely remained the same, providing a dependable platform from which the NCCs operate.[52]
- Core funding is provided via a contribution agreement between PHAC and each host organization, as discussed in the next section.
- Each NCC is headed by a scientific or academic lead, assisted by a manager and a small staff.
- Each NCC has an advisory committee consisting of partner organization representatives who give input on annual work plan priorities and facilitate access to broader stakeholder networks.
- The NCCs are each focused on a different broad priority area of public health practice, but also have the flexibility to address emerging issues independently or in collaboration with each other. As such, the NCCs meet regularly with each other to share information on priorities and plan joint activities.

The Program mission and model have been stable since its launch in 2005. At the same time, the Program has shown maturity through a gradual turnover of leadership in each NCC and adaptation to several corporate changes to the management of the Program, in particular: the budget reductions noted in the next section, governance and the location of the NCCPH Program in the PHAC corporate branch structure.[53]

A further consideration for the Program is that the context of public health has changed between 2005 and 2023. PHAC and the Pan-Canadian Public Health Network have also matured over the same time span. Core public health competencies were developed in 2007 and there are now more schools of public health in Canada.[54] The number of Master of Public Health programs increased from eight in 2005 to nineteen in 2022 amidst a growing diversity of other post-secondary public health training programs.[55] There have been increased research investments such as the CIHR-PHAC Applied Public Health Chairs Program.[56] New scientific information and communication technologies have become available, including rapid vaccine development and the use of social media channels for communicating public health messages.[57] Lastly, public health priorities have evolved, as noted above in the section on Knowledge gap identification, such as an increasing

awareness of Indigenous self-determination, structural and social determinants of health, health equity, and climate change. Despite these changes in context, the contemporary relevance of the NCCPH model is supported by two important similarities between the post-SARS and the present post-COVID-19 eras:

- As with SARS, the COVID-19 public health emergency has tested the capacity of Canada's public health organizations at all levels, including its workforce.[58]
- The need for knowledge translation remains strong and is increasing in the face of multiple complex public health challenges, as highlighted in the 2021 CPHO report.[59] The report calls for closing "the gap between knowledge generation, policy, and practice." Among other actions, it suggests enhancing "rapid and ongoing population health intervention research for prevention and well-being initiatives and strengthen interdisciplinary knowledge synthesis models such as the NCCPH." This recognition of the value of the NCC model was mirrored in a Canadian Institutes of Health Research post-COVID visioning exercise. Advantages of the collaborative knowledge translation concept underlying the NCC model are also reflected in other publications.[60]

Some PHAC and many NCC staff, board, and host organization interviewees related that the model has allowed the NCCs the reach, flexibility and credibility to connect with stakeholders across the public health system and across jurisdictional lines. The stability of the NCCs has also allowed such relationships to mature despite the challenges to the public health workforce outlined in the CPHO's 2021 annual report. According to an advisory board member, the NCCs are valuable because of the relevance, quality, and usefulness of their knowledge translation products and training which are "geared to the right audiences". This is consistent with research on knowledge translation to support EIDM: that it is most effective when customized to suit the varying contexts of individual knowledge users and their organizations.[61]

The NCC model has also supported the NCCs to quickly identify and address emerging priorities. Many PHAC, NCC, board, host and user interviewees agreed that the NCCs were able to leverage their strengths to quickly respond to COVID-19 because of their capacity for knowledge translation, their credibility being built over time, and the reach of their networks connecting community-based and front line public health practitioners, policy makers, and researchers.[62] One interviewee explained that these strengths have allowed the NCCs to be effective in 'peacetime' as well as in times of crisis, providing stakeholders with expertise when needed.

As found in the 2018 evaluation, there appears to be no duplication of roles between the NCCs and other knowledge-producing public health organizations in Canada. For example, the CIHR Institute for Population and Public Health is centred on funding academic research while post-secondary schools of public health are focused on training students for entry into the workforce. Instead, there are many examples of complementarity between the NCCs and other organizations in the public health knowledge 'ecosystem', as discussed above under Networking for collaboration. A few PHAC, NCC,

and advisory board interviewees identified that the collaborative niche is enabled by the NCC leads being experts in their field, as well as the advisory board mechanism in which experts and community members provide insight and advice to the NCCs on emerging priorities, key relationships and knowledge gaps in public health.

NCC areas of focus

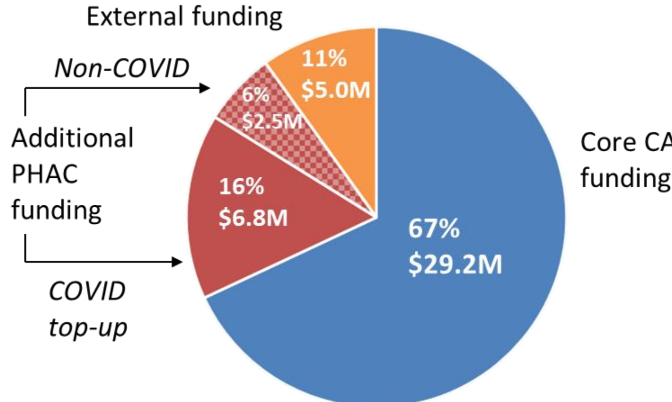
Many interviewees associated with the NCCs, including users, noted that the six NCC topics are sufficiently broad to address existing priority public health issues and new ones as they emerge. As noted in the Knowledge gap identification section, others identified topics that they felt were not adequately addressed by the six NCCs. These included mental health promotion, a stronger focus on other populations at risk such as youth, chronic diseases, substance use and abuse, and the One Health concept of joint action on human and animal health. As previously noted, the NCCs have responded to emerging issues such as these. However, they are limited in their capacity to respond to all emerging issues outside of their annual work plans, as discussed in the following section.

Funding Mechanism

The core contribution agreement funding from PHAC continues to provide the majority of the operating budgets for the six NCCs. However, the purchasing power of the core amount, unchanged since 2015, has diminished over time. Compared to findings in the previous evaluation, PHAC has increasingly used the flexibility of the contribution agreement mechanism to direct additional funds to NCCs for specific, time-limited work, especially in response to COVID-19. NCCs have also obtained more funding from other sources, to varying degrees.

Overall, the six NCCs have operated on a combined budget of $43 million over the last five fiscal years. A summary of NCC funding sources is shown in Figure 2. A more detailed table of funding per NCC is provided in **Appendix G**.

Figure 2: Total funding to NCCs 2018-19 to 2022-23



Over the past five years, the six NCCs received $29.2 million in contribution agreement funding from PHAC, or $973,666 of core funding annually per NCC. The core funding level has remained the same since 2015, following two consecutive budget reductions since the inception of the Program.[63] The core funding is intended to cover NCC staff salaries and contribute to operational expenses.[64]

PHAC has provided additional short-term funding averaging $1.5M per NCC over the last five years. The funds were flowed to the NCCs via 16 requests for amendments, two MOUs, a contract and a grant. Specific projects were funded by at least 12 different PHAC units, as described in the next section.

Most of the additional PHAC funding was to increase NCC capacity temporarily to help with the COVID-19 pandemic response and recovery. More specifically, an amendment of $120,000 was provided to each NCC in 2020-21. Further amendments of up to $533,333 were provided to each NCC in both 2021-22 and 2022-23. Many interviewees stated that this extra funding during the pandemic was crucial for their response to be effective, enabling a temporary increase in capacity.[65] It should be noted that such funding amendments were rare prior to COVID-19 but have become more frequent. Program staff had already processed eight funding amendments from various PHAC branches by the second quarter of the 2023-24 fiscal year. In contrast, there were seven such amendments in all of 2018-19.[66]

NCCs also received a total of $5.0 million from sources outside of PHAC over the last five years to undertake projects with other partners outside of their PHAC contribution agreement work plans. A majority of this funding was secured by the NCCIH from a number of different federal and provincial government agencies.

NCC host organizations have continued to provide important in-kind supports for the use of the institutional infrastructure such as facilities, utilities, accounting, library, human resources, information technology, and auditing services. It is also understood that some host organizations are making significant contributions to salary costs. Data on host contributions was not complete or consistent enough to report on the total value of host support for each NCC.

Strengths of the contribution agreement mechanism

Many PHAC, NCC and advisory board interviewees commented that the contribution agreements between PHAC and the six host organizations for the NCCs formalize and help to structure the PHAC-NCC relationship. They felt that this mechanism was more suitable than a grant or contract model. A grant would have no flexibility to add supplementary funding for special projects and would remove the ability of PHAC to tie any conditions to the funding, such as the submission of annual workplans or performance reports.[67] Similarly, a contract would only be suitable for providing a service directly to the funder and not for assisting a broad range of public health actors.[68] The eight-year renewal of the current contribution agreements, from 2020 to 2028, has provided more certainty for NCC staffing and planning than the previous cycle of five-year agreements. It has also decreased some administrative demands by allowing NCCs to better concentrate on program delivery and network development over a longer funding period.

The flexibility of the contribution agreement mechanism has allowed PHAC to direct additional funding to specific priorities and to use funds that could otherwise have lapsed. Similarly, it also allows the NCCs to adjust annual work plan commitments. Some PHAC, NCC and host interviewees expressed that additional funding was helpful and appreciated. However, they also described that unexpected amendments that come part-way through a fiscal year exert significant demands on limited NCC capacity to use these funds before the end of that fiscal year. There were suggestions that the amendment process could be improved through better coordination with the NCCs and increased alignment with PHAC and NCC annual administrative funding cycles.[69] In response, Program staff reported working with PHAC units to encourage efficiency in timing and coordination.

Funding limitations

Most interviewees cited the static core funding as an increasingly significant limitation on the capacity of the NCCs to meet the expectations of PHAC and non-PHAC partners/collaborators on fulfilling their role without supplementary funding.[70] A key aspect of NCC capacity to respond to public health knowledge needs concerns staffing. Many NCC interviewees pointed out that it has been harder to retain experienced staff as the static core budget is not

adjusted for inflation nor the ensuing increases in operational costs. The short-term and unpredictable nature of supplementary PHAC funding via contribution agreement amendments makes it very difficult to use those additional funds for the salaries of long-term staff. Had the 2015 core funding level of $974 thousand per NCC per year kept pace with inflation, it would have increased to $1.2 million per NCC by 2023.[71]

The NCCs have adapted to this fiscal reality. For example, a few external interviewees highlighted that NCCs are optimizing their budgets by finding efficiencies such as reducing the number of in-person meetings and thus the cost of associated travel through the use of virtual meeting platforms. However, the NCCs are increasingly unable to allow for the salary increases – in some case required by the host institutions – necessary to retain experienced senior staff who are vital to their success, especially subject-matter experts who nurture extensive knowledge-sharing networks. Nor are NCCs able to guarantee employment past the end of the current contribution agreements, recognizing that other organizations are in a similar position. As related in the 2023 NCC collective evaluation report and by some NCC, advisory board and host organization interviewees, experienced NCC staff may leave NCC employment to seek higher-paying positions offering more certainty of longer-term or permanent employment. Many PHAC, NCC, advisory board, and host interviewees expressed concern that budget constraints are making it difficult for NCCs to meet their objective of supporting the knowledge needs of a wide variety of public health organizations and practitioners. The NCCs may soon reach a critical point where they no longer have adequate capacity to serve current partners and collaborators as a primary knowledge source. These challenges were previously noted in the 2018 evaluation.

PHAC-NCC Relationship

The relationship between PHAC and the six NCCs, managed by the OCSO, continues to be mutually supportive, underpinned by the contribution agreement mechanism and bolstered by a small and dedicated OCSO team. It has sustained ongoing efforts to engage on setting NCC priorities.

PHAC is a unique Program partner as it simultaneously acts as a:

- **Funder**: Through the contribution agreement, PHAC administers the core funding for all six NCCs as well as occasional amendments and associated annual reporting requirements. PHAC does so to achieve the Program mission, i.e., enabling evidence-informed decision making by stakeholders at all levels of the public health.
- **Knowledge user**: PHAC staff access knowledge resources produced by the NCCs, just like other stakeholders across Canada and internationally.
- **Collaborator**: Different PHAC programs have undertaken or contributed to specific projects with individual NCCs. Some of these projects have prompted PHAC to send additional funding to each NCC via contribution agreement amendments or, less frequently, contracts.

The relationship is manifested in three key ways: engagement on setting priorities, awareness and intelligence-sharing, and performance measurement reporting. This relationship has adapted to changes in the position of the OCSO and the NCCPH Program within PHAC's corporate structure over time, reflecting larger changes in the Agency.[72]

Engagement on priority setting

Many NCC staff interviewees noted that the OCSO team is very professional and promotes open communication with the NCCs. The OCSO staff administer the contribution agreements, have facilitated regular encounters between the NCCs and various PHAC managers to discuss priorities and often act as a point of contact for other groups within PHAC interested in collaborating with any of the NCCs. A close working relationship between the NCCs and the Program team at PHAC has been maintained over the years. An example of this relationship was the NCC work plan flexibility introduced by the OCSO in April 2020 to prioritize COVID-19 pandemic-related knowledge needs. Almost all NCC staff members mention the appreciation they had for the flexibility PHAC demonstrated during the pandemic, providing surge funding so that they could take on COVID projects as well as the flexibility to amend annual work plans to prioritize COVID-19 work.

Following the 2018 evaluation, the OCSO laid the groundwork for a PHAC-NCC Executive Leads Committee, intended to coordinate PHAC's engagement with the NCCPH and to provide advice to the Chief Science Officer on strategic direction and opportunities in relation to the NCCPH Program. Although this committee was suspended soon after launching

due to the demands of the COVID-19 response, the OCSO resumed meetings between the NCCs and PHAC senior managers in October 2022.

Despite the good relationship with PHAC, many NCC staff members interviewed noted that the mandate of the NCCs to serve all levels of the public health system can mean that PHAC's needs must be balanced against those of other partners and collaborators, some of which have also provided funding to various NCCs. Given PHAC's role as the primary funder, there is a risk that PHAC's needs will overwhelm or eclipse those of other partners and collaborators in NCC work plans.

A few PHAC management interviewees noted that there is a need to move beyond *ad hoc* collaborations with the NCCs to more strategically identify priorities for the NCCs that reflect PHAC's role and priorities. There was also recognition that an intake process could be established for PHAC branches to propose and fund Agency-specific projects for the NCCs as part of operational planning.

Awareness and intelligence sharing

The OCSO has continued to promote awareness of the NCCs across PHAC by facilitating meetings and presentations open to all PHAC and Health Canada staff. However, some NCC staff interviewees noted that PHAC staff awareness of the NCCs was challenged by turnover, the growth of the Agency's workforce, and changes to PHAC's organizational structures. These realities can make it difficult to form critical relationships and maintain awareness of what the NCCs can offer or are already doing.

NCC intelligence on knowledge gaps and the priorities of many different stakeholders across jurisdictions and sectors could help inform PHAC and the PHN.[73] A PHAC manager gave the example of NCCIH becoming a member of a PHN rights and reconciliation working group in recognition of the Centre's capacity to contribute an expert Indigenous public health perspective on critical issues. At the same time, two PHAC managers reflected that a strategic awareness of PHAC and federal, provincial, and territorial PHN priorities should guide NCCs.

Some PHAC interviewees identified topics for which NCCs have become national leaders, becoming knowledge sources for PHAC in the process. These include NCCIH's support for Indigenous self-determination over health and well-being, NCCDH's focus on health equity and NCCHPP's work on Health in All Policies. Despite the growth of interest in the health impacts of climate change and the built environment, a few interviewees related that there seems to be no focused group within PHAC addressing this theme and that NCCEH serves as a natural platform for it.

Performance measurement

PHAC's performance measurement requirements for the NCCPH Program produce rich data for describing the productivity of the NCCs according to their three core functions, as well as their reach. The current tools for Program performance measurement are an annual Performance

Measurement Questionnaire (PMQ), an annual work plan update, and an external evaluative requirement. Reporting requirements were streamlined after the 2018 evaluation that found that the NCCPH performance reporting requirements were cumbersome and time-consuming, especially considering limited staff resources to complete them. A new PMQ format was launched in 2019-20. However, the format is still open to interpretation, which has resulted in some inconsistent data between NCCs and fiscal years. This has presented challenges for analysis. In addition, NCC interviewees have stated that the current requirements are very resource intensive despite the effort made to streamline them.

Despite the significant time invested by NCC staff in producing performance information, it provides limited information about the difference that NCCs make in supporting the use of evidence in stakeholder decision making and public health practice. The current Program logic model shown in **Appendix B** does not portray how the NCCs work or link to current performance measurement requirements. Instead, it focuses on how the Program links to a historic PHAC corporate reporting structure. More broadly, it is challenging to systematically assess results of knowledge translation activities due to the complex set of factors influencing outcomes[74], many of which are outside the NCC sphere of influence.

PHAC, NCC, and host organization interviewees, along with a recent NCC collective evaluation and separate PHAC assessment, provided suggestions to address these issues.[75] There is an opportunity for NCCs and OCSO staff to collaboratively improve the usefulness and feasibility of the current performance measurement requirements.

Conclusions and Recommendations

Conclusions

Since the last evaluation in 2018, the six NCCs have continued to produce a wide array of relevant knowledge products in response to identified knowledge gaps. The NCCs continued to build and maintain extensive networks in order to collaborate with many organizations across Canada, including PHAC. From the beginning of the COVID-19 pandemic, they effectively pivoted from their normal work plans to support the public health response. Many examples of NCC contributions were noted by key informants, including leadership on issues like health equity, reconciliation with Indigenous peoples and climate change. They have also increasingly collaborated with PHAC units, notably on the CPHO's annual reports.

The need for knowledge translation support to public health practitioners and policy makers remains strong despite changes in the sector since 2005. These changes have included emerging public health issues alongside those that persist, new technologies, new players in public health, and evolving public health approaches. That said, like in 2005, the public health workforce has recently been affected by a major public health emergency. The NCCPH Program has matured as shown through the stability of the NCC host organizations, gradual turnover of NCC leadership and adaptation to PHAC's changes in Program management and funding. The work of the NCCs has continued to demonstrate their expertise, credibility across jurisdictions, and responsiveness to new and emerging public health priorities.

The NCC model of knowledge centres, hosted 'at arm's length' outside of PHAC and supported by independent advisory committees, promotes these strengths. This includes the Contribution Agreement mechanism that has provided structure to the PHAC-NCC relationship and flexibility to address changing priorities. In addition, the six NCCs are seen to be operating efficiently within the available funding, as well as seeking alternate sources of funding and in-kind support.

Supplementary funding from PHAC and external sources of funding have enabled the NCCs to generate more knowledge resources and activities, particularly during the COVID-19 emergency response. However, the NCCs have been facing increasing challenges in meeting expectations of supporting evidence-informed decision making for Program partners and collaborators at all levels of Canada's public health system without supplementary funding. The short-term and *ad hoc* nature of supplementary funding affects the prioritization of annual work plan commitments as well as the ability to address long-term NCC capacity gaps. This situation has led to uncertainty, noted in the 2018 evaluation, regarding PHAC's expectations for this long-standing Program in fulfilling its

mission. There is broad agreement among interviewees that the current Program budget does not support sufficient NCC capacity to serve the knowledge translation needs of all key public health actors.

The PHAC-NCC relationship, facilitated by the OCSO, is mutually supportive due to the collaborative nature of the engagement with the leads and managers of the six NCCs. This includes the facilitation of regular meetings and communications between PHAC units and the NCCs, as well as the fulfillment by the NCCs of extensive performance reporting requirements. That said, increasing a strategic two-way sharing of information on public health needs and priorities could help both PHAC and the NCCs to better target their respective activities, meaning that PHAC could make better use of information gathered by the six NCCs via their extensive networks. PHAC could also share its own corporate and program-level strategic priorities, and those of the Pan-Canadian Public Health Network, with the NCCs in a systematic manner, contributing to the development of NCC work plans. There is also room to continue to improve the NCC reporting framework in order to document Program results more efficiently and effectively.

Recommendations

The findings discussed in this report have led to the identification of three recommendations.

Recommendation 1: Reassess PHAC expectations of the NCCPH Program in light of funding, PHAC and public health renewal.
The NCCs were created alongside PHAC and the Pan-Canadian Public Health Network, as part of the original vision for renewing federal public health supports post-SARS. While the six NCCs have continued to perform well, the public health environment and the Program operating context have changed since 2005, especially following the COVID-19 pandemic. However, the NCCPH Program objectives have remained the same since 2005 and the evaluation findings suggest that PHAC’s definition of success for this long-standing Program need to be clarified. This may also affect how PHAC and NCC staff understand the alignment of the NCCPH Program model and mandate with PHAC’s own mandate. Given that the NCCPH Program was founded alongside PHAC, alignment is an important issue in the context of discussions on PHAC renewal following the COVID-19 pandemic. At the same time, there are partners and collaborators inside and outside of PHAC who have expectations for the Program given its design to serve public health practitioners and policy makers across Canada. Therefore, there is a need to review the present-day alignment of the NCCPH Program model and mandate with the current public health environment, as well as PHAC’s own mandate and resources, especially in terms of public health renewal.

Recommendation 2: Enhance the two-way information-sharing relationship between PHAC and the NCCs.
The PHAC-NCC committee that was put in place by OCSO following the 2018 evaluation to enhance coordination was suspended due to the demands of the COVID-19 response. Although the PHAC-NCC relationship continues to be collaborative, the evidence points to an opportunity to improve information sharing between PHAC and the NCCs in two ways:

1. From PHAC to the NCCs: There is an opportunity to build on the OCSO's existing means of sharing of PHAC priorities with the NCCs, such as fielding requests from PHAC units to collaborate, in order to focus more on aligning the work of the NCCs with PHAC and Pan-Canadian Public Health Network priorities at a strategic level.
2. From the NCCs to PHAC: The examples of the NCCs contributing to the annual CPHO reports and presenting to the COVID-19 federal-provincial-territorial Special Advisory Committee suggest that the NCCs could provide useful information to PHAC and the Pan-Canadian Public Health Network, gathered 'from the field' on priority public health issues as they arise.

Recommendation 3: Improve the NCCPH performance measurement framework to better tell the Program results and impacts story.
While the six NCCs continue to meet PHAC's requirements for annual performance measurement reports and supplementary evaluations, it was difficult to use the resulting performance reporting information to fully portray the results of the six NCCs and the impact of the Program as a whole. The performance measurement framework, although streamlined since 2018, could be focused further on demonstrating the achievement of expectations. Suggestions for improving the performance measurement framework have been made in recent reviews and echoed by interviewees. However, the effectiveness of any future changes to the performance measurement framework remains dependent on a renewed understanding of Program expectations; see Recommendation 1.

Management Response and Action Plan

Evaluation of the National Collaborating Centres for Public Health Program, 2018–2019 to 2022–2023

<table>
<tr><td colspan="5">Recommendation 1</td></tr>
<tr><td colspan="5">Reassess PHAC expectations of the NCCPH Program in light of funding, PHAC and public health renewal.</td></tr>
<tr><td colspan="5">Management response</td></tr>
<tr><td colspan="5">Agree</td></tr>
<tr><td>Action Plan</td><td>Deliverables</td><td>Expected Completion Date</td><td>Accountability</td><td>Resources</td></tr>
<tr><td>To review the NCC program objectives in light of the shifting public health landscape, future public health workforce needs, available funding, and PHAC renewal.</td><td>a) Engagement with NCCs and key stakeholders, including a summary report of their perspectives
b) Review of present public health landscape
c) Ratification of any changes to NCC program objectives by PHAC Executive Committee</td><td>a) March 2025
b) March 2025
c) March 2026</td><td>OCSO in collaboration with Strategic Policy Branch</td><td>Current program support team within PHAC</td></tr>
<tr><td colspan="5">Recommendation 2</td></tr>
<tr><td colspan="5">Enhance the two-way information-sharing relationship between PHAC and the NCCs.</td></tr>
<tr><td colspan="5">Management response</td></tr>
<tr><td colspan="5">Agree</td></tr>
<tr><td>Action Plan</td><td>Deliverables</td><td>Expected Completion Date</td><td>Accountability</td><td>Resources</td></tr>
</table>

ACTION 1 To continue to sustain internal awareness of NCCs annual work, exchange on emerging public health issues arising from NCCs business domains and foster new NCCs collaborations with PHAC programs and committees. ACTION 2 To integrate expected collaborations between PHAC and the NCCs into the Integrated Operational Planning and budget requirements. ACTION 3 To review the NCCs annual workplan submission dates in light of PHAC planning cycle in order to harmonize NCCs and PHAC planning cycles.	a) An NCC engagement strategy will be presented to President and CPHO and include: • Annual NCC/PHAC engagement meeting with PHAC senior executives • Periodic NCCs presentations to PHAC governance tables (PHN, EC, EG, DG policy) • Better coordination and connectivity between PHN and NCCs • Periodic information sharing meetings with PHAC programs leads • Reporting on NCC and PHAC collaborative projects b) Current PHAC corporate planning tools incorporate a subsection to prospectively identify expected collaborations with the NCCs. This deliverable is expected to reduce the need for amendments to the NCC contribution agreements and also create more stability around NCC resourcing for PHAC-related projects. c) Revised NCCs work plan submission date as indicated in the contribution agreement (Appendix C—Reporting Plan).	a) March 2025 b) October 2024 c) New date set by December 2024	a) OCSO and relevant program VPs b) OCSO/CMB/ OCFO c) OCSO	Current program support team within PHAC

Recommendation 3				
Improve the NCCPH performance measurement framework to better tell the Program results and impact story.				
Management response				
Agree				
Action Plan	Deliverables	Expected Completion Date	Accountability	Resources
OCSO to review the NCCPH Performance Measurement Framework in light of the findings of both OAE and the assessment exercise. OCSO to engage with the NCCs throughout this process.	Updated NCCPH logic model and performance measurement framework Updated performance reporting tools and templates	March 2026 (interdependent with outcomes of recommendation 1)	OCSO	Current program support team within PHAC

Appendix A: Short profiles of the six National Collaborating Centres

NCC Name	Profile
National Collaborating Centre for Indigenous Health https://www.nccih.ca/	Host: University of Northern British Columbia, Prince George, British Columbia Focus: Supports First Nations, Inuit, and Métis public health renewal and health equity through a holistic, coordinated and strengths-based approach, while advancing self-determination and Indigenous knowledge in support of optimal health and well-being. Priorities: • Increasing understanding and application of Indigenous-informed evidence on First Nations, Inuit and Métis health across their lifespan to support public health policy, practice and program decision-making. • Fostering partnerships, collaborations and networks to mobilize Indigenous-informed evidence across sectors and jurisdictions to support Indigenous health equity.
NCC for Environmental Health https://ncceh.ca/	Host: British Columbia Centres for Disease Control, Vancouver, British Columbia Focus: Assesses health risks associated with the physical environment and identifies evidence-based interventions to mitigate those risks. Priorities: • Raising awareness and increasing understanding of (1) existing and emerging environmental threats and benefits, and (2) how to mitigate these threats and optimize the benefits. • Translating and highlighting research that informs the effective practice of environmental health. • Bringing together the aggregate experience of environmental health practitioners across Canada to inform practice that is effective and attuned to the evolving orientation of public health.
NCC for Infectious Diseases https://nccid.ca/	Host: University of Manitoba, Winnipeg, Manitoba Focus: Assists public health professionals in finding, understanding, and using infectious disease research and evidence. Also works to forge connections between those who generate and those who use infectious disease public health knowledge. Priorities: • Emerging diseases and outbreaks. • Tuberculosis. • Mathematical modelling for public health. • HIV and sexually transmitted and blood-borne infections prevention and control. • Antimicrobial use and resistance. • Population migration and mobility. • Disease debriefs that connect readers to clinical and public health guidance, evidence and other sources of information. • The Notifiable Diseases Database.

NCC Name	Profile
NCC for Methods and Tools https://www.nccmt.ca/	Host: McMaster University, Hamilton, Ontario Focus: Facilitates the use of best available evidence in public health practice by developing widely available resources that build capacity in evidence-informed decision making and fostering relationships between individuals and organizations to facilitate knowledge translation. Priorities: • Supporting evidence-informed decision making in public health in Canada. • Making easily accessible, and, where gaps exist, developing methods and tools that facilitate increased capacity for evidence-informed decision making. • Facilitating and supporting organizational change among public health organizations.
NCC for Healthy Public Policy https://ccnpps-ncchpp.ca/	Host: Institut de santé publique du Québec, Montréal, Québec Focus: Increases the expertise of public health professionals across Canada in public health policy through the development, sharing, and use of knowledge. Recent areas of focus have included mental health, the built environment, public health ethics, and addictions. Priorities: • Supporting the development of competencies and organizational capacity in policy analysis. • Supporting the implementation of intersectoral approaches to promote healthy public policies. • Developing policy approaches for emerging issues in public health.
NCC for Determinants of Health https://nccdh.ca/	Host: St. Francis Xavier University, Antigonish, Nova Scotia Focus: Provides the Canadian public health community with knowledge and resources to take action on the social determinants of health and close the gap between those who are most and least healthy. Priorities: • Support public health to address the structural drivers of health inequity. • Promote public health evidence-informed action on the "everyday conditions of daily life" that influence health and equity. • Support a "culture of equity" in public health organizations and the health system. • Contribute to emerging knowledge translation methods and tools to advance equity.

Sources: Focus statements from NCC websites. Priorities from: Maureen Dobbins, Alejandra Dubois, Donna Atkinson, Olivier Bellefleur, Claire Betker, Margaret Haworth-Brockman, Lydia Ma. Commentary – Nimble, Efficient and Evolving: The Rapid Response of the National Collaborating Centres to COVID-19 in Canada and Lessons Learned. Health Promotion and Chronic Disease Prevention in Canada, Vol 41, No 5, May 2021. https://www.canada.ca/en/public-health/services/reports-publications/health-promotion-chronic-disease-prevention-canada-research-policy-practice/vol-41-no-5-2021/rapid-response-national-collaborating-centres-covid-19-canada.html

Appendix B: NCCPH logic models

This NCCPH logic model was introduced in 2014-2015 and was included in the latest performance measurement strategy dated May 2017. The links to PHAC's corporate program structure and expected results portrayed are out-of-date as of 2023.

Protecting Canadians and empowering them to improve their health (PHAC Strategic Outcome)
Mechanisms are in place to enable the PH system to work collaboratively to address existing and emerging public health infra-structure issues. (PHAC expected result)

PH professionals, policy makers and Canadians have access to reliable, actionable PH data and information. (Intermediate Outcome in Public Health Information and Networks Program) (PHAC expected result)

Link to PHAC's corporate program structure at the time this logic model was introduced.

Ultimate Outcome
Knowledge is mobilized across networks and sectors to fill information gaps build EIDM capacity and respond to emerging health issues in the Public Health system.

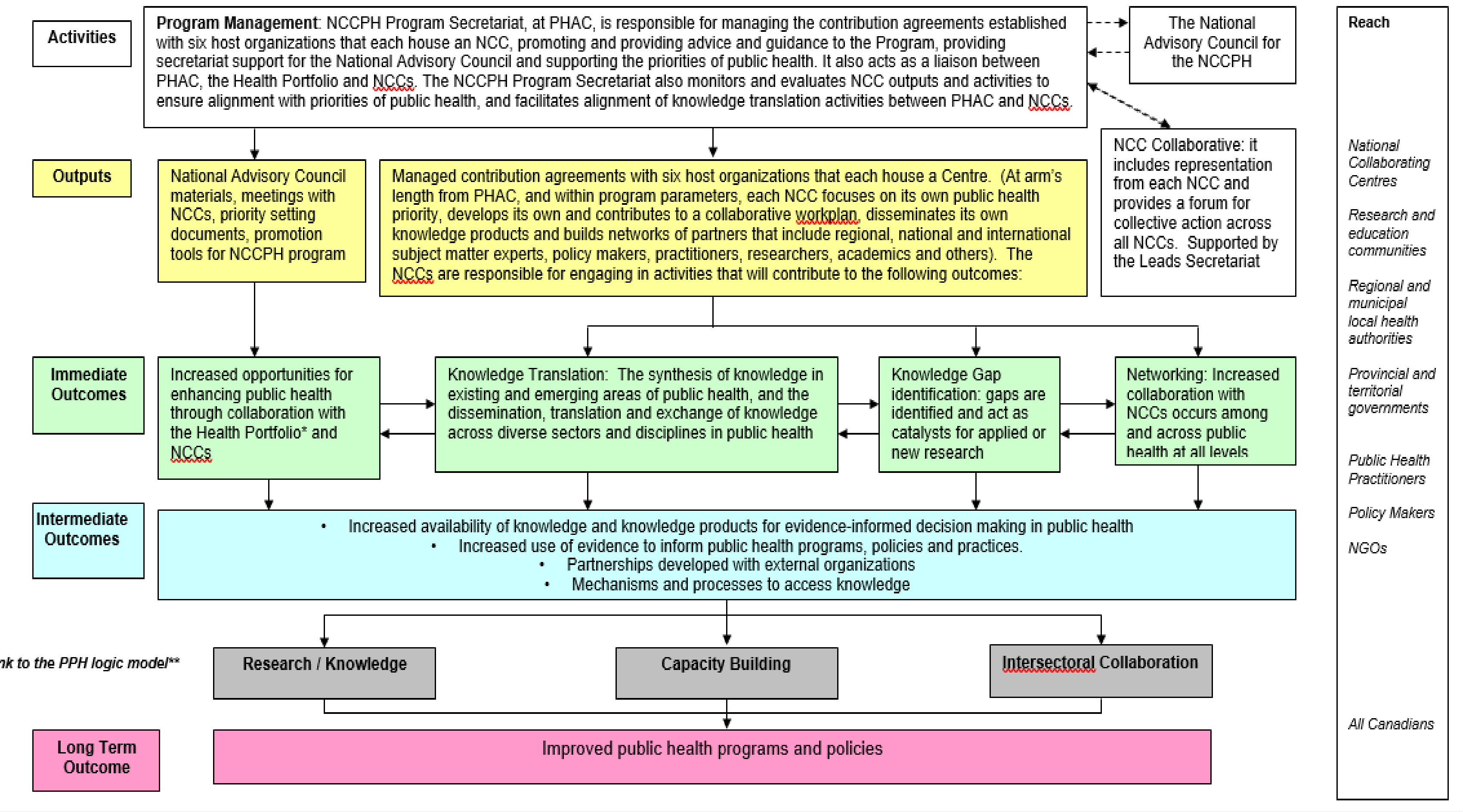
Intermediate Outcome
Products and tools to translate and disseminate Public Health knowledge are developed through a variety of

Immediate Outcome: Knowledge brokers have resources and structures to collaborate across the Public Health system to address knowledge-related needs and gaps required to strengthen EIDM.

Activities and Outputs: Develop and manage Contribution Agreements with NCCs.

Inputs: Agency A-based Funding

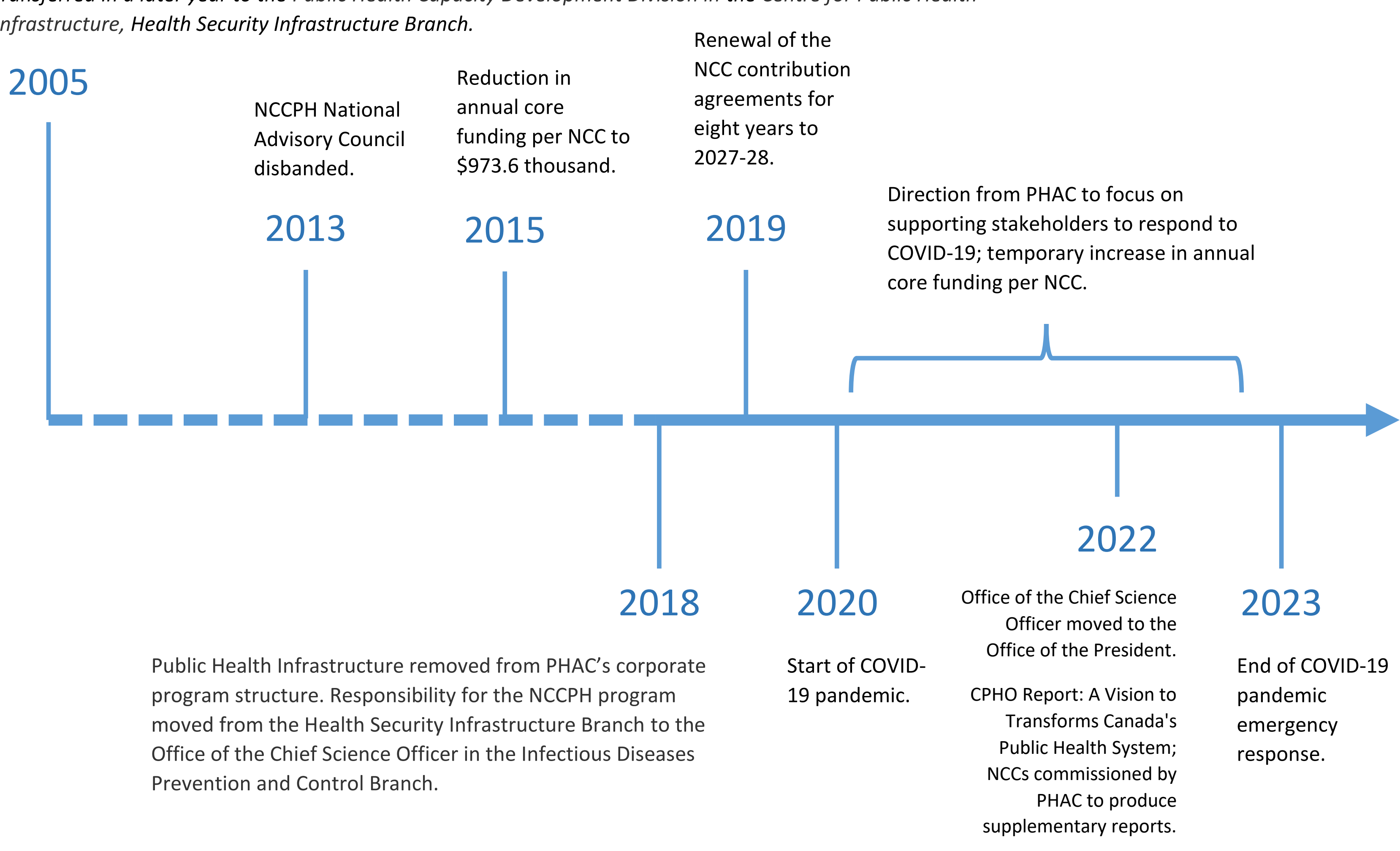
Original NCCPH logic model (2009 version)



* Health Portfolio includes Health Canada, the Public Health Agency of Canada, the Canadian Institutes of Health Research, the Hazardous Materials Information Review Commission, the Patented Medicine Prices Review Board and Assisted Human Reproduction Canada.

** Population and Public Health Fund under which the NCCPH Program is funded

Appendix C: NCCPH Timeline 2005-2023



Appendix D: Data Collection and Analysis Methods

This evaluation focused on the performance of the NCCPH Program over the 2018-19 to 2022-23 period. It also considered the relevance of the Program in the context of the federal public health role. The evaluation team collected data using the following methods:

Document and Performance Information Review
Reviewed PHAC and NCC reports focused on NCC activities and needs for knowledge translation in public health, particularly:

- evaluations and evaluative reports produced by PHAC or any of the NCCs;
- Program documentation, including contribution agreements and the performance measurement framework; and
- PHAC corporate reports, including CPHO annual reports and PHAC Departmental Results Reports.

Interviews
Completed 44 interviews with 58 interviewees from the following groups:

- PHAC Program administration staff and senior managers (n=6)
- NCC staff (n=16)
- Host organization representatives (n=9)
- A sample of partners and knowledge users primarily identified by the NCCs:
    - NCC advisory committee representatives representing a variety of stakeholder groups (n=7)
    - Local public health services (n=2)
    - Professional associations (n=3
    - PHAC staff and managers (n=12) and representatives of other federal departments (n=3)

Questionnaire (to supplement the interviews)
Received 43 responses to a questionnaire sent to 68 additional partners and knowledge users identified by the NCCs. These included representatives of Indigenous organizations, federal, provincial, and territorial and municipal governments, professional associations, non-government organizations, and research institutes.

Performance data review
Reviewed annual reporting information from each NCC for five fiscal years 2018-19 to 2022-23.

Financial data review
Reviewed information on core Grants and Contributions funding and additional financial transfers from PHAC to the NCCs.

Literature review
Performed a limited scan of recent literature on knowledge translation in public health.

The evaluation team used triangulation to analyze data collected by these various methods in order to increase the reliability and credibility of the evaluation findings and conclusions. Still, most evaluations face constraints that may affect the validity and reliability of findings. The table below outlines the limitations encountered during evaluation, and the mitigation strategies that were put in place.

Limitations	Potential Impact	Mitigation Strategies
Interviews are retrospective in nature, providing only a recent perspective on past events.	This can affect the validity of assessments of activities or results that may have changed over time.	Triangulation with other lines of evidence substantiated or provided further information on data captured in interviews. Document review also provided corporate knowledge.
The potential number of interviewees was very large given the extensive networks and variety of partners, collaborators and knowledge users for each of the six NCCs.	Some potential interviewees were unable to contribute their insight.	Interviewees were selected to achieve representation among all NCCs. A questionnaire was used to extend the opportunity for more respondents to participate than could be interviewed. However, the reach of the questionnaire was very limited compared to NCC networks and cannot be considered to be a significant sample of NCC users.
Representation by gender, Indigenous identity or other identities was not	It is unclear if a balance of voices from key NCCPH Program beneficiary groups	This continued to be a limitation in the evaluation design, which was mitigated

Limitations	Potential Impact	Mitigation Strategies
considered in the design of the interview or questionnaire methodology.	was present in the data collected for this evaluation despite the presence of a wide variety of professional, organization and regional representation among those interviewed or reached via the questionnaire.	partially by the use of products developed by the NCCs. Future evaluations of the NCCs will enhance representation in the initial design stage.
While extensive, some elements of the Program performance measurement data were incomplete or inconsistent between NCCs and between fiscal reporting years.	Assessment of progress towards outcomes was challenging.	Triangulation of other lines of evidence was used to provide further information where there were gaps in performance measurement data.
Financial data structure is not linked to outputs or outcomes. Furthermore, data on staffing and in-kind supports to the NCCs was limited	There is a limited ability to assess efficiency quantitatively.	The evaluation focused more on other outcome areas and used triangulation of other lines of evidence to the extent possible.

The evaluation applied an SGBA Plus lens to its assessment of the Program. Although official languages were not specifically examined, they were not found to be an issue for the Program's activities. An examination of the Sustainable Development Goals was not specified for this evaluation, although the Program (mirroring public health in general) indirectly addresses Goal 3: Good health and well-being, while contributing to others such as Goal 10: Reduced inequalities.[76]

The Office of Audit and Evaluation worked closely throughout the evaluation with a Program contact in the Office of the Chief Science Officer to access documents and performance data, and to identify stakeholder groups. The scope for this evaluation was shared secretarially with the PHAC Performance Measurement and Evaluation Committee in April 2023 to help guide the evaluation questions. The final report and Management Response and Action Plan developed by the Office of the Chief Science Officer were also presented to this committee in January 2024.

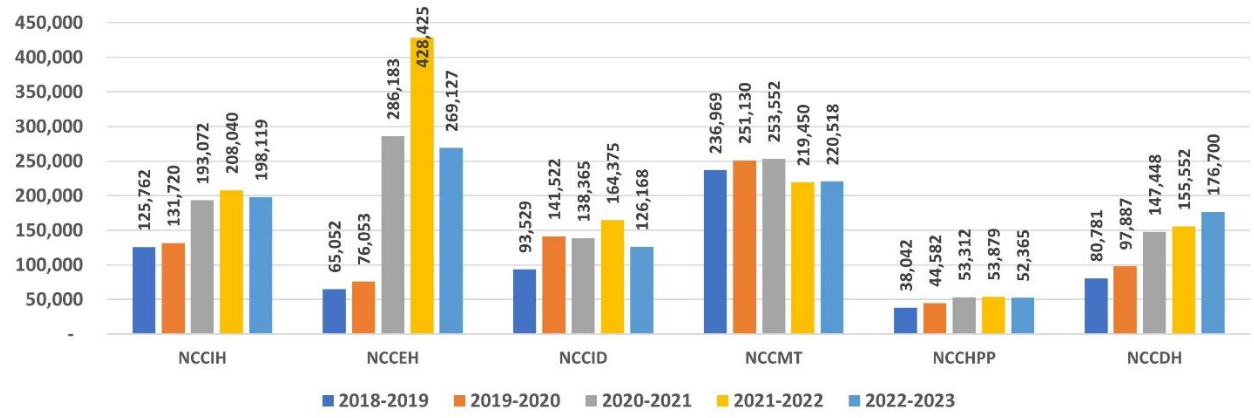
Appendix E: NCC web site statistics highlights

Comparison of selected NCC and PHAC web statistics, 2017-18 and 2022-23

Websites	Unique Visitors 2017-18	Unique Visitors 2022-23 (% change)	Average Time on Site 2017-18	Average Time on Site 2022-23
NCCEH	40,264	269,127 (568%)	2:00	2:28
NCCMT	195,687	220,518 (13%)	5:30	2:33
NCCIH	127,142	198,119 (56%)	2:59	2:02
NCCDH	44,598	176,700 (296%)	1:44	1:09
NCCID	44,636	126,168 (183%)	2:27	0:57
PHAC Vaccines and Immunization	94,542	120,631 (28%)	0:57	0:52
PHAC Social Determinants of Health and Health Inequalities	45,088	106,232 (136%)	2:34	5:48
NCCHPP	34,566	52,365 (51%)	2:27	1:58
PHAC Infectious Diseases	25,393	14,040 (-45%)	1:01	1:24
PHAC CPHO Report	5,928	3,071 (-48%)	1:00	2:16

Note: Ordered by number of Unique Visitors 2022-23. Data Source: Self-reported data from NCC, as shown in 2017-18 and 2022-23 Performance Measurement Questionnaires, and PHAC web analytics.

Number of unique visitors to NCC websites, 2018-19 to 2022-23



Data Source: NCC Performance Measurement Questionnaires

Appendix F: Key Examples of NCC COVID-19 response activities

NCC	Activities
NCCIH	• Library of over 370 Indigenous-informed COVID-19 resource resources specific to First Nations, Inuit and Métis populations • Briefs, webinars, podcasts, video on priority topics including stigma, vaccine confidence (in collaboration with NCCID)
NCCEH	• Library of resources on COVID-19 transmission and mitigation (92 resources; 24 topic areas) • Healthy Built Environment Forum community of practice • New guidance and webinars on COVID-19 transmission in the built environment; five field inquires on priority topics
NCCID	• Hub for Canadian Public Health Laboratory Network's resources • Knowledge briefs and podcasts (starting in January 2020) • Webinars for practitioners to understand modelling and vaccines • Collaborations with NCCIH on vaccine confidence and NCCDH on health equity indicators
NCCMT	• Conducting and posting rapid reviews requested by decision makers at all levels across Canada on priority topics • Repository of Canadian COVID-19 reviews in public health • COVID Evidence Network to Support Decision-Making (COVID-END) • Systemic reviews on public health systems recovery
NCCHPP	• COVID-19 library of resources on public health ethics (11 topic areas) • Focused work on improving public health infrastructure post-pandemic, e.g., profiles of the public health system and expenditures • Projects on Health in All Policies and well-being budgeting, including, a survey in partnership with the Global Network for Health in All Policy and the World Health Organization (WHO) to understand how cross-government decision-making processes and Health in All Policy mechanisms and governance structures have been mobilized to deal with the pandemic.
NCCDH	• COVID-19 health equity resource hub/library (235 resources) • Health Equity community of practice network, events, trainings • Guidance on COVID-19 equity indicators (with NCCID) • Issue briefs and presentations on different health equity COVID-19 issues

Appendix G: NCCPH summary funding table 2018-19 to 2022-23

	NCCDH	NCCEH	NCCHPP	NCCID	NCCIH	NCCMT	Total
PHAC base funding	$4,868,330	$4,868,330	$4,868,330	$4,868,330	$4,868,330	$4,868,330	**$29,209,980**
PHAC additional funding	$1,808,833	$1,214,667	$1,722,611	$1,410,333	$1,614,417	$1,498,667	**$9,269,528**
Other leveraged funding*	$186,015	No funds reported	$501,155	$13,000	$3,602,427	$656,000	**$4,958,597**
Total	**$6,863,178**	**$6,082,997**	**$7,092,096**	**$6,291,663**	**$10,085,174**	**$7,022,997**	**$43,438,105**

* Other leveraged funding include estimates of the value of in-kind supports provided by host organizations to some of the NCCs. As such, these numbers should be interpreted as approximations.

End Notes

[1] The NCCPH Performance Measurement Strategy (2017) states: ""The mission of the NCCPH [program] is to promote the use of knowledge for evidence informed decision making by public health practitioners and policy makers across Canada. The National Collaborating Centres (NCCs) synthesize, translate, and share knowledge to make it useful and accessible to policy makers, program managers and practitioners to support effective, evidence-informed decision making. The NCCs are designed to identify knowledge gaps, stimulate research in priority areas, and link public health researchers with practitioners to build strong practice-based networks across Canada." (Section 3.0)

[2] As reported in *Public Health Agency of Canada 2022-23 Departmental Plan: Supplementary Information Tables*, the NCCPH program is linked to all of PHAC's departmental results, corresponding to its three core responsibilities. Retrieved from: https://www.canada.ca/en/public-health/corporate/transparency/corporate-management-reporting/reports-plans-priorities/2022-2023-supplementary-information-tables.html#a2.10

[3] For an overview of PHAC's three Core Responsibilities, namely i) health promotion and chronic disease prevention, ii) infectious disease prevention and control, and iii) health security, see the latest PHAC Departmental Plan at: https://www.canada.ca/en/public-health/corporate/transparency/corporate-management-reporting/reports-plans-priorities.html

[4] Health equity is integrated into the focus of SGBA Plus. The NCCs are in alignment with the SGBA Plus concept in the sense that health equity is built into their annual work plan priorities. For example: NCCDH work on structural determinants of health inequities; NCCHPP Policy Approaches to Reducing Health Inequalities; NCCMT hosting equity-oriented resources in knowledge repositories; NCCID's focus on addressing infectious disease issues in marginalized populations; NCCEH resources on health equity in the built environment; and NCCIH advancing Indigenous self-determination over health and well-being. The *Health Portfolio Sex- and Gender-Based Analysis Plus Policy: Advancing Equity, Diversity and Inclusion* is found at: https://www.canada.ca/en/health-canada/corporate/transparency/heath-portfolio-sex-gender-based-analysis-policy.html

[5] The 2014 evaluation of the NCCPH Program stated that: "The origin of the NCCPH program can be traced back to reviews and consultations undertaken by the Canadian Institutes of Health Research, Institute of Population and Public Health (CIHR-IPPH) from 2001 to 2003 on the state of knowledge generation and use in the Canadian population and public health sector. This work found that there were important challenges faced by the sector regarding access to high quality and relevant research evidence and its use to inform decision making. Subsequently, following the SARS crisis of 2003, several Canadian commissions, consultations and reports, including the Naylor Report, concluded that there had been insufficient investments in Canada's public health infrastructure, resulting in Canada having an inadequate knowledge base to inform the development of public health programs and policies. These reports strongly recommended enhancements to Canada's public health capacity through improved evidence-informed decision making (EIDM) practices. In response to these concerns, the federal government committed to renew and strengthen public health in Canada. In 2004, in support of this commitment, the NCCPH program was announced by Cabinet, along with the Public Health Agency of Canada and the Pan-Canadian Public Health Network." Retrieved from: https://www.canada.ca/en/public-health/corporate/mandate/about-agency/office-evaluation/evaluation-reports/evaluation-national-collaborating-centres-public-health-program-2008-2009-2013-2014.html#s2.1

[6] Kiefer, L., Frank, J., Di Ruggiero, E., Dobbins, M., et al. (2005). "Fostering Evidence-based Decision-making in Canada. Canadian Journal of Public Health". Canadian Journal of Public Health, Vol. 96, No.3

[7] The Naylor report of 2004, *Learning from SARS: Renewal of public health in Canada – Report of the National Advisory Committee on SARS and Public Health*, states that: "Canada needs more applied public health research and evaluation, more systematic reviews and public health practice guidelines, better training in the generation and interpretation of public health evidence, and better means of storing, maintaining and accessing the relevant knowledge for public health practice. These issues have been highlighted in a document produced by the Institute of Population and Public Health within the CIHR. Any new agency must have a combination of in-house capacity alongside funding to contract out R&D functions to partners such as the CIHR." (p.67) Chapter 10 focuses on public health research capacity. Recommendation 10.2 states that: "The Canadian Agency for Public Health, in partnership with provincial and territorial governments and through the F/P/T Network for Communicable Disease Control, should directly invest in provincial, territorial, and regional public health science capacity. The $100 million earmarked for 'second-line' capacity, including the operation of the F/P/T Network for Communicable Disease Control, is the logical source of funding for this purpose. Options include directed funding flows to existing provincial/territorial bodies or the creation of joint F/P/T regional institutes. The mandate of these bodies would be to provide public health research services to the provinces and territories. Retrieved from: https://www.canada.ca/en/public-health/services/reports-publications/learning-sars-renewal-public-health-canada.html

[8] The original objective statement for the NCCPH Program was: to create linkages and foster collaboration among researchers, the public health community and other stakeholders to analyze priority population health issues and to provide evidence and expertise for the development of mechanisms and tools to improve public health across Canada. This statement is from the 2005 Results-based Management and Accountability Framework then lists the three NCC functions of Knowledge Translation, Knowledge Gap Identification and Networking. Subsequent examples of maintain the same elements of promoting evidence-informed decision making via knowledge translation activities for all public health stakeholders in Canada. Two examples:

- 2017 Performance Measurement Strategy: The mission of the NCCPHP is to promote the use of knowledge for evidence informed decision making by public health practitioners and policy makers across Canada. The National Collaborating Centres (NCCs) synthesize, translate, and share knowledge to make it useful and accessible to policy makers, program managers and practitioners to support effective, evidence-informed decision making. The NCCs are designed to identify knowledge gaps, stimulate research in priority areas, and link public health researchers with practitioners to build strong practice-based networks across Canada.
- 2023-2024 Departmental Plan: The objective of this program is to promote evidence-informed decision-making by public health practitioners and policy makers across Canada. The [NCCPH Program] synthesizes and shares knowledge in ways that are useful and accessible to public health stakeholders. Expected results: i) Public health partners work collaboratively to address existing and emerging public health issues; ii) Public health organizations participate in collaborative networks and processes; and iii) Public health professionals and partners have access to reliable, actionable public health data and information.

[9] The 2018 NCCPH Program evaluation report is available at: https://www.canada.ca/en/public-health/corporate/transparency/corporate-management-reporting/evaluation/2014-2015-2018-2019-evaluation-report-national-collaborating-centres-public-health-program.html

The 2014 NCCPH Program evaluation report is available at: https://www.canada.ca/en/public-health/corporate/mandate/about-agency/office-evaluation/evaluation-reports/evaluation-national-collaborating-centres-public-health-program-2008-2009-2013-2014.html
The 2009 NCCPH Program evaluation report is available at: https://www.canada.ca/en/public-health/corporate/mandate/about-agency/office-evaluation/evaluation-reports/formative-evaluation-national-collaborating-centres-public-health-program.html

[10] The implementation of the Program's 2018 Management Response and Action Plan included:

- i) developing a collaborative two-way partnership between PHAC and the NCCs: The COVID-19 pandemic interrupted a PHAC-NCC Executive Lead committee which had recently been established to promote closer collaboration between PHAC branches and the six NCCs. However, OCSO did renew the NCC contribution agreements, publicize the work of the NCCs at PHAC and facilitate direct collaborations between PHAC units and individual NCCs.
- ii) ensuring that each NCC remains relevant to emerging knowledge needs: The COVID-19 pandemic interrupted the PHAC-NCC Executive Lead committee's capacity to review NCC priorities, however OCSO reviews NCC annual work plans for their ability to address a broad range of actions that reflect key priorities.
- iii) exploring options to maximize efficient resource use: OCSO removed a requirement that all NCCs collaborate on a common 'signature' project, was flexible on changes to workplans based on emerging priorities (demonstrated at the start of the COVID-19 pandemic), and introduced a more streamlined version of the Performance Measurement Questionnaire.

[11] Based on information from Section 3.5 of the 2020 collective Evaluation of the National Collaborating Centres (NCCs) for Public Health; PRA Inc. (2022). Case Study of the (NCCDH) Organizational Capacity for Health Equity Initiative, Final report; (2023) Evaluative Portrait of the Partnerships and Collaborations of the National Collaborating Centre for Healthy Public Policy; Maureen Dobbins, Alejandra Dubois, Donna Atkinson, Olivier Bellefleur, Claire Betker, Margaret Haworth-Brockman, Lydia Ma. Commentary – Nimble, Efficient and Evolving: The Rapid Response of the National Collaborating Centres to COVID-19 in Canada and Lessons Learned. Health Promotion and Chronic Disease Prevention in Canada, Vol 41, No 5, May 2021. Retrieved from: https://www.canada.ca/en/public-health/services/reports-publications/health-promotion-chronic-disease-prevention-canada-research-policy-practice/vol-41-no-5-2021/rapid-response-national-collaborating-centres-covid-19-canada.html; Haworth-Brockman M, Keynan Y. Knowledge brokering on infectious diseases for public health. Can Commun Dis Rep 2021;47(3):161–5. https://doi.org/10.14745/ccdr.v47i03a06

[12] See: https://nccid.ca/project-stream/migration-and-mobility/

[13] In addition, out of the 69 participants surveyed:

- 73% strongly agreed that the NCCs are facilitating networks/collaborations that are aligned with the priorities of their work; and
- 50% strongly agreed that NCC products and activities focused on COVID-19 have been useful for them and/or their organization.

[14] For example, see Rogers, B.J., Swift, K., van der Woerd, K., Auger, M., Halseth, R., Atkinson, D. et al. (2019). At the interface: Indigenous health practitioners and evidence-based practice. Prince George, BC: National Collaborating Centre for Aboriginal Health (now the National Collaborating Centre for Indigenous Health). Retrieved from: https://www.nccih.ca/495/At_the_interface__Indigenous_health_practitioners_and_evidence-based_practice.nccih?id=249

[15] One Health examines the interconnections between people, animals, plants and their shared environment, i.e., social, political and environmental determinants. Examples of specific issues that could benefit from a One Health analysis approach include vector-borne diseases and anti-microbial resistance (AMR) as well as the impacts of climate change on human health. See: https://www.canada.ca/en/public-health/corporate/publications/chief-public-health-officer-reports-state-public-health-canada/state-public-health-canada-2021/report.html#a4.2

[16] See: https://nccid.ca/project-stream/antimicrobial-resistance/

[17] "For several years, the NCCHPP has been working with its partners to clarify the roles of public health actors in promoting population mental health and wellness, to identify the needs associated with these roles, and to respond to these needs. Activities have included hosting a pan-Canadian forum, developing an inventory of mental health strategies in Canada, and producing a framework for supporting action in population mental health that has been used in several jurisdictions, including Ontario, to support the implementation of the Mental Health Promotion Public Health Standards." Bellefleur O, Jacques M. The National Collaborating Centre for Healthy Public Policy in times of COVID-19: Building skills to "Build Back Better". Can Commun Dis Rep 2021;47(4):232–6. Retrieved from: https://doi.org/10.14745/ccdr.v47i04a08

[18] The Knowledge Development and Exchange (KDE) Hub is funded by PHAC (through the Mental Health Promotion – Innovation Fund) and CIHR to provide knowledge translation support for mental health promotion projects funded by them. The KDE Hub appears to be similar to the NCCs in that makes knowledge resources and activities publicly available, is hosted by a university (Renison University College at the University of Waterloo) and is advised by a circle of collaborators including NCCDH and NCCHPP. See: https://kdehub.ca/

[19] For example, NCCHPP was focused on preparing for after the pandemic. Some PHAC interviewees related that certain priorities took the backburner due to COVID-19, like STBBIs, however NCCID continued to facilitate a community of practice network for practitioners focused on STBBIs throughout the COVID-19 pandemic. That said, it was noted that STBBI rates increased and testing rates decreased during the COVID-19 pandemic, underlying the importance of the NCCs to address ongoing public health priorities.

[20] The combined total 523 individual partner/collaborator relationships reported by NCCs for the fiscal year 2022-2023 includes the following groupings:

- The Public Health Agency of Canada and its sub-divisions and branches represent 7.3% of total individual partners (38).
- Academic Institutions represents the type of organization with the largest number of partners between all the NCCs combined with 19.7% of total individual partners (103)
- Nearly 41% of total partners (213) are related to governments in Canada at all levels (federal, provincial, territorial, regional, municipal and local).
- 5% of total partners are either Indigenous-led or Indigenous health authorities.

[21] The were 17 countries represented in the list of international organizations collaborating with one or more NCCs in 2022-2023., The majority of these were from the United States (14 collaborations). Europe was the continent most strongly represented in this list, but there were also collaborations with

organizations in the Americas, Africa, Asia, and Australia/New Zealand. International collaborations were primarily with universities, NGOs and foreign governments. While all NCCs participated in international collaborations, NCCHPP and NCCMT were most active internationally.

[22] One interviewee related that “Je participe également à un comité de pilotage d’un réseau sur la Santé dans toutes les politiques piloté par le CCNPPS, ainsi qu’au comité d’orientation du CCNPPS. Ces collaborations permettent d’établir des liens entre la production universitaire de la recherche et les besoins des utilisateurs en milieux de pratique, bénéfiques aussi pour déterminer les orientations de ma recherche. »

[23] Husson, H., Howarth, C., Neil-Sztramko, S., & Dobbins, M. (2021). The National Collaborating Centre for Methods and Tools (NCCMT): Supporting evidence-informed decision-making in public health in Canada. Canada Communicable Disease Report, 47(56), 292–296. https://doi.org/10.14745/ccdr.v47i56a08

[24] One PHAC interviewee observed that the variety of PHAC units having flowed supplementary funding to different NCCs was a positive indication of how much they valued the NCCs.

[25] The Chief Public Health Officer's Report on the State of Public Health in Canada 2021, A Vision to Transform Canada's Public Health System, is available at: https://www.canada.ca/en/public-health/corporate/publications/chief-public-health-officer-reports-state-public-health-canada/state-public-health-canada-2021.html
The four associated commissioned reports published and disseminated by the NCCs, including the report authored by NCCIH, are available at: https://nccph.ca/projects/canadas-chief-public-health-officer-2021-report-and-associated-commissioned-reports/

[26] https://nccph.ca/projects/2024-core-competencies-for-public-health-in-canada/

[27] https://nccph.ca/projects/public-health-responses-for-long-term-evacuation-and-recovery/

[28] “One hundred fourteen people registered for the event, including leaders and staff from shelters, public health practitioners, medical officers of health, program managers and directors from regional health authorities and government, staff from community health organizations and community groups from the designated region (Northern Alberta, Saskatchewan, Manitoba and Northwestern Ontario). As well, staff from the NCCID and the other five National Collaborating Centres for Public Health attended.” NCCID, February 2023. A Winter Institute: Shelters and Public Health, final report. p.11. Retrieved from: https://nccid.ca/publications/shelters-and-public-health-final-report/

[29] NCCID published PHAC COVID-19 modelling work on their website; see: https://nccid.ca/phac-modelling/

[30] The NCCs presented their early work on COVID-19 to the federal-provincial/territorial Strategic Advisory Committee (SAC) in July of 2020. This included sharing a summary of needs expressed by front line public health practitioners. The NCCs also presented to the PHN in 2022 about the renewal of public health infrastructure (NCCHPP) and the changing understanding of Indoor Air Quality measures, a knowledge synthesis by NCCEH.

[31] One interviewee observed that the NCCs could have briefed the COVID-19 Strategic Advisory Committee or the Technical Advisory Committee more frequently. However, another interviewee reported that NCCMT helped to produce COVID-19 evidence syntheses for use across PHAC and which were used to inform Strategic Advisory Committee and Technical Advisory Committee discussions.

[32] NCCMT and NCCIH were members of the Steering Committee for COVID-END in Canada and both provided dissemination support. The lead of NCCIH advised COVID-END on the meaningful and respectful inclusion of Indigenous researchers and communities. https://www.mcmasterforum.org/networks/covid-end/archive-for-covid-end-in-canada/about-covid-end-in-canada/scientific-leadership

[33] Some NCC evaluations or needs assessments have mentions of topics that stakeholders have found useful at a given point in time. For example, the 2022 NCCEH Needs Assessment Survey highlighted COVID-19, mould, and food/food safety. The 2023 collective evaluation stated that "The document *Understanding RT-PCR Tests and Results* was the #1 downloaded document of all time for NCCID, and regular updates on the variants of concern generated the most traffic to NCCID's website."

[34] Examples of recent short-format issue spotlight videos can be seen at: NCCEH https://ncceh.ca/resources?f%5B0%5D=resource_type%3A2219 and NCCHPP https://ccnpps-ncchpp.ca/resources/videos/ NCCMT https://www.nccmt.ca/training/videos NCCIH https://www.nccih.ca/34/Publication.nccih?type=8

[35] An interviewee related that the book, *Determinants of Indigenous Peoples' Health in Canada: Beyond the Social*, is intended for students in health-related programs such as nursing, public health, surveillance, medicine, etc., from undergraduate to post-graduate levels. The textbook has seen a high degree of uptake, prompting the development of the second edition. An overview of the development of this book is found on: https://www.nccih.ca/en/index.aspx?sortcode=2.7.9.25 An overview of the subsequent 2022 publication and related video series, *Introduction to Determinants of First Nations, Inuit, and Métis Peoples' Health in Canada*, is available at: https://www.nccih.ca/485/NCCIH_in_the_News.nccih?id=495

[36] One NCC user interviewee observed that the usefulness of NCC tools and resources may vary by province and territory according to the capacity of their public health organizations, i.e., stakeholders in jurisdictions without provincial public health institutes may rely more on the NCCs. Therefore, NCCs need to fill gaps and provide different types of products for different audiences which is difficult to do given their budget.

[37] The NCCID Quick Links resource became a Disease Debrief online information hub: https://nccid.ca/debrief/covid-19/

[38] NCCDH hosted four series of conversations on equity-informed responses to COVID-19: https://nccdh.ca/our-work/covid-19/

[39] COVID-END was created in April 2020 and is partnered with the NCC for Methods and Tools, which is housed at McMaster University in Canada (COVID-END, 2021; Grimshaw et al., 2020; Office of the Chief Science Advisor, 2020a). The COVID-END network performs evidence syntheses (including 'living' reviews) and environmental scans on various COVID-19-related topics, such as public health measures, clinical therapeutics, health system resource management, and economic and social responses (COVID-END, 2021; Office of the Chief Science Advisor, 2020a). COVID-END also aims to reduce duplication of research projects by providing a platform for researcher collaboration and coordination (COVID-END, 2021). https://www.mcmasterforum.org/networks/covid-end

[40] As reported in Prairie Research Associates (2020). Evaluation of the of the National Collaborating Centres for Public Health, Volume II – Case Studies. Report on the NCC Knowledge Exchange Forum: Towards TB Elimination in Northern Indigenous Communities, January 31 - February 1, 2018, Winnipeg, MB, retrieved from: https://nccid.ca/ncc-knowledge-exchange-forum-towards-tb-elimination-in-northern-indigenous-communities/

[41] A HiAP research project leader related that they have benefitted from working closely with NCCHPP to increase the effectiveness of public health policy briefs for engaging decision-makers. Guidance from NCCHPP helped greatly to increase the team's knowledge on writing as well as translate and mobilize knowledge. They have received very positive feedback from decision-makers in a couple of instances where the CIHR-funded research team has shared the policy briefs and conducted workshops. See: https://ccnpps-ncchpp.ca/health-in-all-policies/
In addition, NCCDH organized webinars in 2018 that emphasized the concept of Health in All Policies, including: "Chapter 18: Health in All Policies, Health Promotion in Canada, Fourth Edition", part of the Health Promotion Canada series; and "Health in All Policies: an introduction and opportunities for public health" in collaboration with the Health Equity Collaborative Network.

[42] Capacity building for EIDM is a core focus of NCCMT whose resources, training and mentoring have reached uses across Canada and in many countries, which has had extensive reach including front-line organizations and universities across Canada and in many other countries. See the description of capacity-building activities and reach in: Husson H, Howarth C, Neil-Sztramko S, Dobbins M. The National Collaborating Centre for Methods and Tools (NCCMT): Supporting evidence-informed decision-making in public health in Canada. Can Commun Dis Rep 2021;47(5/6):292–6. https://doi.org/10.14745/ccdr.v47i56a08.One interviewee described the extensive integration of EIDM at Peel Public Health with the support of NCCMT. A 2018 study of NCCMT's knowledge translation training and mentoring program found that the program was effective for increasing individual capacity for EIDM, but that the degree of success depended on various contextual factors. Dobbins, M., Traynor, R.L., Workentine, S. et al. Impact of an organization-wide knowledge translation strategy to support evidence-informed public health decision making. BMC Public Health 18, 1412 (2018). https://doi.org/10.1186/s12889-018-6317-5. The NCCMT EIDM model, methodology, resources and training can be found on the NCCMT web site, starting with: https://www.nccmt.ca/tools/eiph

[43] NCCEH partnered with the Intact Centre on Climate Adaptation at the University of Waterloo to produce the following guide and follow up webinar on behavioural and infrastructure adaptations to extreme heat risks: https://www.intactcentreclimateadaptation.ca/irreversible-extreme-heat-protecting-canadians-and-communities-from-a-lethal-future/

[44] "Key challenges include: limited time; demanding workloads; competing priorities; emerging crises; limited capacity for searching, appraising, and applying research evidence; limited knowledge management skills and infrastructure; resistance to change; unsupportive organizational culture and leadership; the political context of decision making; and the ever-expanding evidence base. With many identified barriers to EIDM, there is a need to identify effective and sustainable knowledge translation (KT) strategies to enhance the capacity for public health organizations and workforce to operate in an evidence-informed way." Dobbins, M., Traynor, R. L., Workentine, S., Yousefi-Nooraie, R., & Yost, J. (2018). Impact of an organization-wide knowledge translation strategy to support evidence-informed public health decision making. BMC Public Health, 18(1). https://doi.org/10.1186/s12889-018-6317-5

[45] The NCCIH work on addressing vaccine hesitancy included:

- Series of five factsheets: https://www.nccih.ca/485/NCCIH_in_the_News.nccih?id=467
- a webinar with NCCID: https://www.nccih.ca/495/Vaccine_Hesitancy_and_First_Nations,_Inuit_and_M%C3%A9tis_populations_.nccih?id=322
- articles, such as: Enhancing COVID-19 Vaccine Acceptance in Canada (nccih.ca)
- an animated video: https://www.nccih.ca/495/Vaccine_Confidence.nccih?id=336

[46] National Collaborating Centre for Methods and Tools. (2023 March 23). Rapid Review Update 2: What are best practices for risk communication and strategies to mitigate risk behaviours? https://www.nccmt.ca/pdfs/res/risk-communication

[47] NCCHPP reported that the resources on public health ethics have been used by multiple actors, including the Québec Population Health Research Network, the First Nations Health Consortium in Alberta, and Manitoba Shared Care. Bellefleur O, Jacques M. The National Collaborating Centre for Healthy Public Policy in times of COVID-19: Building skills to "Build Back Better". Can Commun Dis Rep 2021;47(4):232–6. https://doi.org/10.14745/ccdr.v47i04a08

[48] Dyke, E. Assessment of the National Collaborating Centres for Public Health's Contribution to Public Health in Canada, January 18, 2023, FINAL REPORT. Internal document.

[49] NCCEH published a guide and webinar on COVID-19 precautions for multi-unit residential buildings in March 2020 in response to a need perceived by staff on knowledge to reduce the risks of COVID-19 transmission in high-density residential environments. NCCEH reported uptake from many housing-sector organizations that were new users of NCCEH resources. The guide is available at: https://ncceh.ca/resources/evidence-reviews/covid-19-precautions-multi-unit-residential-buildings and the associated webinar can be seen here: https://ncceh.ca/events/upcoming-webinars/covid-19-precautions-multi-unit-residential-buildings

[50] Haworth-Brockman, M, and Betker, C. (2020). Measuring What Counts in the Midst of the COVID-19 Pandemic, Equity Indicators for Public Health. NCCID and NCCDH. Retrieved from: https://nccdh.ca/resources/entry/measuring-what-counts-in-the-midst-of-the-covid-19-pandemic-equity-indicato
This resource was also presented around 15 times to a variety of stakeholders, including at the International Union for Health Promotion and Education and The Ontario Public Health Convention 2022 Spring Workshop, in May 2022 (as reported in the annual PMQ).

[51] NCCMT led a project to analyze the reach and extent of trustworthiness of all NCCs in the eyes of public health stakeholders considered all of the NCCs to be trustworthy source of knowledge during the COVID-19 pandemic, i.e., 2019 to 2022. The report, *NCC Social Network Analysis and Reach Evaluation, Appendix 2021.5.4b*, was accessed from NCCMT's annual performance reporting information. The NCCMT led an all NCC project to investigate the use of relevant public health resources in Canada during the COVID-19 pandemic and conduct an evaluation of the NCC's overall reach.

[52] In 2016, NCCMT moved from the University of Winnipeg to the University of Manitoba. All other host organizations have remained the same since the start of the program. https://news.umanitoba.ca/bringing-evidence-on-infectious-diseases-into-practice/

[53] There have been three main changes in PHAC's governance of the NCCPH program and location within the PHAC corporate structure:

- The Program design called for an Advisory Council of external experts was created to review annual priorities of the individual NCCs and the NCCPH Program as a whole. This Council, established at the start of the program, was disbanded in 2013 as part of a review of all of PHAC's external committees.
- Responsibility for NCCPH program administration was originally placed under PHAC's Public Health Infrastructure Branch. PHAC's corporate program inventory showed the Program as a component of Public Health Infrastructure until 2018-2019. In that year, the Program was placed under the direction of the new post of Chief Science Officer, itself located within the Infections Disease Prevention and Control Branch.
- At the beginning of 2022, the Office of the Chief Science Officer took on the status of a branch reflecting its renewed role of working horizontally across PHAC's branches to advance science priorities. It continues to manage the NCCPH Program.

[54] Di Ruggiero, E., Papadopoulos, A., Steinberg, M. et al. Strengthening collaborations at the public health system–academic interface: a call to action. Can J Public Health 111, 921–925 (2020). https://doi.org/10.17269/s41997-020-00436-w

[55] In 2005 there were eight professional Master of Public Health (MPH) programs in Canda, rising to 14 MPH programs only a year later in 2006. The latest comprehensive report counted 19 MPH Canadian programs in 2022 amongst a total of 46 public health programs at the master's level. Cambourieu, C. & Snelling, S. (2023). Supporting Public Health Human Resource Planning: A Survey of Canadian Universities' Public Health Training Programs. National Collaborating Centre for Healthy Public Policy and National Collaborating Centre for Methods and Tools. Retrieved from: https://ccnpps-ncchpp.ca/docs/2023-Supporting-Public-Health-Human-Resource-Planning.pdf

[56] For example, the Canadian Institutes of Health Research-Public Health Agency of Canada (CIHR-PHAC) Applied Public Health Chairs Program was introduced in 2006 and aimed to strengthen linkages between research and practice. See: https://cihr-irsc.gc.ca/e/52313.html

[57] The Chief Public Health Officer's 2021 Report on the State of Public Health in Canada gives the following examples of important technological advances: those related to rapid vaccine development (i.e., novel
messenger RNA (mRNA) technology); digital technology and virtual information-sharing platforms (incl. social media as a way to disseminate evidence-based information, but also with the challenge of the spread of misinformation); health surveillance for detecting, tracking and reporting on the spread of diseases.

[58] Public health organizations at all levels across Canada have faced significant challenges in the last five years, especially due to the demands of responding to the COVID-19 pandemic. Various publications have highlighted the need for strengthening the public health sector following the COVID-19 pandemic, such as The Chief Public Health Officer's Report on the State of Public Health in Canada 2021, *A Vision to Transform Canada's Public Health System*, Section 2, Public Health in Canada: Opportunities for Transformation

[59] The 2021 CPHO Report Summary emphasizes that the COVID-19 pandemic increased pre-existing challenges to Canada's public health system such as gaps in data, mis- and disinformation, and rapidly evolving evidence. The main report states that "Research is essential to effective public health practice. However, there are gaps in this interface, between the context in which research is done and the local needs and resources of the setting in which it is applied. As a result, evidence may not be translated into the settings where it could do the most good." (p. 61) The Report highlights COVID-END and the PHAC-CIHR Applied

Public Health Chair program, both of which have been supported by NCCs. It also calls for action to "Enhance rapid and ongoing population health intervention research for prevention and well-being initiatives, and strengthen interdisciplinary knowledge synthesis models, such as the National Collaborating Centres for Public Health." (p. 84) https://www.canada.ca/en/public-health/corporate/publications/chief-public-health-officer-reports-state-public-health-canada/state-public-health-canada-2021/report.html

[60] The NCCs were highlighted as a resource that could help to strengthen research-practice collaborations referenced in the Canadian Institutes of Health Research-Institute of Population and Public Health 2022 report Moving Forward from the COVID-19 Pandemic: 10 Opportunities for Strengthening Canada's Public Health Systems, Section 3: What opportunities exist? Retrieved from: https://cihr-irsc.gc.ca/e/52879.html
The NCCs are mentioned as support for strengthening relationships between public health practice and academia. Di Ruggiero E, Papadopoulos A, Steinberg M, Blais R, Frandsen N, Valcour J, Penney G. Strengthening collaborations at the public health system-academic interface: a call to action. Can J Public Health. 2020 Dec;111(6):921-925. doi: 10.17269/s41997-020-00436-w. Epub 2020 Nov 11. PMID: 33175335; PMCID: PMC7656888. A much earlier 2009 opinion published by several public health leaders also highlighted the NCC model as one solution for moving beyond a repeating cycle of pilot projects to sharing knowledge across jurisdictions to facilitate evidence-based practice and policy. Hon. Monique Bégin, Laura Eggertson and Noni Macdonald (2009). A country of perpetual pilot projects. CMAJ June 09, 2009 180 (12) 1185; DOI: https://doi.org/10.1503/cmaj.090808

[61] "KT is the science of applying research knowledge to decisions for healthcare services, policies, and programs, in an attempt to close the gap between research and practice. Tailored and targeted messaging, knowledge management infrastructure, and multidirectional interaction between research and decision-making communities, in particular, show promise as effective KT strategies. Research indicates that strategies to support EIDM need to focus not only on building individual knowledge and skills, but also on shifting the culture within organizations to value EIDM and to develop infrastructure and mechanisms that support it." Dobbins, M., Traynor, R. L., Workentine, S., Yousefi-Nooraie, R., & Yost, J. (2018). Impact of an organization-wide knowledge translation strategy to support evidence-informed public health decision making. BMC Public Health, 18(1). https://doi.org/10.1186/s12889-018-6317-5

[62] Interviewees indicated respect for NCC staff who are recognized leaders in their fields, who have an in-depth familiarity with different stakeholder groups and an ability to deliver useful knowledge products. A special highlight was the appointment of Dr. Margo Greenwood, the longtime Academic Lead for NCCID, to the Senate of Canada in November 2022. The appointment citation refers to Dr. Greenwood's many years of leadership in the field of Indigenous public health and commitment to the well-being of Indigenous communities across Canada. See: https://www.pm.gc.ca/en/news/backgrounders/2022/11/10/dr-margo-greenwood

[63] The original planned budget was $1.5 million in contribution funding per NCC per year. However, Supplementary Tables from the 2007-2008 PHAC Departmental Plan show that the planned budget was reduced to $1.4 million per NCC per year. The Supplementary Tables from the 2015-2016 PHAC Departmental Plan show that the planned budget was further reduced to the current level of $973,666 per NCC per year in 2014-2015 as part of a wider federal government cost-cutting initiative.

[64] Up to 18% of this amount is permitted contribute to operational expenses, including rent, utilities and third-party evaluation services.

[65] This COVID-19 surge funding allowed the NCCs to temporarily increase their capacity to provide support. For example, NCCID was able to pay students who were able to contribute to projects on emerging infectious diseases, literature reviews or forward-thinking work. NCCID was also able to hire a couple of research assistants, propelling other projects on emerging topics such as vaccine equity. However, one interviewee observed that no one was sure how long the funding would last, making it difficult to retain staff.

[66] PHAC contribution agreement amendments in 2023-2024 have included additional funding for the following activities: a cross-NCC project to assist the Corporate Data and Surveillance Branch with the renewal of Public Health Core Competencies, NCCMT to assist the Corporate Data and Surveillance Branch with a scoping review and NCCID with NCCDH to hold consultations for a surveillance strategy, NCCID to assist the Corporate Data and Surveillance Branch with a seminar series on the future of public health surveillance, NCCID to collaborate with the National Advisory Committee on Immunization in delivering a webinar on Guidelines for the Economic Evaluation of Vaccination Programs in Canada. In addition, there was an amendment for NCCEH to assist Health Canada to identify risks from a marine pollution incident.

[67] "Grants are unconditional transfer payments. This means that if an individual or organization meets the eligibility criteria for a grant, the appropriate payment can be made without requiring the recipient to meet any other conditions. In contrast, contributions are transfer payments that are subject to performance conditions specified in a contribution agreement. The recipient must continue to show that these performance conditions are being met in order to be reimbursed for specific costs over the life of the agreement. The government can audit the recipients' use of contributions, whereas this is not a requirement for a grant." Office of the Auditor General of Canada (no date). Framework for Identifying Risk in Grant and Contribution Programs. Retrieved from https://www.oag-bvg.gc.ca/internet/English/meth_gde_e_10223.html

[68] PHAC and NCC staff interviewees felt that a grant mechanism would provide less flexibility for PHAC as well as decrease its financial oversight. In addition, there was broad agreement that the host model was better than making the NCCs become independent not-for-profit organizations as it would bring too many administrative challenges, taking the NCCs away from their core work. Lastly, operating on a contract basis would not align with the objective of the Program to support all levels of the public health system, given that contracts are intended for providing good or services directly to the funder.

[69] Interviewees pointed out challenges with managing ad hoc contribution agreement amendments, e.g.:

- Some PHAC project proposals do not align well with an NCC annual work plan, meaning that planned NCC activities could be displaced by an ad hoc PHAC proposal. However, NCCs may feel compelled to accept a PHAC proposal that would displace another project due to PHAC's status as a funder, collaborator and information user for the NCCs.
- PHAC proposals can be difficult to manage, e.g., projects can start up late and be cancelled after months of planning. The timeline to transfer and use funding from a contribution agreement amendment can be very short if a proposal is received part-way through a fiscal year. A few interviewees confirmed that funding flowed through amendments cannot be "carried forward", i.e., it usually must be spent within the same fiscal year or 30 days into the next fiscal.

Recommendations from all key interviewees encourage PHAC to take on an exercise to understand how funding should be allocated based on needs and priorities, rather than "squeezing things in". Some interviewees have also noted the need for a source of surge funding dedicated to emergencies and unexpected crises, so that it is not necessary for the NCCs to abandon work plans that address pre-existing public health priorities.

[70] The following examples of limitations of the NCCs being able to carry out their key functions and mission were noted in the evidence. All of these instances can be linked to current staffing capacity constrained by current core funding.

- Knowledge gap identification: public health priorities which some interviewees felt were not being addressed by any of the NCCs; see the section on Knowledge gap identification.
- Networking for collaboration: limits on the ability to bring stakeholders together to collaborate on priority topics, and limits on NCCs being able to collaborate with each other; see the section on Networking for collaboration.
- Knowledge translation: limits in NCC capacity to respond to all emerging issues outside of their annual work plans; see Suitability of the NCCPH Program Model section. Note: one PHAC interviewee observed two instances of NCCs having to turn down opportunities to work with PHAC units due to limited staff capacity.
- Support for Evidence-Informed Decision Making: some potential stakeholders not reached or not aware of the support available from the NCCs; see section on Support for Evidence-Informed Decision Making.

[71] The Bank of Canada inflation calculator shows that a dollar amount set in 2015 has declined by 24.7% due to inflation over eight years. Put another way, the core contribution agreement funding level of $973,666 set in 2015 has a present-day value of $791,590 in 2023 once adjusted for inflation. https://www.bankofcanada.ca/rates/related/inflation-calculator/

[72] Up to 2017-2018, the NCCPH Program was linked to a component of PHAC's program inventory called Public Health Infrastructure: Public Health Information and Networks. That component was discontinued in 2018-2019, along with its related Branch structure. Since then, the NCCPH program has been administered by the Office of the Chief Science Officer (OCSO), originally placed within the Infectious Disease Prevention and Control Branch. The OCSO was repositioned in 2022 to report to the Office of the Chief Public Health Officer which has clarified its role in supporting the whole of PHAC. These changes were reflected in the PHAC Departmental Plan; since 2018-2019, the NCCPH Program has been linked to the following elements of PHAC's Program Inventory: Evidence for Health Promotion, and Chronic Disease and Injury Prevention; Communicable Diseases and Infection Control; Foodborne and Zoonotic Diseases; and Emergency Preparedness and Response. See PHAC's archived Departmental Plans at: https://www.canada.ca/en/public-health/corporate/transparency/corporate-management-reporting/reports-plans-priorities.html

[73] "Being able to tap into the public health field has been critical to the work of the NCCs, as has the ability to draw on Indigenous knowledges and experiences of past pandemics (e.g., H1N1, smallpox). Regular check-ins with other NCCs and PHAC have been instrumental in coordinating work, fostering collaboration and avoiding duplication of effort. Dedicated staff with established relations of trust who can work across jurisdictions are needed to proactively seek out who is working on what, compile the information and share it." From: Maureen Dobbins, Alejandra Dubois, Donna Atkinson, Olivier Bellefleur, Claire Betker, Margaret Haworth-Brockman, Lydia Ma. Commentary – Nimble, Efficient and Evolving: The Rapid Response of the National Collaborating Centres to COVID-19 in Canada and Lessons Learned. Health Promotion and Chronic Disease Prevention in Canada, Vol 41, No 5, May 2021. https://www.canada.ca/e n/public-health/services/reports-publications/health-promotion-chronic-disease-prevention-canada-research-policy-practice/vol-41-no-5-2021/rapid-response-national-collaborating-centres-covid-19-canada.html

[74] Fundytus, K., Santamaria-Plaza, C., & McLaren, L. (2023). Policy diffusion theory, evidence-informed public health, and public health political science: a scoping review. Canadian Journal of Public Health. https://doi.org/10.17269/s41997-023-00752-x

[75] The PHAC-Health Canada Office of Audit and Evaluation carried out an evaluation readiness assessment for the NCCPH Program in 2021. It recommended that the Program should i) refine the current logic model in consultation with the NCCs to better reflect NCCs' program theory, evolution and impacts; ii) explore measuring quantitative impact of NCC activities, building on existing NCC capacity and practices, to improve the effectiveness of the performance measurement framework; iii) include disaggregated data to permit an analysis of differences in impacts across target populations (where relevant) in line with SGBA Plus commitments while also reducing the number of output indicators to keep the workload manageable. The 20203 NCC collective evaluation report includes a new logic model based on a 2014 NCCPH logic model and review of individual logic models used by the Centres to guide their own work. This included suggested wording on a theory of change and outcomes which helped to structure reported findings on Program outcomes.

[76] See Canada and the Sustainable Development Goals: https://www.canada.ca/en/employment-social-development/programs/agenda-2030.html