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POLICY INNOVATION LAB REPORT

ENHANCING ADOPTION & SCALE OF TECHNOLOGIES TO SUPPORT HEALTHY AGING IN NEW BRUNSWICK

NOVEMBER 2021

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Executive Summary

This lab project was funded through the New Brunswick Innovation Foundations Social Innovation Research Fund and ethical approval for the project was provided by the University of New Brunswick. The purpose of this report is to highlight the approach taken to answer the question “How might we enhance the innovation ecosystem for health technologies that support healthy aging in New Brunswick?”.

We held a total of three workshops exploring the challenges faced by New Brunswick innovators throughout the research and development process as well as challenges in bringing forward market ready solutions. These challenges are: information and communication challenges; policies and regulations; competing priorities among stakeholders, partners, government; and money. Through iterative and collaborative activities, we developed seven ways of addressing the challenges explored. These solutions aim to provide innovative ways of designing and testing technologies collaboratively, enhance informed decision-making for adopting health technologies, expedite implementation in localized settings, and provide centralized and usable platforms for information on health technologies.

> The social innovation lab approach “draws on the strengths, empathy, creativity, and wisdom of a collective to explore new ways of making progress on a complex challenge. These labs are guided by convening diverse perspectives on an issue, gaining insight from people with lived experience of a challenge, facilitated ideation, [and] building prototypes of solutions.”
>
> -*Think Jar Collective*

Overview

The purpose of this lab process was to generate solutions to the challenges facing the adoption and scale of health technologies to support healthy aging in New Brunswick. As part of this process we:

- Engaged **9** partner organizations and **25** workshop participants
- Hosted **6** advisory committee meetings and **3** innovation lab workshops
- Explored **4** challenge themes to understand the issues to address
- Generated **7** solutions to address the challenges explored and enhance opportunities for adoption and scale in NB and Canada

ACKNOWLEDGEMENTS

Partners

Our generous partners provided in-kind support and funding to make this policy innovation lab happen:

- AGE-WELL NCE Inc.
- New Brunswick Innovation Foundation
- New Brunswick Health Research Foundation
- Government of New Brunswick
- Opportunities New Brunswick
- Horizon Health Network
- Dalhousie University
- IMPART
- New Brunswick Institute for Research, Data & Training

Lab participants

Participants of this lab process represented a variety of positions and perspectives:

- Government
- Researchers
- Healthcare practitioners/healthcare sector
- Non-Profit/NGO
- Industry

What is APPTA?

The AGE-WELL National Innovation Hub, Advancing Policy and Practice in Technology and Aging (APPTA) was established in 2017 as a joint venture between AGE-WELL NCE and the New Brunswick Health Research Foundation.

APPTA's vision is to drive policy innovation that supports the lives of older Canadians. We believe this can be done through supporting governments to develop better evidence-informed policy solutions to population challenges. Additionally, we connect stakeholders across the country with each other to provide opportunities for knowledge exchange between jurisdictions. Finally, we offer education programs to researchers who want to create impact with their work and support them to build skills in policy analysis and knowledge translation.

Our Mission is to drive policy innovation that improves the future of aging in Canada.

What is a policy innovation lab?

Modeled from the social innovation lab approach, our policy innovation labs bring together a variety of stakeholders for their expertise, experience, and perspectives to explore an issue that requires a less-than-traditional approach to problem solving. We believe this approach allows the players at the table to understand a complex challenge first, in order to identify potential solutions. The Lab approach, broadly speaking, is a method of convening diverse stakeholders around an issue to design solutions collectively. It's about doing business differently by using different forms of knowledge, multiple perspectives, and new tools to problem-solve complex challenges.

Four phases of the lab process

Empathy-building: To solve complex challenges, we need to understand them at a micro, meso, and macro level. The first stage of any Lab is to consider whom the issue we are exploring affects and to spend time getting to know them - learning about their experiences and hearing their perspectives on the challenges they face.

System mapping: The second stage of a Lab is to explore the system within which the challenge exists, and the innovator operates. Questions to pose here are: What does it look like? Who is involved? What resources are in place? And, what are the gaps?

Brainstorming: The third stage of a Lab is brainstorming solutions. The objective of this phase is to generate a large quantity of ideas to work from, which can be inspired by examples from other jurisdictions.

Prototyping: Finally, the last stage of the Lab will involve building prototypes of our ideas to make them visual and tangible. The focus of this phase is to build out ideas and receive feedback from as many people as possible to create a high feasibility and high impact solution(s).

Frame the issue

This lab focused on the issue of health technology adoption. There are many technologies being developed that could support older adults to age well at home and in their communities, yet significant roadblocks seem to occur when it comes to funding, support and adoption that is more widespread. We aimed to answer the question:

"How might we enhance the innovation ecosystem for health technologies that support healthy aging in New Brunswick?"

Objectives

Technology can play a meaningful role in helping older adults remain safe, independent, and connected to their communities. While researchers and innovators are regularly piloting new technologies in New Brunswick, they continue to face significant barriers to adoption and dissemination. Through a social innovation lab approach that brings together key stakeholders such as policymakers, health authorities, researchers, innovators, facility administrators, and others, the Policy Innovation Lab aimed to:

- Produce a deeper understanding of the unmet needs of researchers and innovators;
- Map out the innovation ecosystem in our province;
- Identify leverage points within the existing legislative, policy, or regulatory frameworks; and
- Generate solutions that can be prototyped and scaled across New Brunswick.

Preparations for Workshops

Establish an advisory committee	Identify stakeholders	Background research
We formed an advisory committee to initiate the lab preparations. Representatives from eight New Brunswick agencies and/or organizations were selected as members of the committee, which included governments, funding agencies, academia, and industry. This committee provided guidance and oversaw the planning of the lab, the background work conducted, and informed the lab team of key players who are relevant to the initiative.	In order to identify the right stakeholders for this process, we conducted an actor mapping exercise with the lab advisory committee that explored the domains of: innovator, government, industry, non-profit/NGO, etc. Participants for interviews and the lab workshops were recruited.	Stakeholder interviews and a literature review informed the first lab workshop. The literature review aimed to understand the landscape of health technology in Canada as a whole, as well as New Brunswick. Six semi-structured, recorded interviews were conducted virtually with the participants' informed consent. The University of New Brunswick provided ethical approval. Participants included innovators/researchers based in New Brunswick. The goal of the interviews was to gain insight into the innovators' experience of navigating New Brunswick's health technology development ecosystem, specifically technologies geared toward older adults.

Policy Innovation Lab Workshops

Workshop 1

- **Empathy Building:** in this activity, we developed and explored personas of innovators and answered questions of how they might be perceiving the challenges they face, what they see in their environments, and hear from their colleagues, family, friends.
- **System Mapping*:** In this activity, we explored the steps taken in the research and development process and identified actors, policies, regulatory processes that occur throughout to provide the New Brunswick context
- **Challenge Exploration:** Guided by the coordinated implementation model, we explored barriers of technology development, adoption, and scale in administrative, economic, community, and personal environments

Workshop 2

- **Case studies:** This session was prefaced by a presentation of case studies developed from research of concepts and models brought forward in workshop 1
- **Brainstorming:** Following a refresh of the challenges explored in workshop 1 and the case studies for inspiration, participants rapidly brainstormed ideas to enhance technology adoption and scale through use of the Goldmine Matrix Activity

Workshop 3

- **Ideation:** Before prototyping, the ideas brought forward in workshop 2 were recategorized and scoped so participants could move forward with the most actionable options
- **Prototyping:** through two story board rounds, participants collectively selected an idea from the ideation activity to add detail to and build on questions such as: who is involved, what needs to occur, what is the outcome?

*Graphic illustration of system map is provided in Appendix A

From a current state

To an ideal state

While exploring the challenges in the lab, participants were asked to use one word to describe the current state of health innovation in the province and then describe in one word what an ideal state would be. These word clouds were used to foster inspiration for the solutions discussed.

Challenges

Participants discussed challenges from their unique perspectives in order to gain a deeper understanding of the problems within the innovation ecosystem. The following challenge themes summarize the discussions and pose critical questions explored.

Challenge: Information and Communication

Theme: Transparency

- Access to information on building a value proposition, developing a business case, which forms/policies/approvals apply and when
- Knowing who is responsible, or who a first point of contact is, for making adoption decisions, and how those decisions are made
- Lack of access to decision makers, lack of collaboration
- Communication channels within and between departments seems siloed
- Digital literacy of end-users, how to effectively communicate user information to enhance adoption and comfort level with technology
- Lack of clear understanding of who the customer is, in contrast to who the user is

Questions explored

How can communication between departments, institutions, regulatory bodies be improved?

What information channels or resources would help innovators access what they need to know?

Challenge: Policy/Regulation

Theme: Breaking the siloes

- Siloed systems make change and decisions throughout difficult
- Changing mandates and government turnover can halt progress
- Regulatory requirements that do not align with others across provincial, territorial, and federal jurisdictions, and what is required remains unclear
- For privacy standards, what are the requirements and expectations of citizens, government, and private industry when it comes to a secure data network
- Procurement policies and process at Service New Brunswick (SNB) are unclear, even with a NB first strategy

Questions explored

How can policy inform private industry standards (and vice versa) to ensure health care information is protected?

What would facilitate a more transparent procurement process to support the NB first strategy?

What policies/programs have room to accept health technology solutions?

Challenge: Money

Theme: Access & flexibility

- Boundaries and timelines of grants can create limitations or delays to apply for more money (which can delay development until funding is secured)
- Cost of trials, customer discovery, and market research as well as costs associated with regulatory steps (certifications, approvals)
- Cost of IP Protection
- Lack of financial support and incentives beyond the R&D stage (i.e. tax incentives/credits)
- Who is the payer? Who should be the payer?
- Cost associated with implementation may create equity issues if the end-user of the technology must pay

Questions explored

How could there be better support for funding innovations at the market solutions stage?

What are the cost challenges from a government/decision making perspective?

What incentives/credits could better support innovators in the R&D process? Start-ups? Beyond?

Challenge: Competing priorities

Theme: Collective goals

- Difficult to get on the agenda of those in power
- Change in this space requires multiple stakeholders to buy in
- Sustaining the implementation and scale up of technologies is challenging, involving multiple levels of government working together
- No current/clear process for challenging current practices in order to adopt new ones
- De-implementation of obsolete technology is not a focus, and the process is difficult/complex (e.g. fax machines)
- Capacity of an organization (hospital, clinic, home) to support the implementation, creating challenges for adoption

Questions explored

What structures can support adoption of technology/enhancement of technology to remain a priority?

How can spaces for new technology adoption, and displacement of old practices/tech be identified?

How can we expand infrastructure to implement health technologies more rapidly?

Outcomes

The solutions that stemmed from this lab process made a concerted effort to address the challenges explored in the first two workshops. Participants worked together to address the challenges with comprehensive, multi-stakeholder, and multifactorial solutions such as one-stop-shops, living labs, establishing, and integrating standards, and more. The following solutions were discussed in the lab, detailed summaries follow:

- **Living Lab community in New Brunswick**
- **Evidence-informed subsidy to reduce inequities of technology**
- **Centralized solutions database**
- **Qualifying funnel**
- **One-stop shop collaborative communication channel**
- **Collaborative funding model**
- **Outcomes based repository**

Living Lab Community in NB

A living lab community is an initiative that could help support researchers and entrepreneurs to both create and test technologies from initiation through to implementation. A living lab solution would require a particular community in New Brunswick to take on being the primary site within this initiative, with the intent to design, create, test, and ultimately implement technologies throughout the rest of the province. Critical to the success of this type of solution is the ability and willingness of the community to co-design the implementation of technologies. Key members for the initiative should include universities, research institutions, regional health authorities, researchers and innovators, funding agencies, and other community members and partners. To initiate a living lab, a group of invested stakeholders could establish an organization for sustainability, with a steering committee to spearhead the project. Involvement of community members, who might potentially be end-users of the technology, is imperative from the start.

*A **living lab** is a concept of user-centered, open innovation to design, test, and/or implement in a localized context.*

Participants outlined two key requirements for this initiative to take shape; information and engagement. Firstly, it would be extremely valuable to conduct a demographic study, with access to patient data and other relevant administrative data sets. Access to this type of information would help to understand and inform the specific needs of the province as it relates to technologies that support aging in place. Secondly, community outreach is required to determine which communities would participate in technology research, be eager to adopt the living lab community, and have the appropriate infrastructure and stakeholders to enable the sustainability and success of this project.

Funding is a consistent roadblock for technology development and research more broadly. This proposed model, however, may provide greater opportunity for obtaining collaborative research funds by enhancing interdisciplinary networks within the province.

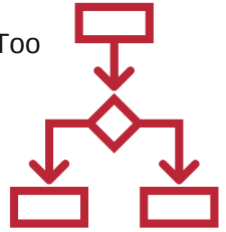
Evidence-informed subsidy to reduce inequities of technology

This solution is a means of addressing an ultimate barrier of technology adoption and spread; cost. The program would have the unique feature of establishing a living lab in NB to test and validate technologies (user acceptance) before they are approved on a list of acceptable technologies for the subsidy. It would also establish an evergreen initiative that assesses technologies to identify any out-of-date devices/applications that may need upgrading. The evergreen process would provide a way of de-implementing technology for the user, and reimplementation of an upgraded device or application.

An additional feature of the living lab, which informs the subsidy list, is that participants noted that it would be important that it run like a business, in that each lab would have specific outcomes and performance management targets every quarter. The key actors that were suggested for involvement in this program would be the research institutions/researchers and industry directly associated with the living lab, the NB Department of Health and Department of Social Development who oversee and support home care and home support services in the province, as well as the Extra-Mural Program who provide home care services. Organizations such as AGE-WELL and APPTA could be pivotal in supporting this initiative in relation to the development and testing of technologies, the knowledge translation required for evidence-informed decision making and scaling the initiative more broadly. This solution proposes a way to enable an easy and equitable system for technology adoption that supports aging in place for New Brunswickers.

Centralized Solutions Database

This solution would provide users a simple interface that allows access to a marketplace of technological solutions available in the province, which would be searchable through life solutions as opposed to technology type to ensure quicker responses to users' needs and interests. The database would provide a competitive matrix to show the status of each technology submitted, so users of the platform can easily find all of the information about a technology they may need. Technology developers would submit their solutions and an algorithm would support the management and monitoring of all entries. This database would be publicly accessible and provide space for honest and open-ended reviews similar to what is available through companies such as Amazon.



This solution would address the many information and communication challenges expressed throughout the lab process. Too often, technological solutions exist for particular problems but are difficult for potential users/decision makers to find, and moreover, it is unlikely that decision makers will invest in and support technologies they do not know about. The database could benefit a variety of other initiatives by offering the information needed to make decisions, continue research, collaborate, and innovate.

Upfront, partners would be needed to form a steering committee for this work. Additionally, this initiative would require staff to build and maintain the database, generate reports, onboard users, and conduct gap analyses on what areas of need are missing solutions. Gathering the required number of partners and gaining buy-in to initiate such an endeavour is seen as challenging by participants. However, with similar interests and a strong community that already exists in New Brunswick, this solution has great potential.

Qualifying Funnel

The qualifying funnel is a proposed mechanism to better review, assess, and learn about technological solutions for those who need to make decisions regarding what to adopt and implement. Participants discussed needing a body of governance to establish and enforce standards for health technologies in this space. The qualifying funnel would leverage the standards put in place, and assess technologies based on an evidence-informed set of criteria on items such as scalability, upkeep, usability, readiness, etc. Organized tiers of technology would provide ease of use, such as defining and organizing interactive technologies and non-interactive technologies separately. This would support the interface and searchability for user needs or interest, i.e., users can search for a non-wearable fall sensor versus a wearable smart watch with fall detection. In addition, this platform would be able to identify and provide mentorship opportunities and business support for start-ups to assess their technologies through this funnel. Participants discussed the Innovation Practices Evaluation Framework and Matrix, developed by the Health Council of Canada and adapted by Health Quality Ontario, which assesses and categorizes practices as promising, emerging, or leading, as a model.

The discussion led to a perceived need to depoliticize the support for this initiative to ensure sustainability and scale up, and minimize the impact that changing governments would have on the funding and operations of this body. In that vein, legislation still exists in New Brunswick for a Research & Innovation Council (disbanded in 2014), with a mandate to advise and provide recommendations to Executive Council regarding research, innovation, and technology in New Brunswick. That council and its mandate aim to foster greater collaborations and coordination among government, industry, education and research communities. This serves as an example of the potential challenges faced by an initiative like this, but also may serve as a point of leverage and provide an appropriate place for a body of governance that includes the qualifying funnel approach.

One-stop shop collaborative communication channel

This solution aims to create a channel for NB innovators, industry, government, and community groups to access information all in one place as it relates to health technology for the aging population. A key aspect of this solution is that it would provide NB innovators with a single point to access information and opportunities, streamlining calls for proposals, applications processes, review processes, etc. The channel would also provide up to date information about health technologies being developed, funded, and tested in New Brunswick so that buyers and adopters (health authorities, government departments, health care professionals, end-users) are able to access the information they may need to make informed decisions. This channel would provide opportunities to expand and scale into other sectors.

The discussion around this idea identified a need for a simple interface, staff for platform maintenance and promotion, a steering committee to spearhead the work, and an onboarding plan to support new users. Further, there was an indicated need for a strategic plan, likely set out by the steering committee, to guide the mandate of the platform. New Brunswick based funding agencies, government, and institutions would have to come together and have representation in the planning phases (and oversight in maintenance) to establish how they will work together through this platform.

Collaborative funding model

This solution, inspired by the Sustainable Development Technology Canada (SDTC) model, would allow for funding calls that pool resources in order to get better returns on investments and allow for more integrated implementation of solutions. This model, with a supportive platform, would pool funding calls in one place and support collaborations between disciplines, academia, industry, government, and community. Industry partners would be able to provide their expertise to projects and support part of the funding calls. All stakeholders involved in this model would support a focus on enabling a mission-driven economy that promotes and enhances the ability of older New Brunswickers to successfully age in the place of their choosing.

Sustainable Development Technology Canada *helps researchers and companies develop and deploy competitive, clean technology solutions to help solve pressing environmental challenges.*

This solution would require collaboration from industry partners, government, community partners. Participants noted that national partners such as the National Research Council would be an asset for implementing this approach. This initiative was proposed as a link with a one-stop shop collaboration communication channel above, as a way to streamline funding processes and access to information and resources as well as enhance the ability to network and form collaborations with partners in NB.

The impact of better models of funding that focus on values such as collaboration could prove invaluable to NB. Roadblocks that these solutions aim to mitigate include changing mandates or conflicting goals of stakeholders, competition with industry when it comes to technology, siloes within and between different groups, different accountability channels for funding initiatives, and misconceptions that come with public versus private sectors.

Outcomes Based Repository - Collaborative Space

This solution is a way to house project information in a publicly available format in the province and provide ongoing status updates, as well as monitor and evaluate metrics for impact. This database would not only house ongoing research projects for health technology development, but it would also be populated with information for technologies that are being implemented, to track the progress and impact the technologies are having on the population. This tracking would include monitoring metrics that represent the health, social and economic outcomes in connection to the implementation of a technology. In turn, opportunities to collaborate would materialize, trust and credibility would be increased, and end-users could advocate and inform what their needs are.

Participants discussed needing arms-length government support for this type of initiative to ensure any change in political parties would not influence the mandate of the collaborative. One such model mentioned was a crown corporation focused on health innovation. This body would be held accountable to all stakeholders (i.e. policy makers, innovators, health care administrators, etc.) and include annual evaluations of performance and mandate. This body would also manage all data on the platform and work toward filling information gaps so that users can access information about projects that will add value to their experience such as identifying resources, collaborations, funding, and more.

By having current and past technological solutions in one place, time and money would be saved, allowing innovation to move forward rather than constantly re-creating solutions. The need to incorporate short- and long-term outcomes were also mentioned as being important to allow for change to be measured along a variety of continuums.

Considerations for solutions

- Provincial vs national: There was discussion about the application of some of these solutions being provincial to NB or national in scope, such and lab communities and databases. New Brunswick is a great place to initiate these solutions given its representative demographics to the rest of the country, and learnings can be applied to spread and scale.

- Currently systems are still fragmented, which makes collaboration difficult.

- Making it applicable or “universal” to many users may be problematic.

- Time: incorporating technological interventions generally require long-term outcomes from decision-makers, something which just may not be attainable before implementation, hence a focus on short term outcomes as well as and long-term outcomes should be applied to the solutions.

Participant Evaluation of the Lab Process

100% **of participants/respondents indicated the information and materials provided in support of the lab were useful**	***100%*** **were happy with the amount of time allotted for the sessions**	***100%*** **of participants/respondents indicated that the activities used in the sessions were effective**
85% **of participants/respondents shared content or ideas from the lab with colleagues**	***100%*** **of participants/respondents indicated their experience in the lab was positive**	***100%*** **of participants/respondents indicated that this lab facilitated connections and partnerships with fellow participants**

Open ended feedback

Participants responded that they would be interested in continuing to be a part of this process by offering letters of support or participating in follow up meetings as needed. This engagement and support is invaluable to the progress made so far and speaks volumes of all the people who came together to explore ways of enhancing and expanding digital innovation in NB.

Quotes from participants:

"I really enjoyed hearing the perspectives of the group members during these sessions. Each brought a unique set of skill sets and experience. It was apparent how much work the APPTA team put into this project. The content was well researched, the sessions were very organized, and the communication was top notch." -Lab participant

"I hope results of the workshops help drive some concrete initiatives/solutions to encourage innovation and improve health outcomes in NB and Canada." -Lab participant

Lessons learned

- For virtual sessions, planning for and anticipating technical difficulties and support for participants is important. A few times, internet was not reliable for participants, which caused them to be dropped from a session for a short period of time. This happens, but it does disrupt flow and engagement.
- Make sure the objectives of each workshop and activity are clearly stated and documented so that participants do not lose sight of what is being asked of them.
- Background research on the topic and issues is beneficial to support the discussions and knowledge base all participants come in with.
- Time can be a limitation for these sessions, in that all avenues of a challenge or solution may not be able to be discussed and captured fully. Doing the most with the time allotted, with good activities to guide the discussion is key.
- Keeping the discussion and workshop in scope is critical to design, and results!

Next steps

- Continue to engage stakeholders and build momentum from lab discussion and findings
- Publish and disseminate a policy guidance report

At APPTA, we are committed to doing everything we can to further this initiative and work from the amazing solutions this lab process generated. We will continue to:

- Engage participants for feedback and validation on materials that stem from the lab process
- Engage with other stakeholders for further feedback, insight, and partnerships
- Seek funding opportunities, when available and appropriate, to further the solutions
- Work toward developing informed policy recommendations that open space for these solutions to be tested and sustainable.

APPENDIX A

GRAPHIC ILLUSTRATION OF WORKSHOP 1 SYSTEM MAP