Access to Evidence-based Research for Unaffiliated Healthcare Providers and Policymakers: a Canada-wide Environmental Scan with Consideration of Options for Nova Scotia

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Introduction

The goal of this environmental scan is to identify the type of health information models implemented across Canada that allow unaffiliated healthcare providers and provincial health ministry employees to access published evidence-based health research. The audience for this report is primarily health information decision-makers within Nova Scotia, but the scan and discussion may be of interest to a wider group of information professionals who are struggling with similar issues in other jurisdictions.

> **Unaffiliated healthcare provider** refers to those who deliver healthcare but who have no affiliation with an academic institution or health authority which would provide them access to a formal information service, direct subscriptions, or an agreement to access such services through another organization. In many jurisdictions this group may encompass healthcare providers in private practice or working in facilities like rehabilitation centres, mental health facilities, long-term care institutions, and nursing homes.
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> **Health ministry** is used throughout this report when speaking of the provincial body responsible for health-related policy, even though individual provinces may use variant terms such as "department".
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> **Policymaker** refers to employees working at a provincial health ministry who are responsible for researching and drafting health policy for a jurisdiction.

The impetus for this scan stems from inquiries from constituents of unaffiliated groups to the W. K. Kellogg Health Sciences Library, which is the largest health library in Nova Scotia and is part of the Dalhousie University Libraries system. Based on the range of health programs offered at Dalhousie University, it is not surprising that healthcare providers dealing with information access issues would reach out to the Dalhousie Libraries for assistance. Unfortunately, library licensing agreements with publishers limit subscription resource and full-text article access solely to Dalhousie University students, faculty, and staff. The assistance the library can offer to healthcare providers is therefore very limited.

This scan will help identify information access models from different regions across Canada and explore what progress has been made toward providing access to research evidence for unaffiliated healthcare providers. This scan will not investigate the details of the financial or human resources that go into each model to make it successful; that could be the subject of a future report. The hope is that the successes and challenges in other jurisdictions will inform how information disparities in Nova Scotia might be addressed and provide a template of models that may enable our groups of interest to access high-quality, published evidence-based health research.

The importance of applying evidence-based research to healthcare decisions and policymaking has been recognized for decades. Since the 1990s, governments have emphasized the importance of developing an evidence-informed healthcare system for citizens (Health Canada, 2004a; Health Canada, 2004b). While the intervening years have seen considerable strides in the application of evidence in all aspects of health-related policy and decision-making, significant barriers remain to bridging the

"evidence-policy-practice" gap. A study by Barr-Walker found that "the use of evidence-based information remains underutilized in practice, and research plays a limited role in the formulation of policy and interventions in public health" (Barr-Walker, 2017, p. 69). The barriers encountered by decision-makers and policymakers to using evidence are numerous (Jakobsen et al., 2019; Masood et al., 2020), but through a library lens, the most relevant and significant to bridging the information gap include: availability of and access to published scholarly research (e.g. databases and full-text scholarly articles), provision of librarian support services, and skills in seeking and appraising evidence-based literature (Jakobsen et al., 2019; Oliver et al., 2014).

One study reports that "having access to research evidence is a basic requirement for effective implementation of evidence-informed practices...A natural recommendation is to improve access and facilitate access to evidence in policy-analysis settings" (Bédard & Ouimet, 2017, p. 186). Studies have also found that an organization that provides infrastructure supporting access to evidence sends a message that the organization values evidence and in turn influences whether evidence is used in policy (Bédard & Ouimet, 2017; Oliver et al., 2014).

Canadian Context

In the Canadian healthcare system, the responsibility for developing evidence-based health legislation, regulation, and policy generally resides with provincial and territorial health ministries under the federal umbrella of the Canada Health Act (Canada Health Act, 1985). While the concept of evidence-based healthcare has been embraced in Canada, the reality of a decentralized healthcare system has presented challenges to providing equitable access to evidence-based information in all jurisdictions and to all who need it. Despite best efforts, there remains a significant divide between provinces and territories, and between healthcare providers and policymakers who have access to a formal health library or information service, and those unaffiliated who must rely on open access content that is free to all or on informal channels (e.g. contacting the author directly).

Without a single national public health system or national network of health libraries, there is no coordination across the country. Thirteen diverse provincial and territorial systems and a combination of federal and provincial arrangements make information inequity across the country almost inevitable. In 2008 there was a concerted effort to address this inequity with the proposed development of a Canadian Virtual Health Library/Bibliotheque Virtuelle Canadienne de la Santé (Canadian Virtual Health Library: Environmental scan, 2008). The goal was to establish a national strategy to address disparities in health information services and access for all healthcare providers wherever they were in Canada and whatever their affiliation. This virtual service was to include desktop access to resources for healthcare providers supplemented by training and assistance from information experts in locating and appraising the best available evidence.

This plan initially received considerable support from the Canadian Health Libraries Association, the Network of the National Library of Medicine and Canada Health Infoway (Bayley & McKibbon, 2012; Ganshorn & Giustini, 2017). However, long-term funding could not be secured to make the initiative sustainable, and it was abandoned in 2014. This left jurisdictions to continue their own path, each having to build partnerships independently and identify resources and infrastructure to support information access. Some provinces made considerable strides in providing access to evidence-based research (Murphy, 2017; Truax et al., 2018); these were usually provinces with one or more medical schools who had health information professionals with the expertise to spearhead an information initiative. Other jurisdictions made little to no headway in this area.

In recent years many regions of the country have undergone a significant restructuring of their provincial healthcare systems with the trend moving away from multiple health regions/authorities within a province or territory, to fewer, more unified configurations. In some provinces, including Nova Scotia, this has led to the centralization of hospital-based library services which has improved access to research and information support for affiliates of the health authorities. Despite this increased access, there remain pockets of healthcare providers and policymakers who reside in an "information desert." These groups often go unseen, with no information champion, and experience "a severe lack of equity between the extent of quality online information resources available to affiliated versus nonaffiliated health professionals" (Matsoukas, 2014, p. 401).

A 2013 study by Léon et al. looked at resources and services at health ministries across Canada and found that around 50% of provincial and territorial jurisdictions maintained some level of library service, providing access to published health research for policymakers. In the intervening years, most health ministry libraries have closed their doors and British Columbia holds the distinction of being the only province to continue to maintain a health ministry library. In the jurisdictions that closed their health ministry library, several were able to establish alternative health information services by arranging agreements with other information agencies. The remaining jurisdictions were not so successful, with no information service taking the place of the health ministry library.

Methods

The environmental scan was considered "quality improvement" per the Dalhousie University Research Ethics Board and did not require ethics approval. Data were primarily collected through semi-structured telephone interviews, the majority of which were conducted between September and December 2019. Additional data were collected through email correspondence and from service and organization websites.

In September 2019, an email was distributed to the Association of Faculties of Medicine of Canada (AFMC) Librarian's listserv. This initial email invited medical librarians to participate in telephone interviews about access to published, evidence-based research for health ministries and unaffiliated healthcare providers in their jurisdiction. Although AFMC librarians are not present in every province and territory, the AFMC listserv was selected as a starting point for the environmental scan because it was assumed that the member librarians would be knowledgeable about and well connected to their jurisdiction's health information field. The intent was to leverage the network of the initial participants to identify additional relevant contacts.

Interview questions were tailored to the specific roles and jurisdictions of participants. Participants were asked about existing internal information services for health ministry staff, as well as any service partnerships, resource-sharing networks, or informal methods of accessing evidence-based health research for those without formal access to academic or health authority library services. Through the initial telephone interviews, additional relevant librarians and information professionals were identified and recruited. One or more participants from each province and territory were interviewed, except for the Yukon, where no appropriate contact could be identified. Interview participants included librarians and information professionals working in academic institutions, government departments, and resource-sharing networks across Canada.

Telephone interviews were transcribed and fact-checked where necessary. In several cases, follow-up emails and interviews were required to clarify interview data with participants. The qualitative data were then analyzed and summarized at a high level. Information was also obtained from websites

throughout the scan to help fill knowledge gaps as needed. The aim of this environmental scan was not to undertake a comprehensive inventory of all the services across Canada that enable health ministries and unaffiliated healthcare providers to access evidence-based health research. Rather, the scan reports on some of the mechanisms currently in place. Additional services not discussed in this report may exist.

Results

Results by Province/Territory

The following is a brief, high-level summary of scan findings by province or territory from west to east. Health information services that support health ministry employees or unaffiliated healthcare providers have been identified. The differences across the country are evident. Some healthcare providers may have access to information services or resources through national/provincial licensing boards, or association memberships (e.g. Canadian Medical Association) if they have them. Information services from licensing boards and associations vary widely across health disciplines and are limited to a single provider group. These information services are not detailed in this report but may be a valuable subject for a future scan.

Note that the results below reflect the situation at the time of interviews, most of which took place between September and December 2019. Since then, access to published health research may have changed and information access issues may have been exacerbated due to the COVID-19 pandemic.

British Columbia

The British Columbia Ministry of Health maintains its own library. The library primarily serves the Ministries of Health, Children and Family Development, and Mental Health and Addiction. Library services are provided on-site and electronically, and include database access, print materials, document delivery, literature searching, research assistance and current awareness. The Ministry of Health Library is also a member of the Electronic Health Library of British Columbia (eHLbc), a consortium that offers a centralized approach to licensing electronic health resources. Unaffiliated healthcare providers may find minimal research support through the British Columbia Legislative Library, professional associations such as the Physiotherapy Association of British Columbia, or licensing boards such as the College of Physicians and Surgeons of British Columbia.

Alberta

The Alberta Ministry of Health does not maintain its own library, but ministry staff are supported by the Alberta Government Library. The Government Library serves all provincial government ministries within the province through services such as document delivery and access to databases and ejournals. The Alberta Government Library is also a subscribing member to the Health Knowledge Network (HKN), which negotiates access to electronic health resources in Alberta, Saskatchewan, and Manitoba. Ministry of Health staff are also supported by the Alberta Health Research Services Unit, which provides reference and research support, and purchases materials such as monographs and journal articles as needed. Unaffiliated healthcare providers may find research support through their licensing boards, one example being the College and Association of Registered Nurses of Alberta (CARNA), which is also a member of HKN.

Saskatchewan

The Saskatchewan Ministry of Health does not maintain its own library, but ministry staff are supported through the Saskatchewan Health Information Resources Program (SHIRP). SHIRP is a resource-sharing

program of the University of Saskatchewan that licenses a subset of the university library's electronic health resources for use by various groups.

The groups supported by SHIRP include licensed healthcare providers in Saskatchewan, all postsecondary students and employees in the province, and designated health-related organizations. The licensed healthcare provider group encompasses Ministry of Health staff as well as unaffiliated or private practice healthcare providers working in the province. SHIRP services include access to databases, ejournals, ebooks, mobile device apps and document delivery. SHIRP was established in the early 2000s and is supported by funding from the Ministry of Advanced Education but administered by the University of Saskatchewan. SHIRP subscribes to a substantial amount of content through HKN.

Manitoba

The Manitoba Ministry of Health and Seniors Care does not maintain its own library, but ministry staff are supported through Manitoba's Health Information and Knowledge Network (MHIKNET). One of the MHIKNET librarians has a primary focus on supporting the Manitoba Ministry of Health and Seniors Care and is based at the University of Manitoba campus to maximize access to published research. MHIKNET serves ministry staff, fee-for-service physicians, and staff of most rural health regions in the province. Services include literature searching, document delivery, current awareness, and education and training. Funding for MHIKNET is provided by the Manitoba Government and the regional health authorities outside of Winnipeg. MHIKNET subscribes to a substantial amount of content through HKN.

Yukon

The Yukon Department of Health and Social Services does not maintain its own library, but the department is a member of the Electronic Health Library of British Columbia (eHLbc), through which they license select electronic resources.

Northwest Territories

The Northwest Territories Department of Health and Social Services does not maintain its own library, but department staff are supported through an unofficial agreement with the Northwest Territories Legislative Library. Considered the secondary clientele of the Legislative Library, department staff are supported through services such as reference, document delivery, and direct purchasing of individual journal articles. The Legislative Library also makes an effort to negotiate electronic resource licenses for all Government of Northwest Territories employees, including Department of Health and Social Services staff.

Nunavut

The Nunavut Department of Health does not maintain its own library, but it subscribes to *UpToDate* for use by all Department of Health staff in the territory. There is also an Information Coordinator who receives and processes information requests from Department of Health staff by conducting research in open access resources or forwarding document delivery requests to the Nunavut Legislative Library. With an unofficial secondary mandate to support all government staff in the territory, the Nunavut Legislative Library supports Department of Health staff through research using open access resources, document delivery, and purchasing individual copies of journal articles.

A contract between the University of Manitoba and the Government of Nunavut also provides support to health sciences centres and Department of Health employees stationed in the Nunavut region of Kivalliq. Specific services provided through this contract include all the MHIKNET services with an additional book curation and delivery service for the health sciences centres.

Ontario

The Ontario Ministry of Health does not maintain its own library, but staff from the Office of the Chief Medical Officer of Health, Public Health (OCMOHPH) receive library services from the Public Health Ontario (PHO) Library per a formal Service Level Agreement. The PHO Library is primarily an internal service that serves researchers and program staff, but it also serves OCMOHPH staff and medical students and residents on placements at PHO. PHO Library services include access to electronic and print resources, searching and evidence synthesis support, document delivery, current awareness, and training, among other services. Unaffiliated healthcare providers may have access to resources through some professional associations and licensing boards in Ontario that maintain library support, such as Cancer Care Ontario and Health Quality Ontario.

Quebec

In Quebec, the Ministry of Health and Social Services does not maintain its own library, but ministry staff are supported through the Integrated University Health and Social Services Centres (CIUSSS). The CIUSSS library team supports Ministry of Health and Social Services staff through services such as document delivery, literature searching in open access resources, and print materials.

New Brunswick

The New Brunswick Department of Health does not maintain its own library, but it subscribes to *Micromedex* for use by all Department of Health staff in the province. Department staff may also find minimal research support through the New Brunswick Legislative Library. A license to the *Cochrane Library* is available to all residents in the Atlantic Provinces through a GeoIP license negotiated by the Council of Atlantic University Libraries (CAUL-CBUA).

Prince Edward Island

The Prince Edward Island (PEI) Department of Health and Wellness does not maintain its own library. The PEI Government Services Library serves all provincial government employees through a print collection that is accessible through the PEI public library catalogue. A license to the *Cochrane Library* is available to all residents in the Atlantic Provinces through a GeoIP license negotiated by the Council of Atlantic University Libraries (CAUL-CBUA).

Nova Scotia

The Nova Scotia Department of Health and Wellness does not maintain its own library. Unaffiliated healthcare providers may access a Regional Health Professional Information Service from the W. K. Kellogg Health Sciences Library for document delivery at no cost. A fee-based literature searching service is also available. A license to the *Cochrane Library* is available to all residents in the Atlantic Provinces through a GeoIP license negotiated by the Council of Atlantic University Libraries (CAUL-CBUA).

Newfoundland and Labrador

The Newfoundland and Labrador Department of Health and Community Services does not maintain its own library. A license to the *Cochrane Library* is available to all residents in the Atlantic Provinces through a GeoIP license negotiated by the Council of Atlantic University Libraries (CAUL-CBUA).

Information Services for Health Ministries

The table below presents a snapshot of information services across the country that support health ministry employees, few of which still maintain their own library. Support from affiliated government services such as government-wide libraries, legislative libraries, or research units have sometimes helped to fill the information gaps in selected jurisdictions. External information services, such as those maintained by universities, have also helped to provide health ministry employees with access to health information research. Where no ministry library, government support, or external information service exists, health ministry employees often have to rely on open access content or informal channels of access.

Province or Territory	Health ministry library	Affiliated government departments that offer support to health ministry employees	External information services that offer support to health ministry employees
British Columbia	British Columbia Ministry of Health Library		Electronic Health Library of BC (eHLbc) (British Columbia Ministry of Health Library is a member)
Alberta		Alberta Government Library; Alberta Health Research Services Unit	Health Knowledge Network (HKN) (Alberta Government Library is a member)
Saskatchewan			Saskatchewan's Health Information Resource Program (SHIRP)
Manitoba			Manitoba's Health Information and Knowledge Network (MHIKNET)
Yukon			Electronic Health Library of BC (eHLbc) (Yukon Department of Health and Social Services is a member)
Northwest Territories		Informal support from the Northwest Territories Legislative Library	
Nunavut		Informal support from the Nunavut Legislative Library	Agreement with University of Manitoba Health Sciences Library for staff in the region of Kivalliq
Ontario		Public Health Ontario Library (for Office of the Chief	

		Medical Officer of Health, Public Health)	
Quebec			Integrated University Health and Social Services Centre (CIUSSS)
New Brunswick		Minimal support from the New Brunswick Legislative Library	
Prince Edward Island		Prince Edward Island Government Library	
Nova Scotia			Regional Health Professional Information Service
Newfoundland and Labrador			

Table 1: health information support options for Canadian health ministries

Information Services for Unaffiliated Healthcare Providers

Unaffiliated healthcare providers have very different options for access to scholarly health information depending on the jurisdiction they call home. In the prairie provinces the large consortia have made either direct support to independent healthcare providers a component of their program (SHIRP), or indirect support through inclusion of associations and licensing bodies (HKN and eHLbc). In most other parts of the country unaffiliated healthcare providers largely must rely on open access health information or some informal arrangement.

In a few cases, licenses for individual resources have been negotiated for all residents of a province and access provided by GeoIP (any computer in a geographic region identified by its IP address). For example, a GeoIP license to *Cochrane Library* is available to all residents of the Atlantic provinces. In other cases, licenses for a single product have been negotiated and made accessible to all healthcare providers in a province or region, by username and password. In Manitoba, a provincial license to *UpToDate* is accessible to all healthcare providers in the province. These and a few other examples are the exceptions.

As mentioned earlier, discipline-specific licensing boards and associations sometimes provide their members with information resources and/or services, but they are sporadic and vary widely across jurisdictions and practice disciplines. Provincial examples include the Physiotherapy Association of British Columbia, the College of Physicians and Surgeons of British Columbia, Cancer Care Ontario, and Health Quality Ontario. National examples include the Canadian Medical Association, Canadian Nurses Association, and the Royal College of Physicians and Surgeons of Canada.

Additional Health Information Services in Canada

While conducting the environmental scan it became apparent that several information services and knowledge synthesis entities were available in addition to traditional library services, and it seems relevant to include them in this report. Some of the services are focused on providing information to individual healthcare providers through the auspices of memberships or associations, while others are focused on knowledge synthesis activities to further evidence-based policy and decision-making.

Knowledge Synthesis

Several knowledge synthesis initiatives established in the past decades incorporate services that support our cohorts of interest. Among other activities, they provide systematic reviews, evidence summaries, and other health knowledge products aimed at increasing knowledge translation into clinical practice. However, they do not provide access to the full text of original research papers used to create these knowledge products. Consumers of these services are assumed to have access to original research publications through their home institution or affiliation. As revealed in this scan, there are inequities of access across the country and this assumption leaves some regions with information gaps. Although these initiatives do not target our cohorts directly, they warrant mention for their variety and promotion of the value of evidence-based research. This is not an exhaustive list of knowledge synthesis services, and there may be additional provincial and national knowledge synthesis initiatives not outlined here.

Canadian Agency for Drugs and Technologies in Health (CADTH)	The Canadian Agency for Drugs and Technologies in Health (CADTH) is an independent, not-for-profit organization established in 1989 by the federal, provincial, and territorial governments (Canadian Agency for Drugs and Technologies in Health [CADTH], n.d.). CADTH supports Canadian healthcare decision-makers such as ministries of health, clinicians, and publicly funded healthcare delivery organizations through services such as health technology assessment reports, rapid response reviews, and environmental and horizon scans. CADTH has a primary research focus on drugs, diagnostic tests, and medical, dental, and surgical devices and procedures.
Strategy for Patient-Oriented Research (SPOR)	Launched in 2011, the Strategy for Patient-Oriented Research (SPOR) is an initiative that promotes the use of evidence-based research in health settings. A partnership between the Canadian Institutes of Health Research (CIHR), provincial and territorial governments, academic institutions, and other key groups, SPOR promotes patient-oriented research through activities such as funding research and establishing research hubs across Canada (Canadian Institutes of Health Research [CIHR], 2018). For example, Support for People and Patient-Oriented Research and Trials (SUPPORT) Units, located in 11 provinces and territories, provide data and training to stakeholders who are interested in conducting patient-oriented research (Canadian Institutes of Health Research [CIHR], 2020).
National Collaborating Centres for Public Health	The National Collaborating Centres (NCCs) for Public Health promote the use of scientific research and other knowledge to strengthen public health practices, programs, and policies in Canada (National Collaborating Centres for Public Health [NCCPH], n.d.). The six NCCs, first established in 2005,

	receive their operational funding from the Public Health Agency of Canada (NCCPH, n.d.). Some NCCs include their own information specialist and subscribe to several of their own electronic research databases. Others are affiliated with universities or other host institutions, enabling staff to access the library services of the affiliated institution (Lê, 2014).

Other Information Services of Note

Consortia	Services mentioned often during the environmental scan were the major consortia in the western provinces: eHLbc, HKN, SHIRP, and MHIKNET. These entities are usually centered administratively around an academic institution and are funded either on a cost recovery basis (e.g. HKN) or by a federation of stakeholders from government, health sector, and post-secondary institutions. Each consortium has a different mechanism for access. With SHIRP and MHIKNET, unaffiliated users can access resources directly, while HKN and eHLbc users do not access electronic resources directly. Instead, the consortia provide a centralized means of licensing resources for a variety of institutions and organizations. HKN is unique in that it negotiates access to health information resources on behalf of the health sector in the three prairie provinces.
Charitable and Non-Profit Organizations	The Community Scholars Program is a unique approach to accessing research literature that, while it does not serve our cohorts of interest, demonstrates that there are new ways to look at old problems of access for unaffiliated users: in this case, the not-for-profit community. Operating out of Simon Fraser University, Vancouver Island University, University of Northern British Columbia, and Thompson Rivers University, the Community Scholars Program supports staff of charitable and non-profit organizations in British Columbia. Program services include access to databases, ebooks, and reference works, as well as librarian support through consultations, workshops, and journal clubs. The service provides free access for up to 500 individuals who work at non-profits and charities registered in British Columbia and have a need to access published research, analysis, and publications to support areas of their work. The Community Scholars Program serves as an example of how an information access initiative can be developed to encourage evidence-based decision making in any field or discipline.
Additional Services of Interest	The Shared Library Services Partnership (SLSP) in Ontario does not serve our cohorts of interest, but it supports Ontario public health units that are without in-house libraries. SLSP services are primarily provided virtually and include searching and evidence synthesis support, research consultations, environmental scans, article retrieval, document delivery, desktop access to selected electronic resources, and training on a variety of

	topics. Funded and coordinated by PHO, SLSP is separate from the PHO internal library.

Discussion

There have been significant changes in the health information landscape in Canada over recent decades. Extensive health information networks have been established in British Columbia, Alberta, Saskatchewan and Manitoba, and these jurisdictions have made great strides in providing access to databases and published health literature to many healthcare providers in their province. Nonetheless, information gaps can persist (Stieda & Bačić, 2009). Without question the SHIRP model established in Saskatchewan has made the greatest inroads into solving the conundrum of how to provide health information for both affiliated and unaffiliated healthcare providers. Other jurisdictions across the country have not had the resources and culture necessary to achieve similar provincial health information initiatives. Several jurisdictions report having made the attempt, but not being successful.

When Léon et al. published their study in 2013 about health ministry libraries in Canada, seven of the thirteen provinces and territorial jurisdictions maintained a departmental library at their health ministry. All but one has since closed. Three of the six health ministry library closures were in the Atlantic provinces (New Brunswick, Nova Scotia, and Newfoundland and Labrador) and in each of these jurisdictions, no alternative health information infrastructure was put in place. Two jurisdictions in the Léon study had a centralized government library that served all government ministries in their province, and those two entities still exist in Alberta and PEI.

Ministry library closures during this period were often attributed to cost saving measures. However, there was also a lack of understanding of the extensive functions offered by the library (Ibragimova & Korjonen, 2019) and a mistaken assumption that access to scholarly research would be free for everyone on the internet. Piwowar et al. (2018) estimate that across all publication years, only 28% of all journal articles with a Crossref digital object identifier (DOI) are open access and available for free online. This demonstrates that the majority of journal articles with a DOI are hidden behind a paywall and not freely available to everyone.

That window of time might have provided an opportunity in each of these provinces to explore other information access options similar to those in other jurisdictions. A centralized provincial service, a government library serving the information needs of all ministries, or a negotiated information service arrangement with a health authority or academic institution, all would have been possible models that other jurisdictions have successfully implemented. Standards for health library services existed in the mid-2000s, but they could only serve as a guide to structuring minimum library services, and were hospital accreditation focused (Canadian Health Libraries Association, 2006). Recently revised standards take a broader view and address the need for health library services to support a wider range of information needs including the formulation of policy, strategic direction and governance in all health and social services institutions (Frati, Oja, & Kleinberg, 2020).

In the absence of a formal library service, unaffiliated healthcare providers have been motivated to seek out creative ways to access published health research. Some seek a formal appointment with a postsecondary institution through a faculty position such as preceptor, mentor, or adjunct. These positions frequently grant access to the institution's electronic resources and library services. This arrangement can sometimes create an unintended consequence of inequity of access between colleagues within the same organization. Another common route explored is requesting access to academic institution resources as an alumnus. This option is available only through a small number

of universities and in many cases, there is a lack of strong health content. For some with physical proximity to a nearby postsecondary institution, on-site access to scholarly content is often provided at specially designated computer workstations.

The information services, infrastructure, and funding models that were identified in this scan appear to be as diverse as possible, demonstrating that there is no single "best" way to go about setting up an initiative related to information access. However, in all the models we encountered, the expertise of librarians was central to the service development and delivery. It appears that to develop a sustainable model for access to published health information resources and services for unaffiliated cohorts, the optimum partnership would be between postsecondary, government and the health sector.

Possible Ways Forward for Nova Scotia

The information gap that exists for unaffiliated healthcare providers and policymakers is not a simple problem to solve. The possibility of one service that supports both cohorts is a complex undertaking, but as the SHIRP initiative demonstrates, it is possible under the right circumstances. A provincial virtual health information service would be the ideal, but if that option is not achievable, other options could also be considered for the cohorts of interest in this scan. Some of these options are presented below.

Provincial Virtual Health Information Service

The provincial virtual health information consortia established in the western provinces are admirable, but a similar model has not yet been achievable in Nova Scotia. In 2010-15 there was an attempt to create a Nova Scotia Virtual Health Library (NSVHL), which would have provided desktop access to a range of health information resources as well as professional librarian support services. This was an attempt to build on the existing Atlantic Health Knowledge Partnership that was in place as a licensing entity.

In 2015, the nine district health authorities in Nova Scotia merged into one health authority, creating Nova Scotia Health Authority. This amalgamation partially achieved the goal of the NSVHL, equalizing access across the province for Nova Scotia Health Authority affiliates, but no further steps were taken as the health authority was focused on this major internal transition. The momentum was lost to pursue further progress by bringing the Department of Health and Wellness and other unaffiliated groups into an NSVHL.

Previous to the NSVHL, an association-based virtual service called The Electronic Bookshelf was established through DoctorsNS for all its members. The initial intent was to expand this service to other health associations. The Electronic Bookshelf provided members with full library service including desktop access to databases, ejournals, and ebooks. It was also staffed by a librarian who conducted literature searches and lead research skills training. This service was in place for ten years before it was closed.

The concept of the NSVHL has lain dormant in the intervening years but with the establishment of the Nova Scotia Integrated Health Research and Innovation Strategy (IHRIS) in 2018, the potential exists to bring new energy to the discussion of a provincial health information service. A virtual service could bring health information resources to the desktop and provide librarian support, training, and expertise to all healthcare providers across the province.

Department of Health and Wellness Employees

Without a provincial virtual health information service in place, the Department of Health and Wellness could consider other, far less reaching, options. Determining the information needs and preferences of the ministry employees would be essential before any further steps could be taken to outline the best

way forward. If a partnership became desirable, the scope of service would have to be established, which, in the information context, could be on a continuum of basic to comprehensive.

Basic services could include document delivery, book loans, and information advisory consults. Comprehensive services could include desktop access to databases and full text articles, literature searching, systematic review support, and research skills training. Where the service falls on the continuum would determine the financial, staffing, and technical outlay required. Based on the models found in the scan, several options might be considered. The cost of each of these options would vary and would require a business plan that was beyond the scope of this report.

Embedded Librarian at an existing health sciences library (e.g. academic or health authority)	A librarian would be funded by the health ministry to provide information services to policymakers, while being situated at an existing health sciences library in the province. Exploration of access models and potential impact on licensing fees would have to be determined, but this cost sharing model has been proven to be successful in both Manitoba (e.g. MHIKNET) and Quebec (e.g. CIUSSS) and could work in either an academic or a health authority environment.
	Having librarians support health ministry staff from an established health sciences library enables them to profit from colleague support, engage in professional development, and license some of that institution's electronic content. This service model would require financial investment from the ministry to cover staffing, modified resource licensing costs, and technical support to potentially provide proxy access to selected resources.
Librarian on-site at the Nova Scotia Department of Health and Wellness	Librarian support would include mediated services such as literature searching, article retrieval, document delivery, and training and support. There would not be direct desktop access for department employees. We did not find a model like this in any jurisdiction. It has some similarities to the BC Ministry of Health Library service in that librarians are on-site at the health ministry, but it differs in that it does not offer desktop access to the policymakers themselves. It is a service mediated through the librarian and that circumvents the cost of subscribing to content.
	This service model would require financial investment from the ministry to cover staffing and some service fees for document delivery and fee-based searching services like DIALOG.
Desktop access to selected databases and research literature for department staff	In this model, department employees would have desktop access to selected health content but would not have access to librarian services such as literature searching, article retrieval, document delivery, and training and support. We found examples of this model where provincial virtual health information services existed (e.g. HKN and eHLbc) and a provincial health ministry became a subscriber.

	This service model would require financial investment from the department to cover resource licensing negotiation and costs, as well technical support to provide proxy access to selected resources.

Unaffiliated Healthcare Providers

For unaffiliated healthcare providers, the Regional Health Professional Information Service, currently available through the W. K. Kellogg Health Sciences Library, could be revitalized. This service has existed for many years, but with no dedicated staff it is currently provided in an "off the side of the desk" arrangement and is rarely promoted. It primarily includes free document delivery and fee-based literature searching. Exploration of possible grants and endowments to support and enhance this service may provide some avenues for expansion. This would allow for promotion of the service and new options such as outreach training for healthcare providers on effective evidence discovery and appraisal skills.

Conclusion

This scan increases awareness of some of the information service models that enable Canadian health ministries and unaffiliated healthcare providers to access scholarly health research. Each individual province and territory has taken a different approach to finding a way forward, and clearly there is no one "right way". The addition of federal initiatives like CADTH and SPOR fills some information gaps but also highlights the lack of coordination between the regions and federal initiatives. Increased awareness of these silos will hopefully result in more coordinated efforts to fill the remaining health information access gaps.

A significant theme within the findings of this environmental scan is that however a service model starts out, it must be nimble enough to grow and evolve over time. A model must respond as user needs change, and the demise of so many health ministry libraries may have been because they did not adapt to changing information landscapes. Librarians have been at the forefront of many health information sharing initiatives across the country. Successes like SHIRP, which was first brought to fruition by health sciences librarians in Saskatchewan (Murphy, 2017), are an inspiration for other jurisdictions.

Suggested next steps include identifying and analyzing the specific information needs of health ministry employees in Nova Scotia, as well as other unaffiliated healthcare providers in the province. The time may also be right to once again consider a provincial virtual health information initiative. Establishing a health information structure that is tailored to the specific needs of our communities in Nova Scotia is a long-term goal that could be achievable with the right commitment and with the key stakeholders on board.

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