

The Introduction of New Non-Drug Health Technologies into Canadian Healthcare Institutions: Opportunities and Challenges

Mise en place de nouvelles technologies non pharmacologiques dans les établissements de santé au Canada : occasions et défis



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Abstract

Introduction: A recent pan-Canadian survey of 48 health organizations concluded that structures, processes, factors and information used to support funding decisions on new non-drug health technologies (NDTs) vary within and across jurisdictions in Canada.

Objectives: The objectives of this paper were to elicit the views of key stakeholders on the following: (1) possible rationale for these findings, (2) enablers and barriers to the adoption of new NDTs, (3) approaches to optimizing the usefulness of health technology assessment (HTA) and (4) creation of a centralized pan-Canadian review process for NDTs, similar to that already in place for prescription pharmaceuticals.

Methods: A one-day facilitated roundtable involving 12 purposefully selected participants who were healthcare institutional/organizational leaders, hospital-based HTA program leaders and academic experts in HTA was conducted.

Results: Participants validated the survey findings and identified the following two enablers of technology adoption: (1) access to dedicated information resources and (2) inclusion of innovation in organizational priorities. Participants also identified four barriers, including the lack of (1) consistent decision-making processes within an organization, (2) agreement on what is affordable, (3) integration of HTA and procurement and (4) HTA literacy. Suggested approaches to optimizing the use of HTA focused on embedding the local context into assessments.

Conclusions: Given the nature of NDT decision-making and the importance of accounting for local factors in such processes, the value of a centralized HTA review mechanism similar to that in place for drugs may be limited.

Résumé

Introduction : Un récent sondage pancanadien auprès de 48 établissements de santé a permis de conclure que les structures, les procédés, les facteurs et l'information utilisés pour appuyer les décisions de financement pour les technologies non pharmacologiques (TNP) varient d'un gouvernement à l'autre.

Objectifs : Cet article vise à recueillir les points de vue des principaux intervenants sur les sujets suivants : (1) l'explication possible de ces conclusions, (2) les facteurs favorables et les obstacles à l'adoption de nouvelles TNP, (3) les façons d'optimiser l'utilité des évaluations des technologies de la santé (ETS) et (4) la création d'un processus d'examen pancanadien centralisé pour les TNP, semblable à celui actuellement en place pour les produits pharmaceutiques délivrés sur ordonnance.

Méthode : Nous avons organisé une table ronde d'une demi-journée avec animateur et douze participants délibérément choisis pour leur qualité de dirigeants d'établissements et d'organisations de santé, de directeurs de programmes d'ETS en milieu hospitalier et d'experts universitaires en matière d'ETS.

Résultats : Les participants ont entériné les conclusions du sondage et identifié deux facteurs

favorables : (1) l'accès aux informations pertinentes et (2) la présence de l'innovation parmi les priorités organisationnelles. Les participants ont aussi identifié quatre obstacles, notamment (1) le manque de processus décisionnels cohérents au sein de l'organisation, (2) l'absence de consensus sur la définition d'un prix abordable, (3) le manque d'intégration entre les activités d'ETS et celles liées aux acquisitions et (4) les lacunes dans la littérature en matière d'ETS. Les suggestions pour optimiser la démarche d'utilisation des ETS portent sur l'intégration du contexte local dans les évaluations.

Conclusions : En raison de la nature des décisions concernant les TNP et de l'importance de tenir compte des facteurs locaux dans le processus, l'utilité d'un mécanisme centralisé pour l'examen des ETS – semblable à celui actuellement en place pour les médicaments – pourrait être limitée.

Introduction

Technology has been a mainstay of healthcare, leading to improved health outcomes for many people. At the same time, it has been a major driver of growth in health expenditures. According to the Organisation for Economic Co-operation and Development (OECD), “Technology can only generate value in health systems if the health benefits of these technologies outweigh the cost they impart. This can only be achieved by promoting access to and appropriate use of technologies that are safe, performant, effective and clinically useful.” (OECD 2017). The OECD made several recommendations, including “Use health technology assessment (HTA), coverage and pricing policies to encourage value-for-money.” (OECD 2017, pp. 13–15).

Canada was one of the first countries to establish institutionalized HTA (Battista et al. 2009). The Canadian Agency for Drugs and Technologies in Health (CADTH), funded by the federal, provincial (excluding Quebec) and territorial governments, has been operating for three decades. In Quebec, the provincial government has established the Institut national d'excellence en santé et services sociaux (INESSS). Over the past 15 years, HTA activities have largely focussed on pharmaceuticals. Centralized assessment processes for the review of new pharmaceuticals being considered for coverage through participating federal, provincial and territorial public drug plans have been created. They generate a single coverage recommendation, thus largely replacing the need for jurisdiction-specific review processes. The exception is INESSS, which undertakes a similar review process for Quebec.

There are no parallel processes for non-drug technologies (NDTs), but individual provinces have established mechanisms for generating HTA information: INESSS in Quebec, Health Quality Ontario in Ontario, Health Evidence Reviews in Alberta and BC Health Technology Assessment in British Columbia. The provinces and territories (particularly

those without formal HTA mechanisms) also rely on CADTH for information on select technologies. Lastly, several teaching hospitals have established HTA units to support decision-making at the institutional level (Martin et al. 2016), and in Quebec, by law, all academic medical centres must have their own HTA capacity (Lepanto 2016).

Given the successful introduction of centralized HTA processes for pharmaceuticals, development of a parallel system for NDTs has been proposed more than once over the past decade. In 2012, the possibility was discussed during a federal/provincial/territorial policy forum, and in 2016, the Conference of Deputy Ministers of Health formalized health technology management (HTM) as a priority for Canada and tasked CADTH with the development of a pan-Canadian HTM strategy to “improve” how NDTs are adopted and diffused into institutions across Canada (CADTH 2016).

As a first step, Health Canada commissioned a study to understand how decisions on NDTs are currently made across the country. This study involved a survey of and interviews with senior/executive-level leaders of healthcare institutions and organizations, as well as a day-long facilitated roundtable. The survey and interviews were designed to understand existing NDT review mechanisms, including the types of information used and structures and processes for making funding decisions. The results of the first parts of the study have been reported in an earlier manuscript (Stafinski et al. 2019). In this manuscript, we report on the roundtable.

Methods

A day-long facilitated roundtable was held. Roundtables convene a small number of participants to deliberate over a clearly defined topic. Twelve individuals were invited to participate spanning the following three groups: (1) leaders of healthcare institutions who make NDT decisions, (2) leaders of hospital-based HTA programs and (3) academic researchers with expertise in HTA and HTA-informed decision-making. Individuals from the first two groups were identified through the survey and purposefully selected to represent a range of healthcare organizations (community-based hospitals, tertiary care centres, academic teaching hospitals, shared services and regional health authorities) and geographic locations. Academic researchers, from the third group, had a publication track record in HTA and served on advisory committees of HTA organizations. The number of participants was limited to 12, ensuring enough diversity within the group to capture a range of NDT decision-making contexts and providing equal opportunity for each individual to participate (Riggas et al. 2010/2011).

The day-long session followed standard roundtable processes and was facilitated by a member of the research team with experience running similar sessions (DM; Scottish Health Council 2014). After introductions and a description of the context and aims for the session, two health services researchers (DM and TS) presented findings from the survey and interviews. Participants were asked whether they were consistent/inconsistent with their expectations, and to identify reasons for the patterns/trends observed across different

institutions. The second part of the session focussed on general issues related to HTM. These issues included enablers of and barriers to NDT adoption and the potential value of a centralized, pan-Canadian HTA process for NDTs. To encourage contributions from everyone, the nominal group technique was used. Participants first self-formulated their thoughts and then shared these in a round-robin fashion (Delbecq and Van de Ven 1975).

The roundtable was recorded, and detailed notes were taken by three researchers (TS, AN and OB). Transcripts and notes were analyzed independently by two researchers using content analysis (TS and DM). Initial categories and codes were developed based on the questions asked during the roundtable (deductive coding). Open coding was then used to capture additional emergent ideas (inductive coding). Participants were de-identified and assigned a number (e.g., P1, P2, etc.) during transcript analysis. To improve the accuracy and credibility of the results, member-checking (circulating results to participants) was performed.

Results

The roundtable included seven senior executives (two from academic teaching hospitals, one from a tertiary care centre, one from a provincial shared services organization, two from regional health authorities and one from a community hospital) and two hospital-based HTA unit leads. Collectively, they spanned Nova Scotia, Quebec, Ontario, Manitoba, Alberta and British Columbia.

Feedback on presentation of survey and interview findings

None of the participants expressed surprise over the findings, reiterating that healthcare organizations are complex systems in which one process for making decisions on all NDTs would have limited application. Larger organizations typically have more than one process because the decision-making authority is often distributed among multiple individuals who have different budget thresholds based on their position. NDTs can range from relatively inexpensive single-use devices (e.g., a stent) to expensive capital equipment (e.g., MRI machine), involving ongoing maintenance and eventual replacement after several years. The seniority of individuals making decisions and scrutiny over the process tend to increase with the budgetary impact of the technology. All decision-making processes were found to require information on safety and budgetary impact. According to the participants, this can be explained by the need to meet accreditation standards that are primarily designed to enhance quality and safety, reduce risk and ensure fiscal accountability. A minority of the processes consider patient preferences. One participant indicated that a lack of resources has precluded implementation of initiatives that are aimed at eliciting patient preferences around specific technologies/services. "To do that would involve resources we just don't have right now" (Participant [P] 1). A second participant questioned whether such initiatives are necessary because the choice of outcomes measured in studies used to inform questions about the safety and clinical efficacy/effectiveness of an NDT should reflect in part what matters to

patients. It was found that of the seven criteria used by at least 75% of processes, five are context-specific. Their application requires consideration of institution-specific factors, including alignment with institutional priorities, availability of similar services elsewhere, affordability, desire to please stakeholders and speed of technology uptake. Finally, based on the results of survey, philanthropic foundations are the most common funding sources for NDTs. "It has almost become a necessity, a part of standard operating procedures." (P2). One participant argued that this "reliance stems from major cuts that were first made to healthcare budgets over three decades ago" (P4).

Enablers of and barriers to the adoption of new NDTs

Participants stressed the importance of focusing on "appropriate" adoption of new NDTs. "It's not about adoption, in generic terms, it's about appropriate adoption." (P2). "Appropriateness" was conceptualized in the following two ways: "providing the right care to the right patient at the right time" and ensuring "the benefits of a technology outweigh the harms to patients, providers and the broader health system" (P1). Two enablers of "appropriate" adoption were identified.

- (1) *Access to dedicated resources for supporting decision-makers' information needs:* Participants from organizations with HTA capacity in-house described it as an "essential resource for understanding the potential impact a technology may have on our organization" (P9). In contrast, participants from organizations without such capacity viewed information availability as a challenge. "We have no dedicated HTA resources. We have to go with what is presented in the business case, which has usually been done off the side of someone's desk." (P1). Potential opportunities for sharing HTA information across organizations were discussed. All participants viewed evidence addressing safety and clinical effectiveness as portable, but they questioned the transferability of information on economic and system implications: "When I go googling on my own and find an HTA from somewhere else, I often quickly come to the conclusion that the only bit I can use is the clinical part" (P4). "We thought we could just use the [name removed] report, but found out the economic model had a different care pathway." (P4).
- (2) *Inclusion of innovation in organizational priorities:* In some organizations, particularly those formally affiliated with academic institutions, innovation is a part of the mission. They have created strategies and programs designed to foster collaborative relationships among innovators, healthcare providers and administrators and to encourage the development of technologies that better align with the institution's values and needs. "We offer a 'living lab' for innovators and in return we have real world evidence that we can use when it comes time to make a purchasing decision." (P5). The role of pilot studies in efforts to enable appropriate adoption of NDTs was also discussed. Although conceptually appealing, their management has challenged healthcare organizations. Pilots have

become “a way to get the technology through the back door.” (P9). Executive leaders are often unaware of pilots. A technology (e.g., medical device or piece of equipment) is lent to individual clinicians, programs or departments, and “they get to try it out for a while. The pilot lasts as long as it takes for staff to grow to like it and want to keep it. Then I find out about it because I get asked for money to pay for it” (P5). Tensions between providers and the executive leadership team surface when a disconnect arises between the technology’s value proposition and the priorities of the organization. Participants discussed ways of mitigating these issues, recognizing that pilots, when managed effectively, offer a useful tool for generating evidence that directly relates to an organization. The establishment of formal processes for overall management of pilots was proposed.

Participants identified four main barriers to the appropriate adoption of new NDTs:

- (1) *Lack of consistent approaches to technology decision-making within an organization:* Depending on the type of organization, the decision-making authority is delegated to leads of sites, programs or departments. Individual leads determine how decisions on new NDTs within his/her portfolio are made, resulting in multiple processes of varying complexity within the organization. In some cases, “a physician just says ‘in my field, this is the new standard,’ and it’s in” (P2). In multi-site organizations, different processes have generated different decision outcomes on the same technology. Thus, “there is quite a disparity in what folks have for equipment” (P6). This disparity has, at times, affected equity in access to services. “We had two patients who both had the same thing but they got offered different treatment options because one lived near [name of hospital removed] and the other lived near [name of hospital removed].” (P6). Participants discussed ways to alleviate this issue, noting that “not everybody is at the minimum standard. We have two major centres and they can’t agree on anything. How do you stop something to bring everyone else to a minimum level?” (P5). Development of a corporate-level strategy for NDTs was proposed, as “currently, health technology does not appear to have a corporate focus” (P3). It was agreed that such a strategy could provide the foundation for a standardized NDT decision-making process because “without a standardized process, opportunities to ensure new NDTs are introduced and used appropriately may be lost” (P3).
- (2) *Lack of consensus around what is affordable:* Participants first deliberated over the meaning of “affordability” and agreed that “affordability is a function of income, costs, and value judgements, and value judgements are a reflection of values” (P1). The term “values” was then discussed. “There is no shared understanding of values” (P8). “We use the word a lot and I don’t know that the values I have in my head are those everyone else in the room are thinking ...” (P3). The importance of establishing a set of values

to guide priority-setting for NDTs was stressed. It was felt that these values reflect those of society because the healthcare system is publicly funded. They also discussed the extent to which societal values may differ from those of patients, providers and payers and concluded that “we don’t really know” (P4). “We have to make efforts to get at this kind of information.” (P7). “And once we know them, there needs to be a higher level discussion around what we can afford.” (P3). In this context, the reliance on philanthropic foundations for funding of new health technologies was raised again. Often, funding is tied to priorities established by the donor, which differ from those of the organization. “Once that funding dries up, the hospital gets saddled with the costs for a technology that it didn’t need in the first place.” (P2). There was consensus around the need to work more collaboratively with foundations, and several ways were proposed that (1) involve foundations in yearly priority-setting activities, (2) co-create a menu of priorities to facilitate conversations with donors and (3) engage foundations in HTA activities. This third suggestion related to the Institute for Healthcare Improvement’s Quadruple Aim Framework, which had been adopted by some organizations. “Each time a new technology is brought forward, whether it be by a donor or a site chief, we have to ask ourselves what added value it brings to each of those quadrants ... and if we don’t think enough for what it costs, then that means we can’t afford it.” (P7).

- (3) *Lack of integration of technology assessment and procurement processes:* Typically, procurement becomes involved only after a technology has been assessed and approved for purchase. Therefore, it does not require HTA information. One participant explained that “procurement folks look at price, whereas the funding committee looks at value” (P6), resulting in the selection of a particular model or make of a technology based on the lowest price, rather than its value to the health system. However, “it could look like it is cheaper, but what if it causes more pain or is more difficult for staff to use?” (P7). The need to consider downstream costs was also raised. “Sometimes you spend the extra money on company X’s because you’ll have fewer costs downstream.” (P8). Since most of the information needed to determine the value of a technology has already been generated either through an HTA or through deliberations among those involved in making the funding decision, steps toward closing the gap between the two processes might include sharing information with and involving procurement in the funding decision stage. “It only makes sense to have procurement at the HTA table,” and “the earlier you can get procurement in this, the better” (P6).
- (4) *Lack of understanding of HTA and its role in supporting decision-making:* Despite HTA’s long history in Canada, its use in NDT decision-making across institutions remains limited (Stafinski et al. 2019). Participants argued that “there is a lack of HTA literacy in many healthcare organizations” (P9). HTA literacy was defined as “the ability to identify, understand, interpret and communicate findings from HTA” (P3). As stated by

one participant, “executives need to learn how to use HTA” (P4). This first requires an understanding of the main decision outcome HTA aims to inform (i.e., appropriateness of care). “It is time we narrow the discussion to appropriate care for appropriate patients” (P5). These questions demand consideration of the clinical, economic, social, legal, ethical and system (including workforce) implications of introducing a new technology; thus, HTA needs to be comprehensive. Since HTA resources are scarce, it was suggested that technologies assessed be limited to those for which there is an existing technology that could be replaced as a result of its adoption. “HTA resources are limited ... they need to be used in the right way ... we probably need to say to each other that we are in a zero sum game – thou shalt not do technology assessment without a comparator.” (P8).

A broader discussion around ways to optimize the usefulness of HTA in healthcare organizations emerged. Participants proposed the following:

- (1) *Identify the right technologies for assessment:* The “value of HTA lies in what we are assessing” (P8). Priority-setting for new NDTs and, by implication, HTA, is essential, as the number and range entering the Canadian market are significantly greater than the resources available to pay for them. In addition, new NDTs cannot continue to be introduced into the healthcare system without re-assessing existing NDTs to ensure their utilization remains relevant and appropriate. “We want an equal number of investment and disinvestment topics.” (P9).
- (2) *Establish a “single entry point for the review of new technologies”* (P9): There was broad consensus around the need for a more systematic, streamlined approach to the review of new NDTs, beginning with the establishment of a single point of entry. That entry point (individual, unit or office) would receive all requests for new NDTs, including those for potential pilots. It was acknowledged that although they may not all require the same level of scrutiny, they should be “entered into a centralized repository of innovations” (P6) to better facilitate their management.
- (3) *Ensure context is embedded into HTA:* The difference between HTAs of pharmaceuticals and of NDTs was stressed. “Usually, a new drug doesn’t mean I will need to think about renovating an OR (operating room) and hiring a new surgeon.” (P4). Decision-makers need to consider factors such as the availability of existing supportive services; patient care pathways; impact on workflow, beds and wait times for other services; and additional infrastructure requirements. “These are not the same for all facilities” (P2). One participant concluded, “For these technologies, when it comes right down to it, it is all about context” (P6).
- (4) *Include analyses of downstream issues:* One participant reminded everyone that “We’ve been talking about using a lifecycle approach to evaluate technologies for a long time now. If we did that, we could better manage what happens downstream” (P10). An example of a case in which the addition of a set of screening tests had overwhelmed lab services, resulting in delays to the analyses of other tests, was provided. Participants

agreed that “economic analyses within HTAs should incorporate implementation considerations that could have downstream consequences” (P7).

- (5) *Align HTA reviews with research processes*: In general, the production of HTAs to support NDT funding decisions remains separate from an organization’s research programs. Participants argued that if the two were more closely linked, there may be opportunities to conduct studies that generate real-world evidence on emerging technologies for which the evidence is promising but insufficient to warrant immediate adoption. There would also be opportunities to review evidence from any pilots of new technologies and determine whether it supports adoption within the organization. According to one participant, “we should look at managed entry as a more routine mechanism for introducing innovations rather than an exception” (P8).

Usefulness and feasibility of a centralized review process

The possible value of a pan-Canadian centralized review process was discussed. It was agreed that information on the safety and effectiveness of an NDT may be useful to all institutions/organizations if it is assumed that the comparator technologies and, moreover, priorities for NDTs are the same. One participant explained, “I already get physicians coming to me with a report from somewhere else saying that we need this technology when what we have to begin with isn’t even the same” (P5). Participants proposed the development of tools organizations could use to customize reports to reflect their local context. However, some raised concerns over the need for institutional resources to do that on an ongoing basis. Consequently, there was consensus among participants that given the nature of most NDTs, a centralized review comparable with that for drugs would likely be infeasible.

Participants proposed an alternative process in which assessments of technologies tied to priority areas shared by most healthcare organizations across Canada would be conducted to support decisions around their appropriate use. For example, there is “a need for good HTA being accessible and easily digestible for the funding and prioritization phase in the capital equipment replacement timeline” (P1). To this end, tools for contextualizing reviews to individual healthcare organizations should accompany them, as it was recognized that no single economic model can capture differences in the delivery of care across organizations in a meaningful way.

Limitations

The study has two main limitations. First, only one roundtable was conducted. Although efforts were made to select participants who represented a broad range of organizational perspectives, it is not possible to comment on the generalizability of the findings to all senior executives, institutional directors of HTA units and academic experts involved in NDT decision-making across Canada. Second, although two participants were from Ontario,

neither held a senior-level executive position. However, both had worked closely with senior executives in healthcare organizations for over 20 years and, therefore, had an in-depth understanding of NDT decision-making processes in Ontario.

Discussion

In this paper, we reported on the deliberations of a pan-Canadian roundtable on processes for making decisions on the adoption of new NDTs. Participants validated the findings of a survey of 48 health institutions from eight Canadian jurisdictions (Stafinski et al. 2019), identified barriers and enablers to the appropriate adoption of new NDTs and proposed a number of ways to improve the usefulness of HTA. In particular, they stressed the importance of ensuring that the local context is embedded in assessments. The need for contextualized HTA has been recognized by jurisdictions internationally, leading to the establishment of institution-based HTA units in many countries (Ehlers et al. 2006; Sampietro-Colom and Martin 2016). Participants argued that a lack of HTA literacy among health leaders has precluded its widespread incorporation into decision-making processes. This has also been identified as a limitation of HTA use in other countries (Hivon et al. 2005). Finally, participants questioned the usefulness and feasibility of creating a centralized HTA process for NDTs, which mirrors that already in place for new pharmaceuticals. Over the years, other countries have engaged in similar debates, and for largely practical reasons, responsibility for making NDT decisions remains at a local or regional level (OECD 2017).

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