Mapping Nova Scotia's Health Research Landscape: An Exploration of Provincial Support for Students and Researchers

Key Informant Interview and Website Analysis

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EXECUTIVE SUMMARY

In the context of a rapidly changing health research landscape that is characterized by increased competition and decreased funding, it is imperative that the Nova Scotia Health Research Foundation (NSHRF) plans its programs and services strategically. As part of the planning process, key informant interviews and website searches were conducted to develop a comprehensive understanding of the types of financial and non-financial supports that exist for students and researchers within the province. This report presents the findings of an analysis of these interviews and searches.

Undergraduate students are predominantly funded through competitive studentships at academic institutions. Supports for graduate students and postdoctoral trainees are slightly more diverse and extend to funding opportunities through health authorities, charities, and foundations.

Types of supports for career researchers include research establishment grants, internal grant competitions, and research chairs. Structures for supporting research commercialization also exist.

Through 26 key informant interviews it was determined that many considered their organizations to be small. Because of this limited funding capacity, internal funding competitions often prioritized early career researchers and opportunities to build internal capacity. Although many key informants conceded that their organizations were not directly influenced by the priorities set out by the NSHRF, they often mentioned a natural alignment between their strategies and those of the NSHRF.

Key informants reported that partnerships and collaborative activities between organizations in Nova Scotia are increasingly successful, although it was noted that some barriers do exist. A number of organizations are looking to use partnership opportunities to assist with the increasing need for matched funding.

Almost every key informant mentioned being impacted by changes in the provincial and national health research landscapes, and several reported adaptability strategies to address the changing environment.

While most organizations did not employ a formal evaluation framework to examine the success or impacts of their funding programs, a number of metrics were reported to be regularly tracked. Key informants relayed that metrics were typically used to inform future programming or present a case to decision-makers.

Overall, key informants described an environment with limited funding, where they are increasingly challenged to provide capacity development and compete with larger jurisdictions on the national level. Strategies for moving forward include expanding the use of partnerships, improving alignment between organizations, and developing additional methods for research promotion.

Introduction

In the context of a rapidly changing health research landscape that is characterized by increased competition and decreased funding, it is imperative that the Nova Scotia Health Research Foundation (NSHRF) plans its programs and services strategically. As part of the planning process, key informant interviews and website searches were conducted to develop a comprehensive understanding of the types of financial and non-financial support that exist for students and researchers within the province. This report presents the findings of an analysis of these interviews and searches.

Methods & Scope

To enhance the comprehensiveness of this report, two methods of data collection were used to assemble the evidence that would be analyzed: key informants and website searches. Key informants were contacted to schedule interviews in order to gather rich contextual information on how organizations within Nova Scotia's health research landscape are providing support to students and researchers. An effort was made to contact a sample of key informants that would allow for the analysis to be representative, but not necessarily inclusive, of the organizations that exist within Nova Scotia's health research landscape. For example, the sample does not include all of the provincial district health authorities, just the two with the highest levels of research activity. Key informants were identified by website searches and from a contact list provided by the NSHRF. Forty-four individuals representing thirty-nine organizations were contacted for an interview. Twenty-four interviews were scheduled and completed over the telephone. Two additional key informants provided written responses to the interview guide questions. Table 1 provides a summary of organizations represented by key informant interviews. Information on the programs and services provided by the NSHRF was used to supplement the analysis.

Website searches were also used to obtain information for the thirty-nine identified organizations. When an organization was represented by a key informant, website data was used to verify and further inform the responses provided in the interview. In cases where organizations are not represented by key informants, website data was used to inform the analysis if relevant information could be found. Where information from website searches was included in the analysis, it has been referenced accordingly.

Key informants were contacted via email with a request to set up an interview. If a response was not received within a week of the initial email, a follow up email was sent and an attempt was made to contact key informants by telephone. For five organizations, a second key informant was identified when it became clear that the first was not available. Interviews were semi-structured and lasted approximately 20-45 minutes, covering a range of topics including; demographics, types of support for students and researchers, the organizational approach to supporting health research, the impact of the changing landscape, and program evaluation (see Appendix A for the complete interview guide). Interviews were audio-recorded and analyzed using Atlas.ti software. Data was then coded

for analysis based on responses to the questions in the interview guide. The broad themes that resulted were analyzed in greater depth when sub-themes could clearly be identified within the data.

This report has been developed to inform programs and services within the NSHRF. As such, not all of the data collected through the interviews has been anonymized, as would be standard practice for a jurisdictional review. Instead, organizations have been identified in the sections of the report that pertain to the types of support provided for students and researchers. This has been done to permit contact with an organization should additional information about programs of interest be desired.

Table 1. Organizations Represented by Key Informant Interviews (n = 26)

Organizations Represented	
Acadia University	Government of Nova Scotia
Alzheimer's Society of Nova Scotia	- Department of Health and Wellness
Brain Repair Centre	Health Association Nova Scotia
Canadian Cancer Society – Nova Scotia	Heart and Stroke Foundation of Nova Scotia
Cancer Care Nova Scotia	IWK Health Centre
Cape Breton University	Mental Health Foundation Nova Scotia
CDHA/IWK Health Authorities	Mount Saint Vincent University
Dalhousie University – Faculty of Dentistry	Northwood Foundation
Dalhousie University – Faculty of Health Professions	Nova Scotia Community College
Dalhousie University – Faculty of Medicine	QE II Foundation
Dalhousie University – Research Services	Saint Mary's University
Dalhousie Medical Research Foundation	Springboard Atlantic
Emergency Health Services Nova Scotia	St. Francis Xavier University
Genome Atlantic	Worker's Compensation Board Nova Scotia

Limitations

There are several limitations that should be noted.

Time constraints limited the number of interviews conducted. Attempts to contact a number of organizations were unsuccessful (see Appendix B for the full list of organizations where key informants were contacted but not available for interviews).

Several key informants represented organizations that provide support to both health and non-health related research. In these cases, data presented may not pertain to health

research specifically, but includes the full spectrum of support provided by the organization.

Although the interview guide was designed to broadly apply to any organization, key informants were not always able to respond to every question. As such, the discussion on certain topics may only be informed by a selection of all respondents interviewed who chose to respond to the pertaining questions in the interview guide.

Types of Support for Students

The following section describes research-funding opportunities and supports available to students in undergraduate, masters, PhD, postdoctoral and resident/trainee programs.

When asked about the types of supports that exist for students in health research, informants commonly described supports in the forms of scholarships, fellowships, research awards, and travel grants.

Many academic respondents (informants) suggested that even though their offices may not support students directly, internal grant competitions for faculty members were often intended, and in some cases, required, to support student research opportunities.

Undergraduate Students

The analysis revealed that half of the informants represented organizations that provide research opportunities for undergraduate students. Among these informants, there was a general agreement that undergraduate research opportunities are an important part of the student experience.

Summer Studentships. The majority of academic institutions offer summer studentship positions. The amount of funding provided to students varies by institution, ranging from $2,500 - $6,000. Financing for studentships was reported to come either solely from internal research funds, or in some cases through a partnership with an external agency such as the Natural Sciences and Engineering Research Council, a federal funding agency. In these cases the academic institution provides top-up funding.

Undergraduate medical students at Dalhousie University are also eligible for studentship positions that are funded by the Dalhousie Medical Research Foundation. Each of these studentships is designed to support a student completing a research project in a specialty area.

Research Projects. As a part of their degree requirements, undergraduate students may have the opportunity to complete research projects under the supervision of a faculty member. These opportunities are typically supported by funds derived from within the academic institution.

Other Opportunities. Other sources of funding for undergraduate research opportunities include registered charities and the NSHRF.

- The Alzheimer's Society of Nova Scotia administers one award that is available to undergraduate students to support a research project. This award is offered on an annual basis.
- In 2013 the Heart and Stroke Foundation of Nova Scotia offered a competitive award for undergraduates. However, as no applications were received the foundation is uncertain as to whether they will offer the same competition in years to come.
- Through its competitive Scotia Support Grant program, the NSHRF provides health researchers an opportunity to support undergraduate students. Additionally, some Nova Scotia universities offer a Scotia Scholar Award at the undergraduate level through the NSHRF's Scotia Scholars^{OM} Awards program.

Upcoming Changes. Dalhousie University's Faculty of Medicine has committed to increase the number of summer student research awards that they offer. Next year they expect to offer upwards of 100 awards, a substantial increase from the 30 awards offered in 2013. The informant noted that the funding source for these new placements has not yet been finalized.

Graduate Students

The following organizations provide research funding opportunities for graduate students dedicated to health research: Alzheimer's Society of Nova Scotia, Canadian Cancer Society Nova Scotia, Dalhousie Medical Research Foundation, the health-faculties of Dalhousie University, The Heart and Stroke Foundation – Nova Scotia, the IWK Health Centre, the NSHRF, Saint Mary's University, and St. Francis Xavier University.

Scholarships and bursaries are available from the Alzheimer's Society of Nova Scotia, Dalhousie's Faculty of Health Professions, the Heart and Stroke Foundation – Nova Scotia, the IWK Health Centre, the NSHRF, Saint Mary's University and St. Francis Xavier University. Terms of awards vary by organization, but are most frequently used to offset tuition costs, or as salary awards for students with a current or proposed project. In a few cases, organizations may offer travel awards for graduate students to attend conferences to present their research.

The NSHRF provides scholarships to graduate students through the Scotia Scholars^{OM} Awards program. At least one Scotia Scholar Award is allocated annually to each Nova Scotia university with graduate students completing thesis-based programs in studies pertaining to health. Graduate level awards are valued at $10,000 per annum. PhD students may be eligible to renew their awards for a second year.

Studentships. Funding for graduate studentships is provided by the Canadian Cancer Society – Nova Scotia, the IWK Health Centre (in part funded by the IWK Foundation) and

the Dalhousie Medical Research Foundation. The amount of funding awarded to each student ranges from $10,000 - $13,400 per annum.

The NSHRF provides health researchers an opportunity to support graduate students through its Scotia Support Grants program. Grants are provided for two years with per annum allocations valued between $6,000 - $8,000 for masters students, and $12,000-$16,000 for PhD students.

Placements. Research opportunities, including placements and the provision of a supportive research environment, may be available to graduate students looking to work in non-hospital and/or non-academic settings. Informants from Emergency Health Services Nova Scotia, Health Association Nova Scotia and Northwood reported that research student placement opportunities are available as the funding environment allows.

Upcoming Changes. Previously, graduate students were supported by an annual scholarship program conducted by Cancer Care Nova Scotia. Due to recent budget cuts this program has been suspended indefinitely. Cancer Care Nova Scotia is currently exploring other avenues of funding.

Postdoctoral Trainees and Medical Residents

Within Nova Scotia, fellowship opportunities are available for postdoctoral trainees and medical residents pursuing clinician scientist training. Fellowships are offered through Dalhousie's Faculty of Medicine, the Dalhousie Medical Research Foundation, the IWK Health Centre, and the Capital District Health Authority. The NSHRF provides health researchers the opportunity to support postdoctoral students through its Scotia Support Grant program.

Types of Support for Health Researchers

The following section describes research-funding opportunities and other supports available to researchers.

When asked about the types of supports organizations provided for their career researchers, informants commonly described supports in the form of research establishment grants, infrastructure support, internal grant competitions, research chairs, and structures for assisting with research commercialization. Other supports and future opportunities are also described below.

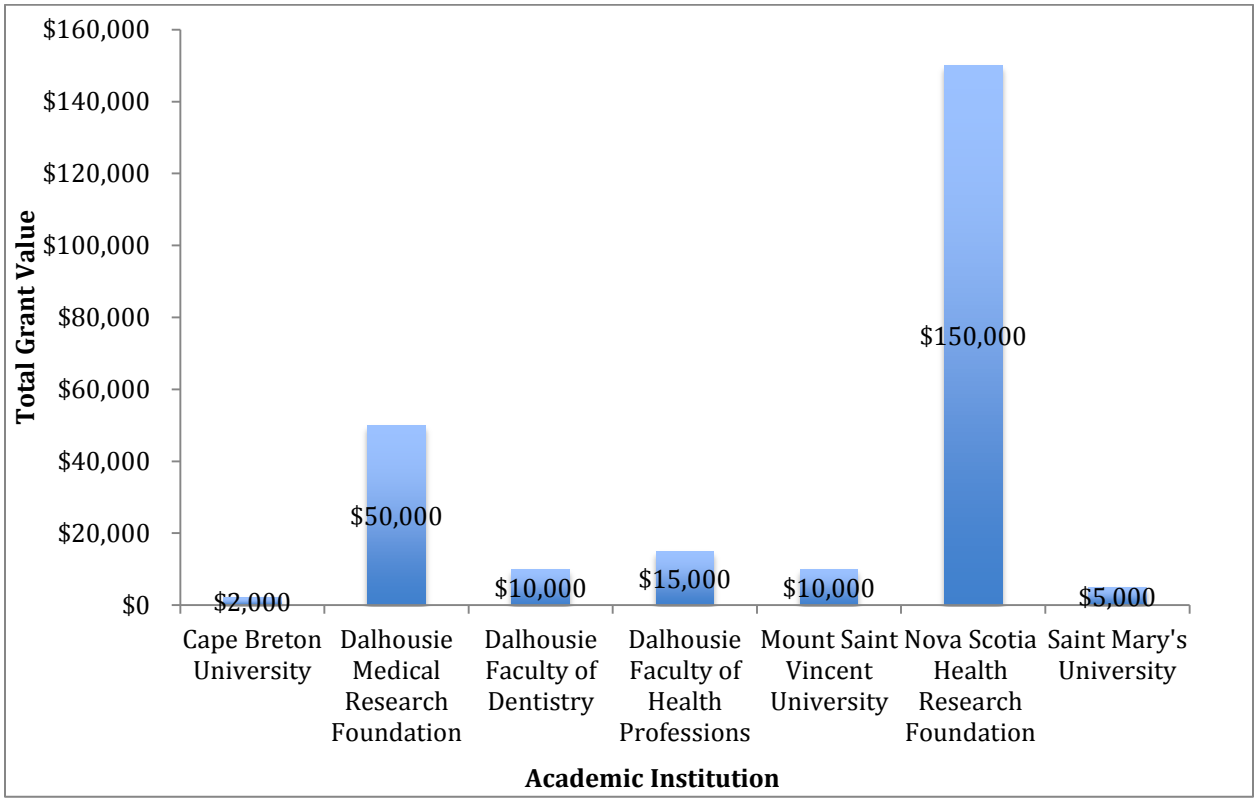
Research Establishment Grants

Research establishment grants are available through the NSHRF, the health-faculties of Dalhousie University and other academic institutions in Nova Scotia. Informants reported two ways in which this type of funding is commonly used; firstly as an incentive to recruit new faculty, and secondly for start-up funds (ex: equipment purchases, student hiring).

Award figures range from $2,000 to $150,000 and vary within and between organizations (Figure 1). Research Establishment Grants awarded by the NSHRF provide a maximum of $150,000, with researchers granted up to $50,000 per year for 3 years. Institutional establishment grants provide support within a specific community of researchers and are not always competitive, or restricted to health related research. The Establishment Grants awarded by the NSHRF support the broad community of health related researchers in Nova Scotia. Applications to the NSHRF are subjected to a competitive peer review process that involves a panel of scientists from across Canada.

Upcoming Changes. Cancer Care Nova Scotia offered the Peggy Davison Clinical Scientist Award as an incentive program to recruit new staff to the Beatrice Hunter Cancer Research Institute, home of the Dalhousie Cancer Research Program. This award provided a researcher with $100,000 per year for three years but will likely not be offered again due to budget cuts.

Figure 1. Research Establishment Grants Provided by Organization



Infrastructure Support

The Dalhousie Medical Research Foundation offers an annual competition that provides grant funding for research equipment. Applications are peer-reviewed by the Foundation's scientific advisory committee which is composed of seven of Dalhousie's Faculty of Medicine researchers from a variety of research areas. The awards are valued at a

maximum of $30,000 and are available to researchers with current appointments at Dalhousie's Faculty of Medicine (Dalhousie Medical Research Foundation, 2013).

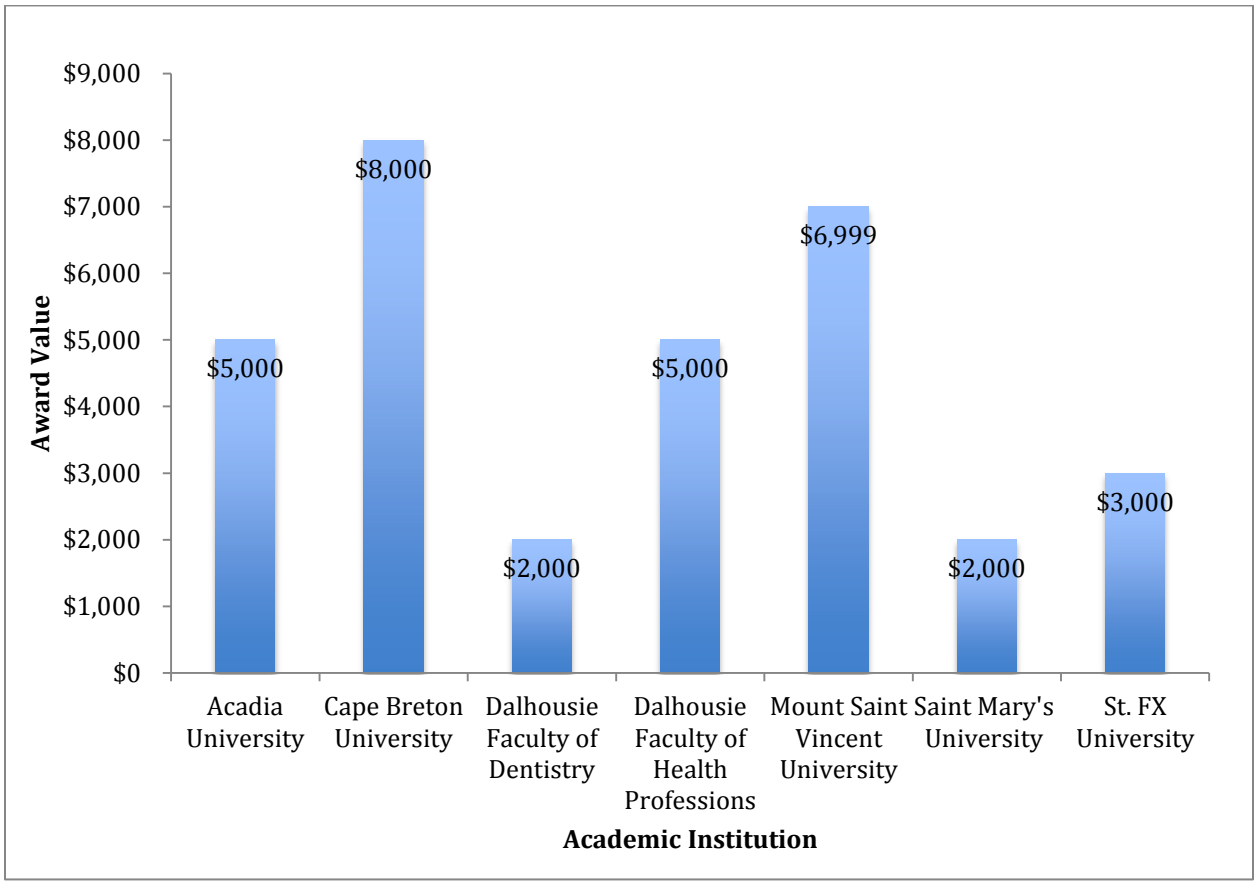
The Nova Scotia Research and Innovation Trust supports Nova Scotia's research community by providing matching funds for grants awarded by Canada's Foundation for Innovation (Nova Scotia Research and Innovation Trust, 2013).

Internal Faculty Grants Competitions

All academic informants reported the existence of an internal annual grant competition. These grants are awarded to faculty members and are typically used to support pilot projects, capacity support, seed funding, and proposal development. Current award figures range from $2,000 to $8,000 and vary by within and between institutions (Figure 2).

Comparable Grants. The Development/Innovative Grants offered by the NSHRF support researchers conducting pilot studies and developing proposals for applications to provincial, national and international funding agencies. These grants provide up to $15,000 per grant for one year and are peer-reviewed by a panel of national experts.

Figure 2. Maximum Value of Internal Grants by Institution



Research Chairs

Health-related research chairs are hosted by the following institutions: Acadia University, Cape Breton University, Dalhousie University, Mount Saint Vincent University, St. FX University, and Saint Mary's University.

The Dalhousie Medical Research Foundation, the Heart and Stroke Foundation of Nova Scotia, and the QEII Foundation have provided support for currently endowed chairs. Information about the specific terms and funding arrangements for endowed chairs was not obtained as data was collected for this report.

Recent Changes. The allocation of two Canada Research Chairs to Dalhousie University was recently decreased by two. This change reflects the decline in funding awarded to Dalhousie by the Canadian Institutes for Health Research (CIHR), a major federal funding agency.

Research Commercialization

Springboard Atlantic and Innovacorp provide funding to academic researchers for the purposes of supporting research commercialization. It should be noted that health research is not a specific focus of either organization. Springboard Atlantic has monthly competitions where applications are reviewed by a committee. This information was not available for Innovacorp.

Springboard Atlantic's Innovation Mobilization program supports funding requests for proof of concept, patent or legal funding, marketing support, and industry engagement. Categories of support range from $15,000 - $50,000. Applications are reviewed by a committee on a monthly basis.

Innovacorp's Early Stage Commercialization Fund supports similar requests and may also be used to leverage other funds. Researchers may be eligible to receive up to $50,000 (Innovacorp, 2013).

Other Supports

During the interviews, several informants discussed their organization's methods of providing non-financial support to researchers. Within their responses these informants established that they felt strongly about the importance of promoting research and developing a strong research culture within their organization.

At the academic level, research services administer grants and often lend assistance to researchers preparing grant applications. Some organizations offer internal peer review, or pay for external peer review services as a strategy for strengthening applications before they are submitted to external funding agencies.

Other organizations that support the research community through networking capabilities and conference support include the Alzheimer's Society of Nova Scotia, Health Association Nova Scotia, and the Northwood Foundation. Cancer Care Nova Scotia and Emergency Health Services Nova Scotia provide information resources by extending the use of their registry databases to outside researchers.

The NSHRF undertakes a number of activities that advance health research management and community collaboration. These activities are completed through Support for the Health Research Enterprise, a component of the REDI program (NSHRF, 2013a).

Future Opportunities

The IWK is in the process of launching a Healthcare Improvement Grant targeting implementation science in the health system. This grant is intended for projects that involve collaboration between two primary investigators, a scientist and an administrator, and is intended to improve the translation of research from clinical science to clinical practice.

Cancer Care Nova Scotia is pursuing a partnership with the Canadian Partnership Against Cancer to create a source of research funding directed towards improving local recruitment for clinical trials.

Matched funding is being considered by several organizations. Most informants revealed they do not allocate matching funds within their annual research budget but instead look for funding as it is requested. Organizations looking to add the resources for matching funds to their annual budgets include the Dalhousie Medical Research Foundation and Dalhousie's Research Services, whose informant is quoted below;

> *"Up until this point matched funding had been a faculty-based decision [at Dalhousie] but as the requirements for matched funding becomes larger there has really been a push towards the university commitment to these kinds of things."*

The NSHRF provides limited amounts of matching funding through its Research Program. Generally, this funding is dedicated to support of national programs such as the CIHR Partnerships for Health System Improvement.

Organizational Approaches

Comparing Supports

During the interview, informants were asked if they knew how the types of support that their organization has provided to students and researchers compared with the supports offered by other organizations. The consensus of the majority of informants was that no formal comparison had been undertaken.

Based on the personal beliefs of several informants, there appears to be a general agreement between organizations that their financial supports are both small in size and of limited availability. This sentiment was expressed regardless of whether informants believed it made their organization similar or dissimilar to others in Nova Scotia. Occasionally, this opinion was followed by a suggestion that a pooling of resources between organizations may lead to the most effective use of an organization's contributions to health research.

Some informants believed that their organization's focus on a specific research theme placed them in a unique role in the provincial health research landscape. Informants who represented organizations that support research across the spectrum often expressed a similar opinion.

Responses from informants representing health charities expressed that they considered their organizational approach to be distinct if they followed a strategic research plan, or had a dual role in program delivery and research support.

Application Review Process

When informants were asked about their organization's application of a review process for internal competitions, methods presented included variations of committee structures, or review panels.

The NSHRF has established a scientific review process that was adopted from CIHR's peer review process and guidelines.

In the case of academic institutions, review methods often differ between the institutional and faculty levels. At the institutional level, panels reviewing internal grant competitions were consistently reported to include faculty members representing multiple disciplines. At the faculty level it was common to have a small committee of deans, vice presidents and/or members of scientific advisory committees. Scientific advisory committees were reported to be composed of members who were internal and/or external to the organization. One respondent noted that their faculty is currently revising their review process because, while a small efficient committee minimizes resource use, they realize such a structure might not be the best way to review applications.

Criteria for Award Consideration

With the exception of the health-faculties at Dalhousie, the informants from academic institutions were not aware of any awards that were specifically earmarked for applicants with health-focused research.

Student award criteria appeared to be consistent across institutions and with preferential consideration given to upper year students, grade point average, experience, and potential.

Although senior researchers are not excluded from applying for internal grants, priority is often given to early career researchers. Informants reported that other criteria for award consideration included quality, budget, impact, feasibility, and the potential to build capacity.

Priorities

In 2010-2011 the NSHRF facilitated a broad province-wide consultation to identify health research priorities, as it is legislated to do by the Health Research Foundation Act (Health Research Foundation Act, 1998). When asked if they were aware of the health research priorities set out by the NSHRF, the informants' answers were mixed. Fifty-eight percent of informants were aware of the NSHRF's health research priorities, including the majority of the respondents who represented academic institutions. In three cases, the interview guide prompted respondents to search for the NSHRF priorities.

In several cases, respondents felt that while the NSHRF priorities did not directly influence the type of research supported by their organization, their own priorities appeared to naturally align with the priorities of the NSHRF.

Informants presented five common reasons for why their organization's research priorities are not influenced by those of the NSHRF. Firstly, some organizations had clearly identified specific health research foci and/or their own strategic research plans. A respondent from such an organization felt that the NSHRF priority of "changing demographics" was not broad enough, in that research should not only focus on an aging population, but also on the increased prevalence of chronic illness in children. Secondly, some respondents belonged to organizations that had no direct influence on the research they provided support to. Thirdly, although some organizations may provide support to health related research when appropriate they do not focus solely on health research and have therefore not defined any health-related research priorities. Fourthly, it was suggested that the decision to support health research was complex and that many things beyond provincial priorities needed to be considered. Finally, organizations wanted to be supportive of their own researchers, regardless of priorities. These respondents believed that the pay-off would be greater if they supported internal excellence, rather than making a judgment call about what type of research would be most successful. In these cases it was unclear if the informants understood that the NSHRF provides a mix of priority and non-priority driven programming and competitive opportunities. One example of a non-priority driven funding opportunity would be the Establishment Grants program.

In one case, an informant relayed that it had been somewhat of a frustration for their organization to attempt to become better aligned with provincial priorities and the NSHRF. In this case, the respondent noted the benefit that could exist with a synergistic approach and mentioned that their organization is keen to take advantage of their own expertise but also wished to better align their institutional strengths and interests with the NSHRF.

Partnerships and Collaboration

When asked about their organizational approaches to partnership and collaboration there appeared to be a general consensus that these types of activities were increasingly successful and considered important assets for informants' organizations.

In the low resource environment that is Nova Scotia's health research landscape, informants reported that partnerships are being used to move agendas forward, improve capacity building potential, increase inter-organizational linkage, minimize inter-organizational disconnect, improve working relationships, and maximize the impact of every dollar spent. It was also suggested that partnerships are increasingly allowing smaller organizations to participate in the research environment. Based on the responses of informants representing health charities, local partnerships may be a useful strategy to show donors the impact of their donations.

Although the majority of informants reported that partnerships and collaborative actions between organizations have been increasingly successful, a number of barriers appear to still exist. These barriers include the draw on resources that it takes to establish a partnership, including but not limited to time, energy, and financial resources. Also noted was the need to align missions, reduce administrative barriers (ex: streamlining the ethics boards in provincial district health authorities), and develop a clear understanding of the role of each individual partner. Multiple respondents from smaller academic institutions reported that it is often easier to facilitate collaborations between researchers or faculties than between institutions.

Partnerships in Action. Informants noted the following as examples of current partnerships that they considered successful. When necessary, information supplied by informants was supplemented by information available on the partnership's website.

Biomedical Translational Imaging Centre (BIOTIC). The BIOTIC was created by local partners as a response to the National Research Council's announcement that it planned to close its medical lab devices in Halifax. The BIOTIC is under the operation of Dr. Patrick McGrath, VP Research and Innovation for the Capital District Health Authority and the IWK Health Centre. The NSHRF is an engaged partner and is providing financial support (NSHRF, 2013b).

Care and Construction. Although this project is mainly financially supported by CIHR, it has involved the support of multiple partners within Nova Scotia, including the Alzheimer's Society of Nova Scotia, Dalhousie University, Mount Saint Vincent University, Northwood, and Saint Mary's University. Partner roles included funding contributions, sitting on the project's research advisory committee, facilitating access to industry partners, provision of academic expertise, and providing access to the research setting.

Maritime SPOR SUPPORT Unit (MSSU). The Strategy for Patient Oriented Research (SPOR) SUPPORT unit serves an example of an intra- and inter-provincial partnership. Ultimately a

collaboration between New Brunswick, Nova Scotia and Prince Edward Island, one of the plans for the MSSU is to enhance and expand data repositories to further research that addresses patient-oriented health issues (NSHRF, 2013c). Collaborative efforts at the local level have been instrumental in developing the project and creating a business case. Local partners include academic institutions, health authorities, the NSHRF, the provincial government and members of the public (NSHRF, 2013b).

Integrated Health Research Training Partnership (IHRTP). Created in 2006 with the NSHRF's support for a program coordinator, the IHRTP supports networking and research skills training for students and health professionals engaged in research. Currently, involved partners include Dalhousie University's Faculties of Dentistry, Graduate Studies, Health Professions and Medicine, along with the Capital District Health Authority, the Dalhousie Medical Research Foundation, and the IWK Health Centre (Integrated Health Research Training Partnership, 2013).

Springboard Atlantic. This organization is an example of an active partnership between 13 universities throughout Atlantic Canada. By sharing resources through a collective network, these institutions are better able to handle the commercialization of research than they would be able to individually.

Partnerships on the Horizon. Based on informant responses it appears that some organizations have discussed future partnering opportunities to provide matching funds. At present, the Dalhousie Medical Research Foundation and Dalhousie's Faculty of Medicine have outlined a partnership plan that, if successful, will provide a stable source of $250,000 per year to the faculty for bridging and matching funds. This was considered to be one of the highest priorities for the faculty, who currently have almost no discretionary research funding to support such endeavors. The Dalhousie Medical Research Foundation has also engaged in discussions with the Alzheimer's Society of Nova Scotia, and the IWK Health Centre about collaborating to provide matching funds in the future.

Assessing the Impact of Changes in the Health Research Landscape

Informants were asked to describe how changes to the national and provincial health research landscapes were affecting their organization's research funding programs.

Major changes that affected informants' organizations include:

- the end of CIHR's Regional Partnership Program;
- the decision by the Social Sciences and Humanities Research Council, a federal funding agency, to discontinue of health research funding;
- increased requirements for matching funds
- the nationalization of health charities;
- budget cuts at the provincial level; and
- policy changes that promoted a shift towards applied science, research commercialization, and health services research.

Impact. Although some respondents were uncertain of the full implications that these changes would have on their organizations, others cited specific examples of mostly negative impacts.

The informants reported the increasingly competitive environment was responsible for increasing the minimum scores funded at provincial and national competitions. This change had in turn led to lower success rates at the same competitions, with a further example of impact being the loss of Canada Research Chairs because less overall funding was being awarded by federal funding agencies. Another result of the overall loss of funding has been the decline in the indirect costs that come to provincial academic institutions through federal funding programs.

Informants reported having to increase the amount of internal resources that are allocated towards acquiring funding from external sources. They also spoke of a greater need to support small scale research, and a mounting pressure to provide matched and bridged funding;

> *"Part of the problem as a region is that because we have so little resources for maintaining the research capacity that we have when research grants are lost, sometimes research capacity is lost."*

Strategies. When describing the impact of landscape changes, some informants revealed organizational strategies for adapting. One commonly employed strategy is best described by the following informant's statement;

> *"We really do pay a lot of attention to what is happening at both levels regarding the topics, flavor of the day, and how we can best use that knowledge to increase our funding so that researchers apply to the right place at the right time."*

Many informants believed it was important to promote research internally to maintain organizational support, while others reported that they have started to look towards non-traditional sources of funding.

One strategy for developing and maintaining capacity was the provision of an internal or external peer review service. This was seen as a strategy to improve success rates at national competitions.

A few informants did not have a strategy, believing that the impacts of change were out of their control.

Determining the Best Way to Support Health Research

When informants were asked about how they determined the best way to support health research in Nova Scotia, only one informant felt unable to answer the question, because it was something that their organization was just beginning to consider.

The following practices emerged as coded sub-themes from informants' responses:

- to improve upon commercialization potential;
- to build capacity;
- to meet community needs;
- to support the best researchers and highest quality projects;
- to define a strategic research plan;
- to examine past practice anecdotally;
- to promote the importance of health research as a part of healthcare;
- to follow an investment philosophy and invest in impact, return, productivity, and utility;
- to align with institutional strategy; and
- to examine budget implications.

Evaluation of Programs and Services

When informants were asked how their organizations evaluated the success or impact of their funding programs they frequently admitted that their organizations did not have a well-developed framework for that purpose. Informants presented a battery of informal metrics that were commonly used to assess the impact of their organization's funding programs. The most common metrics coded within informants' responses included:

- success rates in national competitions;
- publications (rates and impact factor);
- achievement of stated goals and objectives;
- anecdotal assessment of impact on the community; and
- financial accountability.

The NSHRF uses the Canadian Academy of Health Science's framework to evaluate its programs. The set of indicators used are fairly consistent with the informal metrics presented above.

Two common purposes for collecting the metrics emerged from informants' responses; presentation purposes and internal purposes. When collected for presentation purposes, data is used to demonstrate accountability and impact, and convince decision-makers of the benefit of supporting health research. When collected for internal interest, data appears to be used to inform future program design, make comparisons, and to assess the effectiveness of programs at building capacity.

According to informants, many organizations are currently engaging in discussions around how best to effectively and efficiently gather the data that reflects the impact of their funding programs and services.

Emerging Key Issues

This section provides a summary of key issues that emerged from informants' responses. Coded broadly, these issues included capacity building and changes in funding structures.

Capacity Building. From how awards are structured, to the evaluation criteria for awarding internal grants, informants recognize that capacity building is a key issue for Nova Scotia's health research enterprise. This theme was regularly factored into decision-making that affected the types of supports organizations provided to health research. It was also recognized that building capacity in Nova Scotia may not be as easy as in other, larger, provinces because as one respondent suggested that *"others can rely on provincial matched funding, and having some initial way into building their way into the health research enterprise which isn't quite as available in Nova Scotia."* Sentiments similar to the above quote were echoed by a number of informants who believed that limited funding and the small size of the Nova Scotia health research enterprise were the primary reasons that it was difficult to build capacity in Nova Scotia.

Changes to Funding Models. Many informants felt that changes to funding programs would be inevitable given the current funding environment. Although many hoped to maintain funding, others spoke of the need to find new funding models to support major health research centres;

> *"Funding reductions sadly is a reality and that's not going to change in the upcoming years. We're having to find efficiencies and reductions across the board."*
>
> *"We don't have those big high-flying research programs that get automatically funded so we are significantly disadvantaged for all the tri-council programs, so we are going to have to make some substantial changes to our funding opportunities."*

According to one informant the continuing care sector will soon merge with the district health authorities in which they reside. When that happens, the informant is hopeful that the continuing care sector will gain access to the comparatively *"plentiful"* research funding provided by the QEII foundation.

Conclusion

Overall, informants described an environment with limited funding, where they are increasingly challenged to provide capacity development and compete with larger jurisdictions on the national level. Strategies for moving forward include expanding the use of partnerships, improving alignment between organizations, and developing additional methods for research promotion.

Currently, a variety of methods are used to support students and researchers within Nova Scotia's health research landscape. Undergraduate students are primarily funded through competitive studentships at academic institutions. The supports for graduate students are

slightly more diverse and extend to funding opportunities provided through health authorities, charities, and foundations. Funding may not be as extensive for postdoctoral trainees. Researchers are supported through research establishment grants, infrastructure support, internal grant competitions, research chairs, and structures for assisting with research commercialization.

Although many informants admitted that the funding provided by their organizations was not directly influenced by the priorities set out by the NSHRF, they often mentioned the existence of a natural alignment between their priorities and those of the NSHRF's. Informants considered their organizations to be small. As a result of limited financial resources, internal funding competitions often prioritize early career researchers and opportunities geared towards building internal capacity.

Almost every informant mentioned being impacted by changes in the provincial and national health research landscapes, and several reported adaptability strategies that they have adopted for the changing environment.

Partnerships and collaborative activities between organizations in Nova Scotia appear to be increasingly successful, although some barriers do exist. Moving forward, a number of organizations are looking to use partnership opportunities to assist with the increasing need for matching funds.

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APPENDIX A: INTERVIEW GUIDE

Nova Scotia Health Research Landscape Mapping Exercise – Interview Guide

Thank you for agreeing to participate in this interview about the health research landscape in Nova Scotia. The following pages act as a guide of topics that we will discuss. You have been identified as someone who would have valuable insight regarding this topic. You may feel that you are in a position to speak to some or all of these questions. Anything you have to offer is of value to us.

The health research landscape is changing rapidly both provincially and nationally. In order for the Nova Scotia Health Research Foundation (NSHRF) to plan strategically, a current and comprehensive understanding of what types of support exist in the province for students and researchers is needed. The purpose of this interview is collect evidence that can be used to inform NSHRF programs and services. Data will be analyzed with the intention of identifying gaps and/or duplication of support, levels and types of supports, and evaluation processes for these programs/services.

Privacy and Confidentiality
The discussion will be audio recorded for the purpose of accuracy during analysis and write up of findings. The audio recording will not be shared with anyone outside the review team, which consists of employees and representatives of the NSHRF. The resulting audio file will be stored securely at the NSHRF and maintained by the review team. The interview will be compiled into a report that will be used to inform decision-making around the NSHRF's programs and services. While the report may or be shared with some of the NSHRF's key stakeholders, original raw data (i.e., the audio recording and interviewer's notes) will not be shared with anyone outside the review team. Responses will be presented on a group basis whenever possible.

Should you have questions about this guide or the interview process please do not hesitate to contact us.

Sincerely,

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Demographics
The questions in this section are meant to gather some basic information about your perspective, experience and personal context within the provincial health research enterprise.

1. Name of organization

2. Type of organization (ex: university, government, non-government, private, registered charity, other)

3. What is your current role within the organization?

4. For what length of time have you been in this position?

5. Please provide, to the best of your knowledge, an overall picture of how your organization supports health research in Nova Scotia with respect to:

    i. Students (type)

    ii. Researchers (career stage)

    iii. Discipline funded (medical research, health-outcome research, health services-research, and health public-policy research)[1]

    iv. Type of support available (competitive, non-competitive, bursaries, scholarships, studentships)

    v. Total amount of funding awarded by the organization per year _____

    vi. Number of awards handed out each year _____

    vii. Range of award dollar amounts across funding programs _____

[1] **Medical research** means basic scientific and biomedical research as well as clinical and epidemiological investigations. **Health-outcome research** means research into changes in the health status of populations due to the implementation of health programs and services. **Health-services research** means research into the efficiency and effectiveness of the management, organization, and delivery of health services. **Health public-policy research** means research into the impact of social factors, allocation of resources, legal and ethical issues, and the administration, organization, and financing of health care

Your Organization's Approach
The questions in this section are intended to gather information on your organization's approach to the support of health research in Nova Scotia.

1. How do the awards granted by your organization compare to those of other organizations in Nova Scotia? In other words, are you aware of any similarities and/or differences between the supports provided by your organization and those provided by others?

2. Are there restrictions placed upon who is provided support (e.g., with respect to researcher career stage, research focus, personal characteristics, or matched funding)?

3. If any exist, how are competitive grants/awards applications reviewed?

4. What resources (human, fiscal, in kind) does your organization dedicate to the support of health research?
    i. Who in your organization makes this decision?
    ii. What factors are considered by the decision-maker(s)?

5. To what extent are changes in the National and Provincial health research landscapes affecting the sustainability, continuity or consistency of your research funding programs?
    i. In the past has your organization and/or its programs been sensitive to environmental changes? How so?

6. Legislation requires the NSHRF to identify health research priorities through consultation and communication with government, health boards, organizations, institutions, and individuals. Is your organization aware of the health research priorities identified by NSHRF?

i. If so, do these priorities have any influence on what type of research activity is supported?

7. Do you collaborate or partner with any other granting agencies/organizations with regard to the funding competitions/opportunities you offer?
   i. If so, tell us about those collaborations.
   ii. Have you experienced any challenges or barriers to collaboration/partnering? Please explain.

8. Are you aware of any changes that will be occurring within your organization in the next few years with respect to:
   i. Availability of funding opportunities?
   ii. Type of funding opportunities?
   iii. Structure of funding competitions?

Evaluation

1. How does your organization determine the best way to provide support to health research in Nova Scotia?

2. How does your organization evaluate the success and/or impacts of your research funding programs?
   i. Is any data collected? How?
   ii. If so, how is that data used within your organization?

3. What ways does your organization have for knowing about the use of funds after it is awarded to recipients? For example, are researchers required to submit progress updates and/or final reports?

4. Does your organization undertake any evaluations to consider the effectiveness of the research that it has supported?

Additional Comments

1. Is there anything else you would like to share with us about your organization's support of health research in Nova Scotia?

Thank you for participating!

APPENDIX B: LIST OF IDENTIFIED ORGANIZATIONS NOT REPRESENTED BY A KEY INFORMANT

The following is a list of organization's where a key informant was identified but an interview was not scheduled. Three reasons existed for why interviews were not scheduled: informants did not respond to contact attempts (n=7), scheduling conflicts (n=4), and informants did not feel the interview guide applied to their organization (n=2).

The Arthritis Society – Nova Scotia

Canadian Breast Cancer Society – Atlantic

Canadian Liver Foundation – Atlantic Chapter

Crohn's and Colitis Foundation – Nova Scotia Chapter

Government of Nova Scotia – Department of Labour and Advanced Education

Innovacorp

IWK Foundation

The Kidney Foundation of Canada – Nova Scotia Division

Nova Scotia Lung Association

Nova Scotia Research and Innovation Trust

Parkinson Society – Maritime Region

Prostate Cancer Canada Atlantic Region

United Way of Halifax Region.