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Towards a "Profile Survey" of Local Public Health Units in Canada

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Towards a “Profile Survey” of Local Public Health Units in Canada¹

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Towards a “Profile Survey” of Local Public Health Units in Canada

Abstract

The development and refinement of public health systems and services should be informed by empirical evidence. Although Public Health Systems and Services Research can provide such an evidence base, this field is underdeveloped in Canada due in large part to the lack of a mechanism for regular data collection. To address this shortcoming, adopting an integrated knowledge translation approach, the Urban Public Health Network supported preliminary development of a Profile Survey instrument which can be used to collect information on local public health unit organization, capacity, and practices in Canada. However, three critical questions were identified for which the field does not have readymade answers and which hinder the finalization of such an instrument: (1) how should we define a public health unit; (2) how should we classify public health programs and services; and (3) how can we operationalize resource allocation to programs and services? Although temporary solutions to these questions have been proposed by the UPHN research team, greater research and consultation is still needed before these can be finalized and the Profile Survey instrument along with them.

Keywords

public health systems and services research, integrated knowledge translation, local public health, profile survey

Introduction

Public health systems and services research (PHSSR) refers to the systematic study of “the impact of the organization, staffing, financing, and management of public health systems on access to, delivery, cost, quality and outcomes of population-based services and interventions.”¹, pg.284 Public health systems and services development should be informed by empirical evidence;^{2,3} however, commentators have lamented that, “evidence-driven recommendations for organizing, administering, or financing the public health system or its services does not exist”², pg. 285 The primary reason that evidence-driven recommendations are lacking is that the kinds of evidence that are needed to inform them are not collected in the first place.

In 2018, the Urban Public Health Network (UPHN)⁴ commissioned a small team of researchers to begin developing a “Profile Survey” to gather comparable information on local public health practices and capacity to be administered to its 23 members. Work began on the project in 2019. An integrated knowledge translation (iKT) approach was used to adapt the American National Profile of Local Health Departments (NPLHD), and not use PH for use in Canada. The NPLHD is administered every three years by the National Association of County and City Health Officials (NACCHO). The resulting Canadian version is called the Canadian Profile of Public Health Units in Canada (CPPHU). In late 2019, CPPHU was trialed among participating UPHN members and their staff.

So far, the ambitions of the UPHN research team’s work on the CPPHU have been modest and the survey remains a work in progress. This white paper describes the steps that have been taken by the research team to develop and trial the CPPHU. Critically, the team encountered three key questions for which the field does not have readymade answers and which hinder the finalization of a Profile Survey for use in Canada: 1) How should we define a public local health unit (LPHU)? 2) How should we classify public health programs and services? 3) How can we operationalize resource allocation to programs and services? Straightforward answers to each of these questions remain elusive in Canada, in large part, due to decentralization and the diversity of public health practice and organization in Canada.

In order to advance progress on the CPPHU, the research team devised ad hoc solutions to each of the aforementioned questions. The opening sections of this report detail why a Profile Survey of LPHUs is needed to advance PHSSR in Canada and how the survey was developed and trialed. Later sections discuss why the above questions are so challenging and suggest ways that they might be resolved.

Advancing PHSSR in Canada

To the extent that PHSSR has been carried out in Canada, it has tended to concentrate on specific regions and thus provides an incomplete picture of public health in Canada overall.⁴ Furthermore, what little PHSSR work has been done often remains within regional public health authorities for internal use and has not been shared with public health operations in other jurisdictions, wider research communities, and the public. Strosher and colleagues⁵ contend that more PHSSR in Canada is needed to contextualize regional developments and Guyon et al.⁶, and others,^{7,8} argue that Canada needs to undertake a “national inquiry” approach to PHSSR.

⁴ The UPHN is a network of Medical Health Officers who are responsible for public health in the largest cities in each of Canada’s provinces (excluding P.E.I). Collectively, this network is responsible for the population health of more than 50% of all Canadians.

In 2011, a Think Tank was assembled to develop a national PHSSR agenda for Canada. The Think Tank brought together 42 public health researchers, practitioners and policy makers from across Canada, the United States and the United Kingdom.^{4,9} The group was multidisciplinary in nature and held various roles, including Medical Officers of Health/Medical Health Officers (MOH/MHO), university professors, and agency/organizational directors, allowing for the establishment of a comprehensive agenda and ensuing discussion.⁴ The Think Tank identified eight priority areas for PHSSR in Canada going forward:

1. Data development/public health information systems;
2. Public health system performance;
3. Governance, system/organizational structures;
4. Partnership/collaboration;
5. Knowledge translation research on appropriate PHSSR methods;
6. Development of capacity to do PHSSR;
7. Public health ethics; and
8. Public health workforce.⁴

Critically, PHSSR advancements in priority areas (2) through (8) are being seriously delayed by our lack of advancement of priority area (1): data development/public health information systems.

The UPHN sponsored the development and trial of the CPPHU, which begins to directly address the first priority identified by the 2011 PHSSR Think Tank and marks a critical first step in the establishment of regular research and reporting that can be used guide the development of public health systems, their financing, and the delivery of their services going forward.^{2,3}

The Value of a “Profile Survey” of Local Public Health Units

Since 1989, NACCHO has collected a NPLHD survey once every three years in the United States.¹⁰ This survey collects data on the workforce, funding, programs and partnerships of local health departments throughout the country. The survey has provided researchers with the data they need to answer important questions—such as identifying the effects of local public health spending on morbidity and mortality^{6,8,11-14}—and a foundation for more in-depth data collection.⁵

No equivalent “Profile Survey” to the American NPLHD exists in Canada. A Canadian Profile Survey would routinely collect data on key public health systems and services in every LPHU in Canada, and is needed to inform public health research and practice in Canada. Critical questions that the survey would gather information on would include: What are the primary activities and responsibilities of LPHUs? How are these LPHUs organized and administered? And, what resources, financial and human, do they have to work with?

The introduction of a Profile Survey for Canada would provide a critical conceptual and survey methodology foundation that would bolster further research on more specialized public and population health topics throughout the country. First, it would motivate the creation of a nationally recognized suite of concepts and indicators that can support comparative PHSSR. This national repository of terms and indicators would serve to greatly facilitate inter-jurisdictional understanding and collaboration going forward. It would also provide a foundation for additional PHSSR surveys.

Second, the implementation of the Profile Survey would itself provide an infrastructure that could be used to advance other studies that are national in scope but which may be short-term or possess fewer resources. For instance, several supplementary modules have been developed by researchers and added to the American NPLHD over the years. These are sometimes administered to a subset of local health units to answer more targeted research questions.⁵

CPPHU Development and Trial

Integrated Knowledge Translation

The 2011 PHSSR Think Tank observed that the field should be advanced and can maximize its efforts to improve the health of Canadians by utilizing a research methodology that jointly engages researchers and knowledge users in the planning and execution of research.⁴ After having identified PHSSR as a research priority, the UPHN funded a small team of researchers based at the University of Saskatchewan to spearhead the CPPHU trial. This collaboration provided an unprecedented and innovative opportunity to conduct PHSSR research in Canada using an integrated knowledge translation (iKT) approach.

iKT involves ongoing active participation from researchers and knowledge users (e.g., policy makers, practitioners, administrators) throughout the research process.¹⁵ Although not yet widely practiced or understood,¹⁶ iKT can promote the integration and utilization of research findings, by focusing on questions that are relevant to practice, and working with partners capable of implementing the identified recommendations.^{15,17-19} An evaluation of the CIHR KT Funding Program was conducted and found that iKT funded researchers often reported improving the health of Canadians, developing new/improved health care services or products and bolstering the health care system.²⁰

The UPHN (the knowledge users) and research team members formed a group that will henceforth be collectively referred to as the “iKT Collaborative.” Dr. Corey Neudorf is the former Chief Medical Health Officer for Saskatoon and, currently, a professor at the University of Saskatchewan, is also the President of the UPHN. He was designated as the project’s lead due to his interests, knowledge and his ability to bridge the UPHN with the researchers. The Profile Survey development process was iterative and participatory amongst the iKT Collaborative (see *Appendix A* for a visualization of the process).

Profile Survey Development

The American NPLHD survey was used as a template for both structure and content for the creation of the Canadian Profile Survey. Relevant questions were adapted so that they were applicable to the Canadian context. The majority of these changes involved terminology (e.g., changing “state” to “province”). However, throughout this adaptation process, the research team encountered terms and questions that did not readily translate to Canadian contexts (e.g., the term “local health department” and questions relating to public health jurisdiction and governance), so new content had to be developed.

One section that was particularly challenging to adapt was the “Local Public Health Programs and Services” section. In the NACCHO NPLHD survey,²¹ LHDs were asked if a list of public health programs and services were performed in their jurisdiction, and, if so, by whom.

⁵ An additional well-known example of this kind of practice in Canada is the various annual supplemental batteries that are appended to each iteration of the Canadian Community Health Survey.

The iKT Collaborative decided not to utilize this section of the survey as it did not align with the scope or organization of public health practice in Canada and did not seem to be based on a recognized formal framework. Without the existence of a unifying public health intervention classification scheme in Canada, the iKT Collaborative struggled to adopt this section of the survey.

The research team opted to conduct a scan of Canada's public health system to inform the development of novel terms and questions. This scan involved collecting information on Canada's health authorities and LPHUs to determine the extent of variability that exists in their structure and function throughout the country. In addition to this, Dr. Neudorf was consulted to gather further information on the jurisdiction and governance of LPHUs in Canada. Collectively, this information was utilized to inform the remaining areas of the survey.

Over the course of survey development, the knowledge users of the iKT Collaborative were regularly consulted. Survey questions and any necessary terms that were developed by the research team were also reviewed and revised by Dr. Neudorf. Based on these revisions, a public health resources allocation section was added to the Profile Survey in order to address a gap in the NACCHO NPLHD survey. Dr. Neudorf also referred the research team to three UPHN-member MOH/MHO from different provinces to garner further feedback; the survey questions were altered based on their insights.

Once the first draft of the Profile Survey was completed, the research team desired to pre-pilot components of the survey to verify accuracy and relevance. Survey Monkey, an online survey platform, was utilized to quickly generate a shareable product (see [Appendix B](#)). A link to the survey was emailed to all UPHN members and the participants were given two weeks to complete the survey and provide feedback. This pre-pilot verified a number of key survey questions developed by the research team and helped to identify barriers to completion and opportunities for improvement. The survey instrument was modified based on the results of the pre-pilot.

In addition, the concept and progress to-date on the project was presented at the bi-annual UPHN meeting in Banff, Alberta, in June 2019. The research lead, Dr. Plante, completed a formal presentation followed by a question and answer period. Post-presentation, feedback was gathered during consultations with several UPHN members in attendance. Over the course of two days of meetings, Plante was also able to informally follow-up with many members and discuss in some length the organization of their local public health units.

In addition, to assist with the development of "Section C: Local Public Health Programs and Services," and in lieu of utilizing the NACCHO NPLHD "Local Public Health Programs and Services" section, the iKT Collaborative opted to adapt the World Health Organization's Integrated International Classification of Health Interventions (ICHI) framework.^{22,23} Researchers and knowledge users of the iKT Collaborative met twice with ICHI developers to discuss the structure of the framework and its suitability to the NPHHUC Trial and one more time to report on how the framework was adapted and utilized.

The second draft of the Profile Survey was shared with the UPHN executive for further review and feedback. An electronic copy of the survey was sent via email to the four executive members of the UPHN. The executives reviewed the survey themselves and shared it with their leadership staff. The research team conducted over-the-phone follow-up conversations with the executives to gather their feedback. Follow-up emails were sent to ensure that revisions were implemented as intended.

Upon finalizing the survey (see [Appendix C](#)), it was sent via email to the entire UPHN membership in the fall of 2019. The research team opted to use REDCap (Research Electronic Data Capture), a secure online platform, to capture data and manage the survey. A link to the REDCap survey was sent to all UPHN members, who, given the length of the survey and the extent of detail required for the answers, were given one month to complete it. Members were given a two-month extension due to a technical error in the REDCap software. A total of 20 UPHN members were invited to participate in the survey. Of the 20 respondents, nine members fully completed all sections of the Profile Survey. Feedback on the content of each section and the survey's execution was invited and collected from the UPHN membership.

The progress of the CPPHU Trial was presented to the UPHN membership in November 2019. This presentation covered the development of the Profile Survey, preliminary results gathered from the LPHUs and the lessons learned. Feedback was collected after the presentation.

The result of this iKT process was a Profile Survey that has been pre-piloted and trialed among the UPHN members. The development and implementation of the CPPHU survey identified three critical questions that require further investigation before a comprehensive Profile Survey for PHSSR in Canada can be finalized and fully established. These questions and their potential solutions as identified by the iKT Collaborative are outlined below.

Critical Questions Encountered During Survey Development

During the development of the Profile Survey, three key questions were identified by the iKT Collaborative for which the field of PHSSR in Canada has not supplied ready-made answers and which have complicated the development of the survey. Specifically:

1. How should we define a LPHU?
2. How should we classify public health programs and services?
3. How can we operationalize resource allocation to programs and services?

These questions are not easily answered, due in large part to the variability in structure and function of Canada's public health system from province to province and region to region.

Preliminary temporary answers to each of these questions were supplied by the iKT Collaborative in order to advance initial CPPHU development and trial. However, these temporary answers need to be fully addressed before a Profile Survey instrument can be finalized for PHSSR in Canada. Each of the following three sections summarize the ad hoc solutions proposed for the CPPHU trial. Avenues for more robust solutions are discussed later in the document.

1. How should we define a public health unit?

When the iKT Collaborative initiated the development and trial of CPPHU, they considered the LPHUs that the Profile Survey would gather information on. Due to the variability in structure and function among Canada's public health systems, a standardized definition of LPHU does not yet exist.

Much of the variability of the public health system in Canada arises from the regionalization of Canada's health system at the provincial and local levels. The provisions of the *Constitution Act* of 1867 placed the responsibility of health care largely with the provinces and territories, giving rise to essentially 13 independent health systems unified by fiscal federalism.²⁴ The responsibility of public health, however, has never been clearly defined, with both federal

and provincial/territorial governments holding partial responsibility.²⁴ In addition, local regionalization occurred in most health care systems throughout Canada in the 1990's and 2000's, with the provinces/territories designing different decentralized formats.²⁵⁻²⁷ Later, the efficacy of this decentralized approach was called into question, resulting in re-consolidation within in a number of provinces.²⁸ Some provinces, including Prince Edward Island, Alberta and Saskatchewan, have eliminated local regionalization altogether, opting for a centralized model of health care.^{25,28}

Due to there being 13 different public health systems and varying levels of local regionalization within each province and territory, defining the elementary units of Canada's public health system is challenging. The CPPHU trial drew attention to three key issues. First, the organizational structure of public health ranges from an independent department to being embedded within wider governmental and health administrative organizations. Second, the scale of public health operations varies from a whole department in large cities to being as small as a unit of one MOH/MHO and their immediate staff, in smaller cities. Third, while some MOH/MHOs play more of an advisory role, others retain executive power over public health offices that provide direct services to their citizenry.

Developing suitable terms and definitions was critical to ensure that the various systems were represented and that the survey questions were applicable from all perspectives. The NACCHO NPLHD survey use the term "Local Health Department" (LHD), which they define as "an administrative or service unit of local or state government concerned with health and carrying out some responsibility for the health of a jurisdiction smaller than the state."^{29, pg.3} Public health systems in Canada are ambiguous entities to which this term and definition does not directly apply; therefore, the iKT Collaborative opted to develop a term more specific to the Canadian context.

The iKT Collaborative undertook an iterative process to co-develop an appropriate term and corresponding definition to define Canada's public health systems. Both "Public Health Department" and "Public Health Authority" were initially considered, but these did not resonate with the UPHN members, especially those whose public health systems were embedded within a larger health department or authority. The iKT Collaborative have tentatively opted for "Public Health Unit" in the hopes that "unit" is inclusive enough to fully capture the aforementioned variability.

For the purposes of the CPPHU trial the research team defined a LPHU as:

A department, unit or team whose primary function is to carry out one or more core public health functions, including: health protection; health surveillance; disease and injury prevention; population health assessment; health promotion; and emergency preparedness.³⁰ A public health unit may be a stand alone entity or exist as part of a wider health or governmental agency.

Core public health functions were taken from the 2003 report, *Learning From SARS: Renewal of Public Health in Canada*, also known shorthand as the "Naylor Report", which has been widely used to conceptualize public health operations in Canada.³¹

2. How should we classify public health programs and services?

Rather than use the NACCHO NPLHD list or the core public health functions from the Naylor Report (which were too vague), the iKT Collaborative decided to investigate international public health frameworks. ICHI was identified as a viable alternative.⁶ The ICHI framework was adapted for public health in Canada.

The ICHI framework was used by the research team to try and fill in the gaps in the NACCHO NPLHD survey and in the Naylor Report. The research team wanted to curate a comprehensive, universal list of public health programs and services using ICHI. Since 2007, ICHI has been developed by the World Health Organization Family of International Classifications (WHO-FIC), with new versions released annually.²² ICHI is an overarching classification system for health, containing more than 7,000 interventions ranging from primary care to public health.²³ Notably, once ICHI is available publicly, it will compliment WHO-FIC's other classification systems, including ICD.³⁴

ICHI uses three axes are used to describe interventions: "Target (the entity on which the Action is carried out), Action (the deed done by an Actor to the Target) and Means (the processes and methods by which the Action is carried out)."^{35,p.6} For public health descriptions, the Target for Health-related Behaviors and the Target for the Environment (two of the four Target categories) and the four categories of Actions (Diagnostic, Therapeutic, Managing, and Preventing) are the main categories that describe public health and population health interventions.³⁴ As described in ICHI Working Paper,³⁶ the Target and Action categories applicable to public health were condensed and modified while the Means were omitted due to lack of applicability to the field of public health.

Working with the Action axis to identify key categories of public health actions, each of the ICHI Action categories was thoroughly reviewed. Once reviewed, Action items were selected based on their provided definition and applicability to public health. Where needed, Action items were collapsed to create broader Action categories. The end product is 14 public health Actions.

Once the new set of Actions were identified, the research team moved ahead with identifying core Targets of public health programs and services. The research team wanted to find a comprehensive set of public health Targets that can be used to capture the range of public health programs and services implemented across Canada. The list of public health Targets has to be universal enough that any combination of the 14 Actions can be used to capture the various activities that are employed to deliver Target interventions.

However, due to some tensions around the ICHI framework (e.g., ICHI priorities versus domestic priorities, ICHI detail versus survey feasibility, and ICHI theory versus Canadian practice), the research team got support from Dr. Neudorf in finalizing the core public health targets (i.e., family health, health promotion and injury prevention, environmental health, inspection and emergency preparedness, and disease prevention and control). For more details on steps taken to identify Actions and Target, see ICHI Working Paper.³⁶

The research team then created a survey battery that could capture how Targets and Actions can be combined by local public health providers. In order to capture equity

⁶ WHO first developed the International Statistical Classification of Diseases and Related Health Problems (ICD) in 1948, and has since been revised and published several times to reflect advancements in the medical field.³² Although the tenth reiteration has been modified for Canadian Use (the ICD-10-CA), this classification unfortunately does not track public health interventions.³³

considerations, an additional set of questions asked whether efforts were deliberately targeted to one or more at risk groups (e.g., minorities, women, children).

3. How can we accurately measure resource allocation to programs and services?

An important component of PHSSR is measuring the inputs being allocated to public health. Measuring the allocation of monetary and human resources to specific public health programs and services, however, is not an easy feat. LPHU budgets are not necessarily separated from broader health budgets or distinguishable by individual programs and services. In addition, with public health's close relationship with medicine, interventions often receive resources from both sectors, making it difficult to distinguish who contributed what.⁷

Additionally, trying to identify exactly how many resources or full-time equivalent staff were allocated to a given public health intervention is not a straightforward task. Public health operations are not usually organized in terms of the incremental billing for the provision of specific services (in contrast to other forms of clinical practice). Health promotion activities, for example, are likely to be multifaceted, involve contributions from many staff, and need to be enacted for an extended period of time before any impact is expected. Individual staff are also likely to be responsible in full or in part for many different interventions.

In the NACCHO NPLHD survey, resource allocation is only captured in one section, "Occupations Employed."²¹ This section asks for participants to report whether certain categories of public health workers are currently employed by the LHD, and if so, to report the number of full-time equivalents that are currently employed. This "Occupations Employed" section was adapted to the Canadian context by amending the occupation list to reflect the titles and positions that are prominent in Canada.

While the NACCHO NPLHD survey inquires about the LHD's overall expenditures, it does not include questions about how these resources are allocated to the various programs and services. This is a significant inhibitor to the NPLHD survey as comparing the resources allocated with the consequent health and social outcomes is an important indicator for determining the success of both medical and public health interventions.

To compensate for this shortcoming, Dr. Neudorf suggested the inclusion of a new section for the Profile Survey inquiring about the resources allocated by LPHUs to a list of core public health functions. The functions listed (population health assessment, health surveillance, health promotion, disease and injury prevention, health protection, and emergency preparedness and response) were adapted from the Naylor Report.³¹

The UPHN members that participated in the pre-pilot generated significant feedback for the resource allocation section. First, knowledge users asked for flexibility regarding whether amounts were reported for calendar or fiscal year to reflect varying accounting practices across the country. Second, MOH/MHOs were more likely to be able to speak in relative terms regarding the particular areas that resources were allocated to and the trend over time rather than in specific numbers. Third, there were concerns over gaining authorization to share financial information as well as the potential sensitivity of the data.

Based on the feedback from the UPHN members, the research team amended the survey to ask for the proportion of resources allocated per core public health function. However, the

⁷ For example, funding for immunization programs, depending on the jurisdiction, may be split between public health (i.e., public health nurses) and/or health care (i.e., RNs and LPNs).

proportions reported are rough estimates as it is not standard practice for LPHUs to report their resources by core public health functions.

Lessons Learned and Directions for Future Investigation

Tensions in defining a public health unit

Although the term “Public Health Unit” has been selected for the time being, the UPHN membership is not fully satisfied with this term. There are problems with the ad hoc definition that need to be addressed by future consultation and review, including: Does it encompass the structure (i.e., organization, scope, power) of all public health systems? Does it include the basic/standard functions of all systems? Does it identify discrete and comparable systems of authority and/or practice? The lack of clarity around these questions poses serious problems, as it hinders learning between jurisdictions and undermines the generalizability of Canadian experiences.

The final definition needs to be cognizant of the differing perspectives of researchers and knowledge users. Defining “LPHUs” is critical to PHSSR in Canada as it will help researchers to identify the essential unit elements in diverse settings, enabling comparative research. While the definition needs to consider the goals of research, it also needs to be reasonable to knowledge users. The discontinuity in Canada’s public health system has given rise to unique LPHUs that utilize locally defined concepts, relationships and structures. This definition needs to reasonably refer to the various units and their arrangements in order to conduct comparative research.

To inform this question, two courses of action are recommended. First, a systematic review should be conducted to investigate the term “public health unit” and related terms, to identify what these terms are ordinarily used to describe and how they vary across jurisdictions. Second, consultation with different members of the country’s LPHUs will aid in further understanding the differences in structure and function. These two steps will aid in identifying an abstract term that can be systematically applied and analyzed throughout the country.

Tensions in defining public health programs and services

Although multiple attempts have been made to define Canada’s core public health functions;^{30,37,38} there is no single authority that defines the scope of public health practice in the country.³⁹ Litvak et al. (2019), have attempted to bridge this gap by developing a typology of public health interventions in Canada, but it excludes preliminary needs assessment measures such as surveillance.

The lack of a unifying public health intervention classification scheme is reflected in the variability of the programs and services offered by different jurisdictions across Canada. Certain LPHUs may administer particular programs and services based on their resources or local priorities; however, those offered in other LPHUs may be determined by their perspective of the role of public health. For example, in Ontario, vaccines are administered by public health Registered Nurses (RNs), but in other jurisdictions throughout the country, this is often handled by RNs and Licensed Practical Nurses (LPNs). In order to conduct national-level comparative research, it is important to draw on a standard list of programs and services that are not delimited by local approaches to public health practice.

In the United States, the CDC has developed the 10 essential public health services, which includes the activities that should be provided by all jurisdictions.⁴⁰ These essential services were first identified in 1994 by the Core Public Health Functions Steering Committee,

which included representatives from public health service agencies and other major entities in public health.⁴⁰ The development of this list provided a means to evaluate the capacity of public health systems to provide these services.⁴¹ The National Public Health Performance Standards “provide a framework to assess capacity and performance of public health systems and public health governing bodies. This framework can help identify areas for system improvement, strengthen state and local partnerships, and ensure that a strong system is in place for providing the 10 essential public health services.”^{42, para 1}

To answer the question of how we should define public health programs and services in Canada, two courses of action are recommended. First, a Steering Committee, similar to that which was established in the United States, could be formed in Canada, consisting of representatives from the LPHUs and individuals from public health organizations such as the Public Health Agency of Canada. The varying perspectives of this conglomerate would be able to compare and contrast the core public health programs and services provided throughout the country and determine what the essential/standard ones ought to be.

Second, when attempting to adapt the ICHI framework to the Profile Survey, the iKT Collaborative encountered some challenges. The ICHI framework, as applied to public health in Canada, should be further revised and developed. The research team’s adaptation of the ICHI scheme is a work in progress and several issues have yet to be addressed.³⁶

Tensions in operationalizing resource allocation to programs and services

It is important to measure resource allocation to public health programs and services for two main reasons: (1) to determine their cost-effectiveness; and (2) to operationalize their distribution. Working with NACCHO NPLHD data, Mays and Mamaril (2017) found that just a 10% increase in investment in local public health was associated with a significant reduction in adjusted Medicare expenditures per person after 1 year and was significantly further reduced after 5. Furthermore, for each dollar invested into local public health, Medicare could expect to receive a 10% return on their investment after 5 years.

It is not currently possible to do the same kind of analysis at Mays and Mamaril in Canada. Resource allocation to health and public health programs and services at the provincial-level in Canada has been tracked in the National Health Expenditure Database since 1975,⁴³ however, the objective of this database is not to measure public health expenditure per se, and it does so in ways that do not reflect the way it is actually organized and practiced in Canada. For example, it bundles community mental health programs, drug safety, and occupational health programs together with core public health funding resulting in estimates that are misleadingly high. It also does not report any amounts at the local level.

According to a report by the Canadian Senate, the health care system “only accounts for 25% of health outcomes regardless of the level of funding it receives,” while 50% of health can be attributed to the social determinants of health^{44, pg.7} Dutton, Forest, Kneebone and Zwicker report that increased social spending was positively associated with provincial-level population health measures, but that the same is not true for health spending.⁴⁵ Given that the aim of public health is primarily to operate on the social determinants of health, it stands to reason that returns to public health are more likely be positive than they are for the health system as a whole.

As detailed above, there are two sets of significant hurdles that must be overcome in order to collect comparable data on public health, financial and human capacity. First, a systematic approach has to be devised for separating spending on the public health system from

spending on the health system generally. Second, innovation is needed to devise ways of differentiating allocation between different kinds of public health spending. In Section E of the CPPHU survey, we asked respondents to report what proportion of their resources (i.e., funding, FTEs etc.) roughly went to each of six widely recognized categories of activities.

Due to Canada's lack of advancement in data development/public health information systems, we lack the categories and techniques needed to operationalize resource allocation to programs and services. In contrast to our counterparts in the United States, we cannot determine the impact that public health spending may be having on the health and wellness of Canadians. Further consultation is needed with local public health leadership to determine how this kind of measurement can be effectively advanced.

Integrated Knowledge Translation

Although relationships have yet to be established between iKT strategies and positive outcomes,¹⁶ enablers and barriers to successful iKT partnerships have been identified. A scoping review by Camden et al. (2015), found three overarching themes that influence stakeholder engagement: (1) communication and culture (e.g., agreeing on goals and expectations); (2) power sharing (e.g., researchers and knowledge users having joint control over the research process); and (3) time, funding and resources (e.g., allocating sufficient financial resources to support stakeholder participation). Notably, scientific jargon was noted as a communication barrier, thus stakeholders need to be supported through appropriate training in order to participate and contribute.¹⁷

A scoping review by Gagliardi et al. (2016), further contributed to this topic and identified nine enablers and 15 barriers to iKT reported from 13 studies. Differing priorities among stakeholders, lack of understanding of or experience in iKT, and attitudes towards research were the three most commonly cited barriers, while continuous and varied opportunities for collaboration, strong leadership, and taking a phased approach to develop a shared language were the three most common enablers.

One strength of the iKT Collaborative that was struck for the CPPHU trial, was the existence of a Knowledge Broker (KB). KBs are individuals who link the researchers and knowledge users of iKT partnerships, facilitating communication and understanding.^{15,46} These individuals may originate from outside of the partnership and need to acquire the necessary internal tacit knowledge to work effectively, or they may be internal actors and this new task might disrupt other components of their role.¹⁵ The KB in the iKT Collaborative, Dr. Neudorf, successfully fulfilled the role of the KB by facilitating collaboration (e.g., scheduling meetings, suggesting appropriate consultants, etc.), and communicating appropriate updates/feedback that were conducive to each party's respective understanding.

Communication is cited as a critical factor in determining the success of a iKT partnership.^{16,17} Fortunately, the iKT Collaborative consisted of MOH/MHOs from Canada's urban centers and university researchers, all of whom understood the basic jargon associated with research and the health care system. Having a shared language promoted understanding between the two groups, which was bolstered by the KB. Having the researchers work closely and iteratively with the MOH/MHOs ensured that the concepts and terminology of the research team remained anchored in those used by clinicians.

A third strength of this iKT partnership was that the research priority was identified by the UPHN members and then the research question was co-developed by the iKT Collaborative.

When the research question is co-developed they are often more relevant to policy and practice, and the subsequent findings are more easily disseminated and implemented.^{15-17,19} It also ensured that the knowledge users were eager to participate actively over the entire course of the project.

Conclusion

This study has contributed to the first PHSSR Think Tank objective, data development and public health information systems, but more progress is required. Future PHSSR work in Canada should focus on taking the recommended steps previously discussed to answer the three questions identified in this paper. This information will inform future iterations of the Profile Survey. Through the CPPHU trial, a Profile Survey was developed, which will enable the UPHN and its associated researchers to conduct comparative research on local public health outcomes in order to guide and improve the delivery of public health services and systems for Canadians.

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Appendix A. Development and Implementation of the Profile Survey

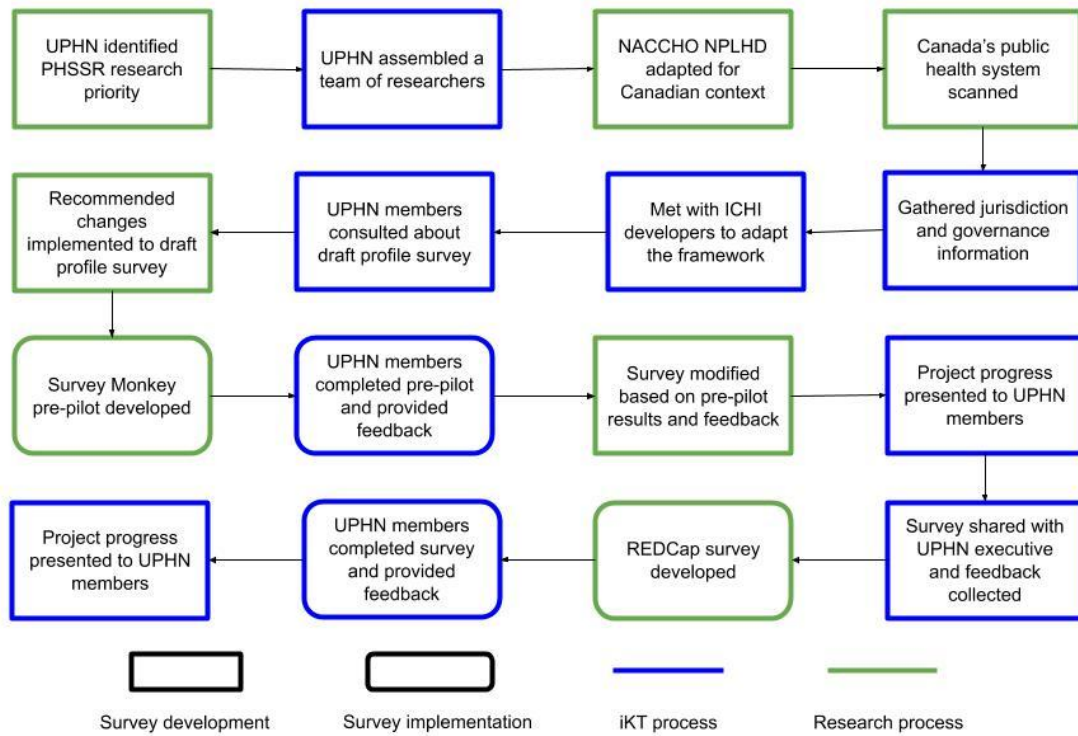


Figure A1. iKT development and implementation involved in the creation of the Profile Survey.

Note: This figure outlines the process taken to develop and implement the Profile Survey. Square and rounded boxes indicate survey and implementation processes, respectively. Blue and green lines indicate integrated knowledge translation (iKT) and research processes, respectively. Urban Public Health Network (UPHN); Public Health Systems and Services Research (PHSSR); National Association of County and City Health Officials (NACCHO); National Profile of Local Health Departments (NPLHD); Integrated International Classification of Health Interventions (ICHI); Research Electronic Data Capture (REDCap).

Appendix B. Pre-pilot Survey Monkey Survey Questionnaire

Appendix C. Piloted RedCAP Profile Survey Questionnaire