



# OPPORTUNITIES TO PROMOTE EFFICIENCY IN HOSPITAL DECISION-MAKING THROUGH THE USE OF HEALTH TECHNOLOGY ASSESSMENT

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## KEY MESSAGES

- ▼ Health technology assessment (HTA) is a multidisciplinary area of applied research that produces high-quality information about health technologies—drugs, medical technologies and health interventions. The HTA produces recommendations on whether a health technology should be considered, funded and adopted into practice. The goal is to use the research and recommendations from the HTA to inform decisions that will improve quality and cost-effectiveness of healthcare.
- ▼ In Canada, there are several well-established agencies at the national and provincial levels that successfully perform HTA. More and more, however, HTA units are being implemented in a local/hospital-based setting, based on a growing awareness that the local context needs to be taken into account when assessing health technologies.
- ▼ Four different models for performing local/hospital-based HTA have been identified and are currently in use world-wide: the ambassador model; mini-HTA; internal committee; and HTA unit. Each has its own strengths and weaknesses. There is insufficient evidence available to adequately assess which of these models would be the best for Canadian hospitals.
- ▼ Research shows that local/hospital-based HTA may influence decision-making. There are reports from isolated experiences related to local/hospital-based HTA on hospital decisions and budgets, as well as positive perceptions from managers and clinicians.
- ▼ It is difficult to evaluate the overall impacts of HTA on the various levels of healthcare delivery, largely because most hospital-based HTA experiences are recent and there is a paucity of data. Further research is necessary to explore the conditions under which local/hospital-based HTA results and recommendations can have an impact on hospital policies, clinical decisions and quality of patient care.
- ▼ The potential exists to share expertise and methodologies between local/hospital-based HTA units. However, there are challenges in directly transferring research knowledge from one organization to another, given the specificity of the context from hospital to hospital.

## EXECUTIVE SUMMARY

The goal of health technology assessment (HTA) is to improve the quality and cost-effectiveness of healthcare, and ultimately improve the health of people. This goal is reached by providing decision-makers with high-quality information about the clinical effectiveness, cost-effectiveness and broader impact—including social and ethical implications—of health technologies, which encompass drugs, medical technologies and health interventions. In Canada, agencies that perform HTA are well established at the national level (Canadian Agency for Drugs and Technologies in Health) and also in some provinces (the *Institut national d'excellence en santé et en services sociaux* in Quebec, the Ontario Health Technology Advisory Committee and Medical Advisory Secretariat in Ontario, and the Institute of Health Economics in Alberta).

More and more, local/hospital-based HTA is becoming essential, due to a growing awareness that the local context needs to be taken into account when assessing health technologies. Healthcare organizations are under increasing demand from health authorities to improve the quality and the efficiency of care delivery. With this in mind, it is important that decisions (prioritization, investment, adoption, and disinvestment) regarding some health technologies—other than those concerning large equipment, which are usually considered at a regional or provincial level—be carried out at the local/hospital level. The implementation of local/hospital-based HTA units is viewed as a strategy to improve the relevance and timeliness of HTA recommendations and, ultimately, to facilitate uptake. It is also a strategy that can support knowledge transfer and evidence-based decision-making at the local/hospital level, thus enabling a culture of evaluation in the hospital.

Quebec has the greatest number of hospital-based HTA units, with five university hospital centres that have already implemented their own local HTA programs. Quebec is the only province in which such units are mandated by the law. Other Canadian provinces with local/hospital-based HTA activities are Alberta, with the Local HTA Decision Support Program, and Ontario, with the HTA unit at Toronto's Hospital for Sick Children, the High Impact Technology Evaluation Centre at the London Health Sciences Centre, and the Health Technology Assessment, Appraisal and Review Program at St. Joseph's Healthcare, Hamilton.

Local/hospital-based HTA are not necessarily performed within the walls of the hospital but are specific to local /hospital-based decision-making. When collected and available for analysis, local data (utilization, costs...) are used by these programs to ensure a better applicability of their reports and recommendations to the local/hospital contexts and consequently a greater impact on hospital policies.

Overall, four different models for performing local/hospital-based HTA have been identified and proposed by the HTA International association (HTAi): the ambassador model; mini-HTA; internal committee; and HTA unit.

- ▼ In the ambassador model, interested clinicians who are recognized as opinion leaders play the role of ambassadors of the HTA “message” within healthcare organizations.
- ▼ Mini-HTA is a management and decision support tool that consists of questions about the technology, the patient, the organization, and the financial aspects. A single professional participates in the assessment process, collecting utilization data at the hospital level in order to inform decision-makers.
- ▼ The internal committee is usually made of a multidisciplinary group representing different perspectives of the organization. This committee is in charge of reviewing evidence and making recommendations to the healthcare organization.
- ▼ The HTA unit represents the most structured model for local/hospital-based HTA. It is a formal organizational structure with dedicated HTA personnel working on a full-time basis to produce high-quality scientific HTA material.

## EVALUATING THE IMPACT OF HTA

*“HTAs that have no influence on policy are wasted effort.”*

– Dr. Maurice McGregor, Chair of the Technology  
Assessment Unit of the McGill University Health Centre

There have been few assessments of the impact of HTA recommendations on decision-making. The best available information suggests that recommendations issued by hospital-based HTA units do have an impact on hospital policy. However, the impact of mini-HTA, for example, seems to be lesser on hospital policy and it is usually used as a supplement to decision-making. Stakeholders hold congruent and positive perceptions about local/hospital-based HTA activities, although some concerns have been raised. Little information is available regarding the financial aspects pertaining to the four models of local/hospital-based HTA, including cost-effectiveness, costs of HTA review and resources required for implementing a local/hospital-based HTA program.

There are several barriers and facilitators to the uptake of local/hospital-based HTA recommendations, and these need to be recognized by those undertaking the assessments. As well, strategies should be implemented to overcome the potential barriers. For instance, when the opinion of a hospital-based HTA unit is sought by the hospital administration, the HTA must be completed in a timely fashion if it is to have an impact on hospital policy, as HTA recommendations may become obsolete if not completed within the required decision-making timeframe. Poor knowledge of hospital-based HTA recommendations is another example of a potential barrier. Adopting well-designed dissemination strategies, such as websites for hospital-based HTA units, or even making key stakeholders individually aware of the recommendations, could enhance awareness and potentially increase compliance with the recommendations.

Some conditions are essential to ensure the success of local/hospital-based HTA programs. Here are some of the issues that should be taken into account:

- ▶ The process of health technology evaluation and approval should be fair, transparent, evidence-based and timely.
- ▶ There is also a need to establish a set of criteria and protocols for HTA at the hospital level to avoid the risk of individual bias and partiality.
- ▶ The process of health technology assessment and approval should be congruent with the hospital's mission and firmly rooted in its strategic plan.
- ▶ Hospitals should devote the required resources and should put the necessary organizational changes in place in order to promote and support technology assessment programs.
- ▶ With respect to the composition of the technology evaluation committee, key stakeholders (finance, senior administrators), clinicians, HTA professionals and patients/consumers should be represented.

The final issue addressed in this report is the transferability of local/hospital-based HTA results between hospitals and between provinces. However, available evidence suggests that the recommendations made by a hospital-based HTA unit may be of interest to other institutions, but are not necessarily transferable due to the local conditions, values and priorities of a hospital. Nevertheless, information-sharing is a valuable activity, as results of systematic reviews conducted by one HTA unit can likely more often be used by other units as a starting point for their own HTA reports. Additionally, the exchange of methodologies and expertise between HTA units is desirable because it can lead to sharing of best practices and economies of scale. In Quebec, one of the roles of the Institut national d'excellence en santé et en services *sociaux* is to facilitate collaboration and exchange, and avoid duplication between all HTA units in the province. This institute initiated a community of practice in HTA that provides a forum for provincial HTA professionals. This initiative aims to promote the exchange between the different local/hospital-based HTA units and could be expanded to other Canadian provinces and territories.

# 1 CONTEXT

Improving the quality of healthcare in a context of scarce resources is a challenge for health systems.<sup>1</sup> However, it is believed that using the best scientific evidence available to support decision-making has the potential to ensure that Canadians have the best quality of care.<sup>2,3</sup>

Health technology assessment (HTA) is a multidisciplinary field of applied research aimed at providing high-quality information about the clinical effectiveness or efficacy, cost-effectiveness and broader impact (including social and ethical implications) of health technologies (drugs, medical technologies and health interventions) in order to support and inform those who make decisions about health policy and purchasing, health services organization and management, and clinical practices.<sup>4,5</sup> The emergence of HTA activities in hospitals and other healthcare organizations is the result of an increasing awareness that the specific organizational contexts should be taken into account when assessing health technologies.

The adoption of the HTA logic at the hospital level seeks to respond to three different concerns.<sup>6</sup> First, decisions on the technologies to be reimbursed by the publicly funded healthcare system largely rest with individual institutions or provincial governments. Thus, individual healthcare organizations face ongoing pressure from health authorities to improve the quality and efficiency of care delivery. This has increased organizations' independence and empowerment, but has also increased their responsibilities. Consequently, decisions (investment, adoption, disinvestment) concerning many health technologies are increasingly carried out at the local/hospital level. Second, opportunities and advantages associated with the use of health technologies in the medical field depend on resources and competencies availability in each healthcare organization. Given that decisions are increasingly taken at that organizational level, evidence and data should also be collected and analyzed in that organizational context.<sup>6</sup> Third, policy-makers, hospital managers, clinicians and other healthcare professionals are asked to incorporate timely scientific evidence into clinical practices and organizational processes. In other words, the implementation of local/hospital-based HTA units can be useful to create a positive organizational context conducive to the use of scientific evidence to support both clinical practices and management decision-making in hospitals. In light of these concerns, when deciding whether or not to adopt health technologies, it is imperative to assess the effectiveness of local/hospital-based HTA experiences as well as the different approaches that can influence the different stakeholders (managers, clinicians and patients) to incorporate HTA.

In this report, the authors aim to inform future decisions regarding the implementation of local/hospital-based HTA as a means to improve the optimal use of hospital resources across Canadian jurisdictions. The objective is to synthesize current evidence concerning the use of HTA at the local/hospital level as a means to promote better healthcare decision-making in Canada. More specifically, the authors explore the impact of local/hospital-based HTA activities at different levels: management (Have HTA recommendations been accepted and initiated by managers?); financial (What expenses and savings are related to HTA activities and their recommendations?); and clinical (What is the acceptability and adoption of HTA by healthcare professionals and patients?). This synthesis identifies the main barriers and facilitators to the adoption of local/hospital-based HTA recommendations, as well as the conditions for the success of local/hospital-based HTA. The authors discuss the transferability of HTA results and the strengths and limitations of different structures for local/hospital HTA. Future avenues for the evaluation of local/hospital HTA initiatives are also identified.

## 2 IMPLICATIONS

According to the HTA International association (HTAi), organizational models for HTA can be grouped into four categories: the ambassador model; the mini-HTA; the internal committee; and the formal HTA unit.<sup>6</sup> Each model has specific purposes, structures, advantages and disadvantages. As well, the models' impact on hospital policies and the factors affecting their effectiveness can vary. (All four models and their processes are described in more detail in section 4.2 of this report.)

Evidence from the scientific literature is limited regarding the impacts of local/hospital-based HTA on the different stakeholders (hospital managers, clinicians, and patients) as well as on hospital budgets. This is mainly due to the fact that local/hospital-based HTA is a relatively new activity and few evaluations have been conducted.<sup>7</sup> However, investigators who assessed Canadian and international experiences reported a high impact of local/hospital-based HTA on decisions regarding the acquisition or withdrawal of health technologies in hospitals.<sup>8-10</sup> Available information shows that a great proportion of HTA recommendations made by hospital-based HTA units are adopted and acted upon by hospital managers.<sup>10</sup> The acceptance of these recommendations by clinicians has been reported to be high in one report<sup>9</sup>, which may be because of the collaborative nature, scientific rigour and transparency of the hospital-based HTA process. No studies assessed the impact of local/hospital-based HTA on patient outcomes.

The impact of HTA on hospitals' costs and savings was assessed in only one published study, where the budget impacts of HTA reports were analyzed.<sup>10</sup> This study demonstrates that the HTA recommendations made by the Technology Assessment Unit of the McGill University Health Centre (MUHC) contributed to a net budget saving of close to \$11 million over five years. The costs related to the functioning of this hospital-based HTA unit were about \$1.2 million over five years. However, costs may vary a lot from one hospital-based HTA unit to another depending on the number of staff and its qualifications, as well as the salary scales within each organization.

Finally, this synthesis addresses the transferability of local/hospital-based HTA recommendations and reports from one hospital to another and from one province to another. No empirical studies were found on this topic, but contacted experts expressed reservations about the direct applicability of HTA recommendations across settings due to the very nature of local/hospital-based HTA, which is context-specific and adapted to the local conditions, values and priorities of a hospital. Nevertheless, sharing knowledge and expertise between local/hospital-based HTA organizations is necessary to avoid duplication and ensure the rigour of the process. Furthermore, systematic reviews that are conducted by an HTA unit can be useful for others. Thus, creating a community of practice that gathers HTA professionals at the provincial level seems a promising approach.

## 3 APPROACH

An expedited knowledge synthesis including the scientific literature (qualitative, quantitative and mixed-methods studies) and other published documentation (technical or grey literature) was conducted. The search methodology is summarized in Appendix 1 and the descriptive content of retrieved studies and reports is presented in Appendix 2. The websites of the Canadian HTA agencies that were searched are presented in Appendix 3. Key results of the systematic review were presented and discussed during two meetings of experts held respectively in Montreal and Quebec City. These meetings brought together members of the research team and representatives of HTA units across the province of Quebec and generated rich discussion.

The list of local/hospital-based HTA programs across Canada was established by combining the information found in a report published by the Canadian Agency for Drugs and Technology in Health (CADTH)<sup>11</sup> and a scientific article by Battista et al.,<sup>7</sup> both of which have addressed such HTA programs in Canada (See Appendix 4). The diversity of interests and expertise among team researchers and their respective networks allowed the validation of this list. Moreover, the authors identified international experts who have published reports or scientific articles that focus on the description of the activities or the evaluation of local/hospital-based HTA programs. Due to time and organizational constraints, experts from other Canadian provinces and international experts involved in local/hospital-based HTA in different countries were contacted to seek further information by e-mail only. (The contribution of the experts who participated in the two meetings and those who responded our e-mails is recognized in the Acknowledgements section of this report.)

## 4 RESULTS

The information provided in the following sections corresponds to the most recent information available at the time this report was produced. It is worthwhile to mention that local/hospital-based HTA programs in the Canadian provinces may have changed since the production of this report.

### 4.1 HTA in Canada

In Canada, CADTH is responsible for conducting HTA at the national level. At the provincial level, HTA is undertaken by agencies including *L'institut national d'excellence en santé et en services sociaux* (INESSS) in Quebec, the Ontario Health Technology Advisory Committee (OHTAC) and Medical Advisory Secretariat (MAS) in Ontario, and the Institute of Health Economics in Alberta (IHE).<sup>7</sup> These programs are principally concerned with the evaluation of health technologies, and their findings and recommendations guide the decisions made by various government bodies regarding the dissemination of health technologies. Several other organizations conduct HTA across Canadian provincial and territorial jurisdictions. These organizations differ in their structure, the scope and breadth of the assessments that are performed, and their targeted audiences.<sup>7</sup> Additionally, there have been several initiatives to establish local/hospital-based HTA in Quebec, Alberta and Ontario.

#### 4.1.1 Quebec

Quebec has the greatest number of hospital-based HTA units and, since 1992, is the only Canadian province to have local/hospital-based HTA mandated by the law.<sup>11</sup> Five university hospital centers have already implemented their own local HTA programs (see Appendix 4 for more information). Hospital-based HTA is currently expanding to other institutions such as the *Institut de cardiologie* and the *Institut de réadaptation Gingras-Lindsay* in Montreal and the *Institut de réadaptation en déficience physique* and the *Institut universitaire en santé mentale* in Quebec. Furthermore, the *Consortium pour l'évaluation des technologies et des modes d'intervention en santé et services sociaux* (CETMISSS) has been formed by a group of five health and social services centres with the aim of sharing resources to promote HTA, providing training to managers and healthcare professionals, and performing HTA.

Quebec's hospital-based HTA units perform evaluations of medical devices, treatments, and delivery of healthcare services. These units contribute to the development of policy recommendations for their specific organizations. Moreover, they play a critical role in training researchers in evaluative methods, promoting a culture of evaluation and disseminating knowledge.<sup>11</sup> The scientific staff of the hospital-based HTA units

works in close collaboration with managers and healthcare providers of the institutions to which they are attached. This collaboration encompasses the selection and the prioritization of topics, the collection and interpretation of evidence, and the development of policy recommendations.

### 4.1.2 Alberta

In Alberta, a local decision-support program has been developed by the Department of Surgery and Surgical Services and the Calgary Health Research Portfolio at Alberta Health Services-Calgary with the support of CADTH.<sup>12</sup> The ultimate goal of this program is to provide process and tools for evaluating new technologies in a systematic, consistent and transparent manner. In order to expand this program to other departments, the Local HTA Project Group was formed with members from additional departments, who adapted the local decision support program to cover a wide range of applications. Thus, this program could be categorized as an internal committee.

The Local HTA Decision Support Program comprises a set of policy, forms and tools to provide a process for assessing health technologies.<sup>12</sup> The policy states that all new technologies must be evaluated by the Local HTA Program before their implementation or purchase. The forms are used to collect and assemble evidence concerning the safety, efficacy and effectiveness of the health technology, and combine these data with the organizational and financial impacts of the health technology at the local level. The tools are a set of guidelines used to translate and interpret the collected scientific evidence into recommendations or decisions about whether to adopt a technology and under what conditions, or about the prioritization of competing technologies for funding and purchase for the local environment. The Local HTA Decision Support Program favours patient care services innovation by incorporating an outcomes reporting mechanism by which innovative technologies can be tested and evaluated.<sup>12</sup> Details about the technology evaluation pathways that are used by the Local HTA Decision Support Program are presented in Appendix 5.

The Local HTA Decision Support Program is now being adapted by the newly formed Surgery Clinical Network Health Technology Assessment and Innovation (SCN-HTAI) unit, a provincial review body at Alberta Health Services. Moreover, the Alberta Health Services, in collaboration with Alberta Health and Wellness, has created a province-wide Health Technology Assessment and Innovation Program.<sup>11, 12</sup>

### 4.1.3 Ontario

Ontario has three groups undertaking hospital-based HTA activities: the Technology Assessment at SickKids (TASK);<sup>10</sup> the High Impact Technology Evaluation Centre (HiTEC) at the London Health Sciences Centre;<sup>11</sup> and the Health Technology Assessment, Appraisal and Review Program at St. Joseph's Healthcare Hamilton (SHARP program).<sup>13</sup>

TASK is a research institute-based unit at Toronto's Hospital for Sick Children that was created in 2007 in response to the growing interest in HTA and health economic evaluation from this institution.<sup>11, 14</sup> TASK's funding comes mainly from research grants. In addition to HTA, this unit performs methodological research and economic evaluations in paediatrics, and also provides training activities.

The mission of HiTEC at the London Health Sciences Centre is to perform health technology analyses for high-stakes decisions (high clinical, economic, and political risks) for the hospital's decision-making needs.<sup>15</sup> The hospital-based unit is composed principally of one pharmacist and a physician, with as-needed collaborative input from a bioethicist, medical economist, content-related experts, and administrators. HiTEC uses a priority scheme to assess which technologies and drugs should be addressed,

and when externally-prepared HTAs are unavailable to address the prioritized topics, the unit conducts its own HTAs. When appropriate externally prepared HTAs are available, the assessments are used as the starting point for contextualization. HiTEC was created for the purpose of informing decisions within the hospital setting, and the activities within HiTEC are conducted in response to decision-makers' needs (requested by administrators or clinicians via the appropriate decision-making committee process).

The SHARP program has been developed by the Programs for Assessment of Technology in Health (PATH) Research Institute, in collaboration with the administration at St. Joseph's Healthcare, Hamilton.<sup>13</sup> The ultimate goal of the SHARP program is to assist decision-makers at the hospital level with requests for new health technologies (drugs, surgical interventions, laboratory tests and capital acquisitions) using literature reviews and synthesis techniques. The program explores whether an evidence-based HTA approach could be applied more consistently for informing local/hospital decision-making regarding new technologies.

## 4.2 Existing approaches to implement HTA at the local/hospital level in different healthcare systems

Given the emergence of HTA activities at the local/hospital level in numerous countries around the world, the Hospital Based HTA Interest Sub-group was created within the HTAi (the HTA International association) in 2006.<sup>6</sup> This sub-group brings together professionals involved in the use of HTA logic at an organization level, with the ultimate goal of supporting and promoting both managerial and clinical decision-making processes.

The hospital-based HTA subgroup agreed that various scenarios of HTA activities exist at a healthcare organization level, depending on institutional and other socio-economic factors that characterize the healthcare system in different countries.<sup>6</sup> A conceptual model was established to reduce the variability between hospital-based HTA approaches that were found around the world. Four different models for performing HTA within hospitals were acknowledged: 1) ambassador model; 2) mini-HTA; 3) internal committee; and 4) HTA unit. Two variables were considered to conceptualize these models: the focus of action (produce evidence for managerial decision-making and/or to support effective clinical practice); and the level of complexity of the organizational solution implemented (individual professionals or complex and multi-professional organizational units).

Figure 1: Local/hospital based HTA models <sup>6</sup>

		Focus of Actions	
		CLINICAL PRACTICE	MANAGERIAL DECISION MAKING
Organizational Complexity	High (Team-group-unit)	(Q3) 'Internal Committee' Model	(Q4) 'HTA Unit' Model
	Low (Individual)	(Q1) 'Ambassador Model	(Q2) 'Mini-HTA' Model

### 4.2.1 *Ambassador model*

This model was first developed in Swedish hospitals.<sup>16, 17</sup> The ambassador program was initiated in 1996 by the Swedish Council on Technology Assessment in Health Care (SBU), because of the recognition of the importance of effective dissemination procedures of SBU findings. Specifically, the SBU has established a network of over 40 local “ambassadors” of the HTA message—<sup>18</sup> who are interested clinicians who have participated in an SBU project and who are recognized as opinion leaders.<sup>17</sup> Their mission is to visit and to inform colleagues and other interested parties throughout the country about SBU’s findings. Moreover, networks of SBU ambassadors across Sweden participate in initiating and promoting efforts at the local and regional levels, aiming to ensure that SBU reports are effectively influencing decision-makers and that the SBU findings are used in clinical practices.<sup>17</sup>

The Alberta Ambassador Program is an adaptation of the Swedish Ambassador program, and was used as a HTA knowledge transfer strategy for informing community clinicians about current research evidence on the management of chronic non-cancer pain.<sup>19, 20</sup>

### 4.2.2 *Mini-HTA*

Mini-HTA is a management and decision support tool in which the assessment process (collecting data within the healthcare organization) is performed by a single professional. It consists of questions about the technology, the patient, the organization, and the financial aspects. These questions cover the prerequisites for using the new technology and the consequences of using it.<sup>21</sup>

The term “mini-HTA” was first used by the Copenhagen University Hospital (Denmark) and was initially designed to support decisions related to the approval of new treatments. Over time, mini-HTA was adopted by many Danish hospitals, and it is actually used both for requesting equipment and for introducing new treatments.<sup>21</sup> The mini-HTA is often the principal basis for decision-making in hospital management, while in other contexts it is used as a supplement by decision-makers.

Mini-HTAs are also used in some Spanish hospitals to support the introduction of new technologies. In Catalonia (Spain), the Hospital Clinic of Barcelona is producing HTA reports, in a modified mini-HTA format, with a very participative process that involves managers, clinicians, and other stakeholders. These reports contain information that is specific to the organization and are thus not public.<sup>22</sup>

### 4.2.3 *Internal committee*

With this model, a multidisciplinary group representing different perspectives, called an internal committee, is in charge of reviewing evidence to issue recommendations to the healthcare organization. This model is commonly used in the United States,<sup>23</sup> in Australia<sup>24</sup> and in some Spanish hospitals.<sup>25</sup>

For example, HTA in Veterans Health Administration (VHA) West Coast hospitals in the United States is performed mainly by internal committees. Committees include representatives from the administration, materials/supply management, medical staff, and nursing.<sup>23</sup> A formal process for new technology assessment with a dedicated committee is in place in most of these VHA hospitals, and nearly all the hospitals have a process to phase in new technologies and another one to seek out emerging technologies. Overall, all hospitals have a criteria-based structure or a defined protocol to evaluate technologies. These committees usually do not have the necessary authority to approve the implementation of a new technology, given that the final decisions are made by the medical executive committee, the senior management or the hospital governing board.<sup>23</sup>

In Australia, the Northern Sydney Central Coast Area Health Service has established an internal committee composed of consumer representatives, a health economist, clinicians, and members of the area and state bureaucracy.<sup>24</sup> This committee is responsible for assessing new health technologies, appraising their application in the local context and making recommendations to Northern Sydney Central Coast Area Health Service. A clear and simple application process is implemented and the necessary resources are devoted to conduct relevant assessments.<sup>24</sup>

In Spain, the University Hospital Miguel Servet of Zaragoza in Aragón has a committee responsible for the evaluation of health technologies (Comisión de Tecnología y Adecuación de Recursos) which is integrated into the Quality of Care Unit. The committee has eight members and serves as an assessor for the hospital's administration. Its mandate goes beyond HTA and includes needs assessments, technological inventory, development of clinical guidelines and pathways, elaboration of criteria for hospital admission, and management of waiting lists.<sup>25</sup>

#### 4.2.4 HTA unit

This model represents the highest degree of structure for hospital HTA.<sup>26, 27</sup> The HTA unit is a formal organizational structure with dedicated HTA personnel working on a full-time basis. This model is used in Quebec,<sup>28</sup> in Italy,<sup>27</sup> in some hospitals in the United States and in France,<sup>8</sup> although the French experience is somewhat different.

Created in 2001, the Technology Assessment Unit of MUHC is the first hospital-based unit to be established in the province of Quebec in 2001 and is recognized as being very dynamic and prolific.<sup>28</sup> This HTA unit is composed of two entities: a professional staff and a policy committee.<sup>26</sup> The former is represented by a small staff with expertise in HTA: part-time director, part-time research scientist, two full-time research associates and a secretary. When a request for a technology assessment is received, the unit's professional staff is in charge of gathering, analysing and synthesizing the scientific evidence, especially HTA reports performed elsewhere in the world. They are also responsible for ensuring that the collected evidence is relevant to the local context by using primarily local data when available and by conducting original research when necessary. The policy committee is in charge of developing locally pertinent recommendations using the evidence in the technical reports produced by the professional staff. This committee is composed of 10 volunteers (nurses, physicians, other health professionals and patients representatives) and an administrator, and is assisted, as needed, by consultants, ethicists and health economists.

The hospital-based HTA unit at the Centre Hospitalier Universitaire de Québec (CHUQ) belongs to the Department of Evaluation, Quality, Engineering and Performance.<sup>29</sup> This unit is composed of professional staff and two committees: the orientation committee, which is responsible for the choice and prioritization of evaluation questions and which oversees the general orientations of the HTA Unit; and the scientific committee, which validates the evaluation reports that are produced and ensures the rigor of the scientific methodology.

In Italy, there are hospital-based HTA activities reported in several hospitals and hospital-based HTA is considered as the real driver of the country's HTA movement in the country.<sup>30</sup> One example is the HTA unit at the Policlinico "A. Gemelli" in Rome, a University Health Centre comprising five healthcare organisations covering acute, rehabilitation and nursing home care.<sup>27, 31</sup> This unit was created in 2001 and is attached to the General Directorate. The purpose of this HTA unit is to counsel top management in decision-making on resource allocation using transparent, fair and consistent evaluation processes. This unit is composed of a multidisciplinary professional staff (one physician, two biomedical engineers, one

engineering quality expert, five health economists and one statistician) as well as a clinical committee. Between 2001 and 2004, 30 new technologies were assessed by this hospital-based unit and 10 research projects were conducted. This unit has two principal areas of activity: high-level management support and clinical support. In addition, this unit performs research and training activities (Ulysses program: International Master's Program in Health Technology Assessment and Management<sup>32</sup>) and participates in Hospital-Industry collaborations on HTA.

In the United States, the Centre for Evidence-based Practice at the University of Pennsylvania Health System was established in 2006 and has produced more than 100 reports since its inception. The professional staff includes two hospital co-directors, two research analysts who perform evidence reviews, a health economist, six clinical liaison, a librarian and an administrator. The Center is guided by an executive board and an advisory board composed of academic and administrative leaders.<sup>33, 34</sup>

In France, the Committee for the Assessment and Dissemination of Technological Innovations (CEDIT) was established in 1992 as an HTA agency attached to the Medical Policy Directorate of a network of 39 university hospitals known as the Assistance Publique-Hôpitaux de Paris.<sup>8</sup> The CEDIT fulfills two missions. First, it produces recommendations on the value of health technological innovations. Second, it provides practical advice on the dissemination of these technologies within the hospital network. In addition, the CEDIT provides methodological, logistic, and financial support to conduct supplementary investigations when needed. Healthcare providers and people involved in making financial policy decisions (senior management of hospitals and purchasing divisions) are among the recipients of CEDIT's recommendations.<sup>8</sup>

### **4.3 Reported effects and impacts of local/hospital-based HTA activities**

#### **4.3.1 Impacts on hospital policies**

Only a few evaluations of the impact of HTA on hospital decisions have been reported in the literature. Among them, McGregor has evaluated the acceptance of the recommendations of 27 reports issued by the Technology Assessment Unit of the MUHC between January 2002 and June 2007 and their impacts on policy.<sup>10</sup> In this evaluation, McGregor assessed the impact of the recommendations of each report by conducting interviews with local administrative and clinical decision-makers. The findings indicate that policy recommendations of 25 reports, among the 27 that were evaluated, were accepted and incorporated into hospital policy. The hospital administration rejected the recommendations of only one report and no concrete measures were considered to implement the recommendations of another one.<sup>10</sup>

An evaluation of the impact of hospital-based HTA recommendations was also conducted by the HTA unit of the CHUQ in Quebec by assessing the application of the recommendations of two reports: the intravenous administration of contrast agents in medical imaging; and the use of Argon in cryotherapy to relieve lumbalgia.<sup>9</sup> Overall, 70% of the recommendations of the first report and 68% of the second report were accepted and incorporated into hospital policies.

Another evaluation of HTA impacts on hospital decisions is that of the CEDIT in France, which reports that decision-makers find hospital-based HTA recommendations to be very useful.<sup>8</sup> That study, based on interviews with decision-makers, highlights that HTA recommendations are used to inform financial decisions: in other words, whether or not funding is provided to purchase the technology.<sup>8</sup> However, Ehlers et al. found that the impact of mini-HTA seems to be less important for decision-makers. For instance, decision-makers in Danish hospitals use the mini-HTAs as a supplement when making decisions.<sup>21</sup>

HTA activities could improve the decision-making process related to the introduction of new technologies by fostering the transparency and the communication between the different stakeholders

(Healthcare professionals, managers and decision-makers), which ensures more informed decision-making and helps to build the credibility of decision-making process at local/hospital-based levels.<sup>8, 26</sup> However, establishing the impact of local/hospital-based HTA recommendations on decision-making can be challenging, particularly for technologies whose value is perceived only after several years have passed since their implementation.<sup>35</sup> In cases where the impact of local/hospital-based HTA recommendations is not rapidly observed on decision-making, it is not possible to predict with certainty whether the dissemination of the technology would have been the same if the HTA was not carried out. Moreover, the presence of incentives or circumstances that promote the dissemination of the technology may impede the assessment of the impact of some HTA recommendations. Other sources of information, such as scientific publications, may have an impact on the introduction of new technologies, which makes it difficult to identify the specific impact of HTA recommendations.<sup>35</sup>

Discussions with experts show that procedures used to identify the impacts of hospital-based HTA recommendations, such as the interviews that have been conducted by the Technology Assessment Unit of MUHC, are not sufficient to fully identify the impact of hospital-based HTA recommendations. A comparison between an organization that has adopted the technology and one that did not would be necessary to differentiate between the impact of hospital-based HTA recommendations and the environmental context. It is worth mentioning that experts consider that such comparisons are difficult to conduct, mostly due to methodological and ethical concerns. Furthermore, experts have stressed the fact that since the aim of hospital-based HTA is to influence decision-making processes, its impact should be assessed at a broader level and not only on individual decisions regarding particular technologies. However, experts agree that it is essential to develop new analytical models for evaluating the impact of HTA, to compare similar environments and to conduct multiple case studies in order to advance knowledge on the impact of local/hospital-based HTA.

### *4.3.2 Perceptions of various stakeholders on local/hospital-based activities*

Users' perceptions of hospital-based HTA activities were evaluated by the HTA unit of the CHUQ using a questionnaire that was sent to 22 individuals involved in the activities of the HTA unit, either by requesting an assessment or by participating in a working group.<sup>9</sup> The perceptions of these stakeholders were assessed about the following topics: the usefulness of hospital-based HTA for decision-making; the use of hospital-based HTA for improving clinical practices and organization of services; participation and involvement in the technology assessment process; timeliness of production of reports; the use of new services offered by the CHUQ's HTA unit; the recommendation of this unit to colleagues; and the quality of the services provided by the unit. Fourteen stakeholders answered the questionnaire (response rate 62%). High satisfaction with the activities of the unit was observed. Moreover, clinicians believe that hospital-based HTA had an impact on their practice.<sup>9</sup>

In France, the CEDIT is well regarded by the administrative staff.<sup>8</sup> The reasons for requesting a technology assessment at CEDIT may vary between different stakeholder groups. Members of the administrative staff are typically looking for an objective assessment of the technology, data on the financial impact, and an objective opinion on the introduction of the health technology. According to the French experience, the reasons for requesting a technology assessment are different for physicians, who typically seek an assessment when the technology they request is costly. It is difficult to obtain funding for such technologies, so hospital-based HTA provides physicians with a tool to negotiate with managers, which improves their credibility when they want to introduce a new technology.<sup>8</sup> Conversely, when easy access to a technology is granted by manufacturers or special research allocations, healthcare providers do not usually seek the opinion of a hospital-based HTA unit in order to avoid the risk of obtaining recommendations that go against the introduction of the technology.

The importance of involving patients and the public in healthcare decisions is becoming increasingly recognized.<sup>36</sup> However, no studies were found that addressed the impact of local/hospital-based HTA on patient outcomes. A systematic review of patient and public involvement in HTA conducted recently by the authors confirms that although such experiences are reported, their impact has seldom been evaluated.<sup>37</sup> Moreover, there are potential challenges related to patient involvement at the hospital/local level, such as the risk of confidentiality breach. Also, the tradeoffs in the time required involving patients and the public versus the uncertain increment in the quality of the decisions needs further assessment. Finally, it seems important to identify the types of technology for which patient or public involvement could improve decision-making.

### 4.3.3 *Financial aspects*

There are few data available on the financial aspects pertaining to hospital-based HTA. To the best of our knowledge, cost-savings resulting from the application of hospital-based HTA recommendations in Canadian hospitals were evaluated only by the HTA unit of the CHUQ<sup>9</sup> and by the Technology Assessment Unit of the MUHC.<sup>10</sup> With respect to the HTA unit of the CHUQ, the application of the recommendations of two reports (“Intravenous administration of contrast agents in medical imaging” and “Use of argon in cryotherapy to relieve lumbalgia”) resulted in an annual cost savings of \$460,000.

Between 2002 and 2007, six technologies were adopted as a result of the recommendations of the Technology Assessment Unit of the MUHC, with an increase of \$1 million in hospital expenditures.<sup>10</sup> Conversely, more than \$12 million was saved due to the rejection or the limited acceptance of 19 technologies. The operating costs of this hospital-based HTA unit was \$1.2 million during the five-year period.<sup>10</sup>

## 4.4 **Strengths and limitations of the different local/hospital-based HTA models**

Each of the four HTA models for performing HTA (ambassador model, mini-HTA, internal committee, and HTA unit) corresponds to specific needs and structures and has its strengths and limitations. However, the available evidence does not allow us to assess which of these models would be the best for Canadian hospitals. The literature shows that the ambassador model can impact on clinicians’ decisions,<sup>17</sup> but it remains a strategy that relies upon individual clinicians whose influence, interest and availability may vary. This model is associated with minimal costs, essentially to support training and networking of the ambassadors.

The evaluation of the Danish experience<sup>21</sup> reports that the mini-HTA process uses evidence-based knowledge and is mainly oriented towards solving decision-making problems within hospitals. The structure (form or checklist) of mini-HTAs and their features (flexibility, openness, and timing) are greatly appreciated. However, insufficient evaluations and the lack of quality control are frequently mentioned as disadvantages. Furthermore, mini-HTAs are occasionally performed by a single individual and are rarely peer-reviewed. Consequently, there may be some concern about transparency and partiality.<sup>21</sup> The costs of performing mini-HTAs in Denmark and elsewhere have not been documented in the literature.

With respect to the internal HTA committees such as those found in U.S. hospitals, Umscheid et al.<sup>34</sup> expressed some concerns about the fact that these committees may not have the expertise to appraise or synthesize scientific evidence adequately. Indeed, several internal HTA committees seem to be involved in activities that go beyond HTA.<sup>25</sup> Moreover, risk for conflicts of interests may exist when evaluations are performed at the level of a clinical department rather than at the hospital level. In this case, evaluations

may be too narrow in scope and biased towards interventions performed by that department. Although the composition of internal committees may vary from one hospital to another, members of such committees are already employed by the healthcare organization which limits the impact on budgets.

Finally, the formal HTA unit is the most complex organizational structure that can be found at the hospital level. This structure employs specialized staff in various disciplines whose expertise is required for conducting HTA (clinicians, economists, information specialists, epidemiologists, and others). Thus, the costs of creating an HTA unit will depend on the number and profile of the staff. For instance, the Technology Assessment Unit of the MUHC, with its two full-time and two part-time employees, estimated its costs at a mean of \$240,000 annually.<sup>10</sup> The main advantages of this structure are the depth, high quality and scientific rigour of the HTA process; the fact that it works in partnership with all stakeholders interested in the technology; and its relative independence from clinicians or hospital management. Nevertheless, one of the main disadvantages of the HTA unit is the necessary financial and time investments it requires. The experience of implementing HTA units in Quebec's university hospitals demonstrates that it can take several years for these units to reach their goal and create a culture of evaluation. Experts have reported that the role of HTA units was not always well understood, but that once the HTA unit is established, its impact on hospital decisions seems major.<sup>10</sup>

Another concern raised during the discussions with HTA experts is that it would not be possible to have an HTA unit in all Canadian hospitals because of the high-level expertise needed. It is also worth noting that only successful HTA units have published information about their activities and impacts. The lack of data from those units that are less successful means that knowledge is lacking on the factors that can limit the success and impact of HTA units.

## 4.5 Barriers and facilitators to the uptake of local/hospital-based HTA recommendations

### 4.5.1 Barriers to HTA uptake

The following table presents these limitations to both the internal committee model and the local/hospital-based HTA unit, along with some strategies to overcome them. These strategies were either found in the literature or have been proposed by experts during the two meetings that were held.

BARRIERS OR LIMITATIONS	STRATEGIES
<p>Time barriers can arise when the opinion of hospital-based HTA unit is sought by the administration.<sup>8, 10, 34</sup></p>	<p>HTA must be performed rapidly to have an impact on hospital policy.<sup>10</sup> An interval of three to four months is deemed acceptable according to the experience of the HTA unit of MUHC,<sup>10, 26</sup> but this can vary according to each decision-making context and stakeholder (<i>expert meetings</i>).</p> <p>In order to complete HTA in a timely fashion and to have an impact on hospital policies, hospital-based HTA units should balance academic rigour with operational efficiency.<sup>34</sup> This balance can be achieved by prioritizing the projects, limiting the scope of reports to issues most critical to a decision and using existing reviews as a starting point when possible.<sup>34</sup></p>
<p>Hospital-based HTA recommendations may become out-dated with the rapid developments of knowledge and technologies.<sup>8</sup></p>	<p>HTA results are only useful for a given technological development in a given context.<sup>8</sup> It is thus essential that HTA be repeated in a timely fashion.</p>
<p>HTA is a time-consuming activity; this situation may be problematic for technologies that may be disseminated before establishing proof of their value in terms of costs and efficiency.<sup>8</sup></p>	<p>Hospital-based HTA recommendations that are published once the technology has already been implemented could have no influence on hospital policy.<sup>10</sup> Hospital-based HTA should ideally be conducted before the introduction of the technology within the institution to ensure compliance with recommendations.<sup>8, 10</sup></p>
<p>Technologies for which a request for evaluation is made are often already implemented in hospitals. In the case of such “disinvestment” decision support role, HTA units are often limited in their power to influence clinicians’ behaviours that are already well entrenched (<i>expert meetings</i>).</p>	<p>A strategy to increase the impact of HTA recommendations in such cases is to ensure the involvement of clinicians from the beginning of the HTA process and ensure transparency throughout the process. Some countries have implemented specific tools in the field of disinvestment<sup>38-40</sup> that could be useful for guiding HTA units in this role. HTA units could also coordinate efforts to horizon scan (identify upcoming innovative technologies) so they are ready for the decisions on time. Better prioritization of HTA topics would also help address more important decisions in a timely manner (<i>expert meetings</i>).</p>

BARRIERS OR LIMITATIONS	STRATEGIES
<p>Poor knowledge of the recommendations may limit their impact on practices.<sup>8, 10</sup></p>	<p>Dissemination strategies play a key role in ensuring compliance with hospital-based HTA recommendations.<sup>8, 10</sup></p> <p>The creation of websites for hospital-based HTA units is very useful.<sup>8</sup></p> <p>Ensuring that key stakeholders are aware of recommendations.<sup>10</sup></p>
<p>The delay between the dissemination of hospital-based HTA recommendations and their application.<sup>8</sup></p>	<p>Access to earlier work is essential.<sup>8</sup></p>
<p>The existence of major external constraints can limit the dissemination of the new technology, even when positive recommendations are issued (for instance, when a particular technical environment is required that is not available in organizations) (<sup>8</sup> and <i>expert meetings</i>).</p>	<p>No strategy mentioned.</p>
<p>Hospital-based HTA units could use a pre-selection process of technologies in order to increase the impacts of their recommendations. These units may avoid topics where there is a lot of uncertainty (<i>expert meetings</i>).</p>	<p>Although it remains a hypothesis, it could be verified by comparing the requests that were submitted to the hospital-based units and those that have been selected, and by investigating the reasons and the principles behind these choices (<i>expert meetings</i>).</p>
<p>The activities of hospital-based HTA units may be limited to certain technologies (middle-level technologies, for example) given that the decisions are obvious for big technologies and there is no need to do systematic reviews or further evaluations for such technologies (<i>expert meetings</i>).</p>	<p>No strategy mentioned.</p>
<p>It can be challenging to use local data to inform decision-making regarding health technologies when such data have not been collected, or are not available.<sup>34, 41</sup></p>	<p>When critical to a decision, such data should be gathered even if it requires considerable fieldwork.<sup>41</sup> For instance, it could be necessary to perform cost analyses when such analyses are not available, or are not from the hospital's perspective.<sup>34</sup></p>
<p>Some stakeholders may perceive hospital-based HTA units as a threat to innovation. This situation is especially encountered for innovations that can help medical centers retain or enhance market share. Similarly, resistances to processes informed by hospital-based HTA may be observed with providers that lack education in evidence evaluation.<sup>34</sup></p>	<p>These negative impressions are likely to change by involving key stakeholders in the evaluation process<sup>41</sup> and by adopting a fair and consultative manner of making decisions.<sup>34, 41</sup></p>
<p>The fear of liability on behalf of providers, particularly when policies informed by HTA committees are not followed.<sup>34</sup></p>	<p>An organizational approach to addressing clinical questions is the best defence against malpractice, fostering a culture of evidence-based practice.<sup>34, 41</sup></p>

In addition to the aforementioned barriers, other factors may hamper the compliance with local/hospital-based HTA recommendations, such as the approach and the level of evidence used to summarize the findings, external pressures, and other political or financial constraints. With respect to hospital-based HTA units in Quebec, experts expressed three important concerns during the discussions regarding the topics that are assessed by hospital-based HTA units.

- ▼ First, hospital-based HTA units could use a pre-selection process of technologies in order to increase the impacts of their recommendations. In other words, these units may avoid topics where there is a lot of uncertainty. Although it remains a hypothesis, it could be verified by comparing the requests that were submitted to the hospital-based units and those that have been selected and by investigating the reasons and the principles behind these choices which will reveal if a pre-selection process of technologies exists or not.
- ▼ Second, the activities of hospital-based HTA units may be limited to certain technologies. For instance, the Technology Assessment Unit of the MUHC usually assesses middle-level technologies, given that the decisions for big technologies are taken at a higher level (the state/province-wide or even the national level) and there is no need to do systematic reviews or further evaluations for such technologies. Conversely, the hospital-based HTA unit of the *Centre hospitalier universitaire de Sherbrooke* (CHUS) also evaluates small technologies. These small technologies are evaluated rapidly without allocating a lot of resources. Given that the HTA unit of the CHUS wants to spread a culture of evaluation among healthcare professionals, it agrees to make such evaluations. For such questions, there is little published scientific literature. Consequently, field evaluations are usually carried out.
- ▼ Third, a particular concern raised by the experts was the fact that technologies for which a request for evaluation is made are often already implemented in hospitals. In the case of such “disinvestment” decision support role, HTA units are often limited in their power to influence clinicians’ behaviours that are already well established. In cases like these, a strategy to increase the impact of HTA recommendations would be to ensure the involvement of clinicians from the beginning of the HTA process and ensure transparency throughout the process. Some countries have implemented specific tools in the field of disinvestment<sup>38-40</sup> that could be useful for guiding HTA units in this role.

#### 4.5.2 Facilitators to HTA uptake

The main facilitators to the uptake of local/hospital-based HTA recommendations mentioned in the literature are as follows:

- ▼ Senior representatives of the departments involved in the health technology under study (future users) must take part in the report production to ensure its relevance and acceptance.<sup>10, 26</sup> Recommendations are more likely to be followed if the study is planned with the decision-makers in mind and preferably with their participation.<sup>21, 34</sup>
- ▼ The development of recommendations should be made by a multidisciplinary committee comprising hospital administrators, nurses, pharmacists, medical doctors, other healthcare professionals and patients.<sup>10, 26</sup>
- ▼ The way that hospital-based HTA recommendations are presented and drafted is very important to ensure their uptake and utilization in informing decisions. It is important to keep in mind that readers pay more attention to recommendations that pertain to their area of activities.<sup>8</sup> Some people, especially members of the administrative staff, read only the summary of HTA reports.

- ▼ The presence of a regulation system within hospitals could be very effective.<sup>8</sup> The regulation may be a financial one, especially for costly technologies (i.e. budgetary restrictions or absence of funding if the recommendation is negative or the allocation of special appropriation if a positive recommendation is issued).<sup>8</sup>

## 4.6 Conditions for the success of local/hospital-based HTA

Three published surveys addressed the conditions for ensuring the success of HTA initiatives at the local/hospital level. The surveys reported on two of the four HTA models—local hospital-based HTA and internal committee. In Canada, the evaluation by McGregor of the Technology Assessment Unit of the MUHC addressed important conditions to ensure the impact of hospital-based HTA.<sup>26</sup> In Australia, Gallego and colleagues conducted a survey within the Northern Sydney Central Coast Area Health Service to identify key characteristics regarding HTA that healthcare providers and health services managers considered essential.<sup>24</sup> In the United States, Rosenstein and colleagues conducted a survey of 19 VHA West Coast hospitals to identify the characteristics that are essential to ensure the success of HTA at the local level.<sup>23</sup>

Key factors identified by these studies include:

- ▼ A fair, transparent, evidence-based and timely HTA process
- ▼ A process that focuses on patients' needs
- ▼ An established set of criteria and protocols for HTA to avoid the risk of individual bias and partiality
- ▼ High-quality assessments
- ▼ Comprehensive impact analyses that address the following issues: costs, quality, patient safety, impact on staff training and credentialing, impact on service utilization and potential impact on market share
- ▼ Representation from key stakeholders, clinicians and patients/consumers on the technology evaluation committee
- ▼ Good communications systems and knowledge translation
- ▼ Necessary resources devoted by hospitals to promote and support HTA programs
- ▼ Hospital-based HTA activities that are congruent with the hospital' mission and firmly rooted in its strategic plan

In order to avoid potential drawbacks, the following issues should be considered when implementing a local/hospital-based HTA program.<sup>26, 42</sup>

- ▼ Decisions about the funding and the introduction of health technologies that are made at the local level may engender disparities in the healthcare services provided by different area health services.
- ▼ There is a risk of duplicating HTA, which should not be ignored.
- ▼ Decisions regarding some costly health technologies (“big ticket” technology items) are not usually taken at the local level, but rather at a higher level (the state/province-wide or even the national level).
- ▼ The capacity of some public hospitals or even some area health services to perform HTAs may be limited.

These results are supported by elements emerging from the experts meetings and documentation from Canadian experiences. According to experts, one of the challenges that local/hospital-based HTA can face is changing the mindset of healthcare professionals to prompt them to request help from the HTA units. Thus, a “culture of evaluation” would be a major factor associated with the success of local/hospital HTA. For instance, the HTA unit of the CHUQ is relatively new but has already noticed a change in the

mindset of clinicians who have now the reflex of submitting their requests regarding new technologies directly to the hospital-based HTA unit. The situation may be different in other units, where requests seldom come from clinicians. For instance, most requests received by the Technology Assessment Unit of the MUHC come from the administration or other committees such as the Operating Room Product Approval Committee of the Department of Surgery. Everyone in this department must go through that committee if he or she wants to introduce a new technology. A request is submitted to the HTA unit when this committee is unable to answer a question. As such, this committee performs a preliminary level of evaluation that makes clinicians more conscious of their choices.

This situation is echoed in the Alberta experience, where the Local HTA Project Group identified key elements for the success of local HTA. One of the major factors is that local HTA initiatives create HTA capacity “from the bottom up”, by empowering users to develop their own local HTA process. Furthermore, local HTA initiatives ensure that all stakeholders are consulted and the impact of the technology is considered not only from a research clinical perspective, but also from a financial perspective in a consistent and transparent manner.

## **4.7 Transferability and coordination of local/hospital-based HTA results between hospitals and between provinces**

The recommendations made by a hospital-based HTA unit may be of interest to other institutions, but are not directly transferable.<sup>10</sup> As mentioned in the previous section, HTA recommendations are more likely to be accepted and followed when key stakeholders within the hospital participate in their development. These recommendations are thus specific to the local conditions, values and priorities of a hospital and cannot directly apply to other institutions.<sup>10</sup>

### **4.7.1 Potential for transferring HTA**

The limited experiences of hospital-based HTA in Canada do not provide enough evidence on the possibility to transfer HTA results from one region or province to another. In Alberta, recent efforts towards greater knowledge exchange between HTA entities are found through the creation of the SCN-HTAI unit, a provincial review body at Alberta Health Services, and the province-wide Health Technology Assessment and Innovation Program, set up by Alberta Health Services in collaboration with Alberta Health and Wellness.<sup>12</sup> This program will complement the existing HTA expertise in Alberta and will support teams in managing health technologies through an evidence-informed decision model.

In Quebec, one of the roles of the recently created Institute, INESS, is to facilitate collaboration and exchange, and avoid duplication between all HTA units of the province.<sup>43</sup> Furthermore, the Ministry of Health and Social Services has created the *Table intersectorielle des RUIS en ETMIS* (Réseaux universitaires intégrés en santé - Integrated University Health Networks) that is responsible for the coordination of HTA at the provincial level. Each of the four RUIS has a similar structure that ensures exchange and collaboration at a supra-regional level.

The transferability of HTA results was discussed during the two experts meetings and it was noted that the possibility of transferring local/hospital-based HTA recommendations between hospitals or between provinces seems limited, given that recommendations usually depend on the context. Moreover, the topics that are addressed by a local/hospital-based HTA unit might be specific to a unique hospital and thus hardly transferable to another one. Conversely, the results of systematic reviews conducted by an HTA unit can be used by other units as a starting point for their own HTA reports, as long as the scientific rigour of

the systematic review is ensured. Additionally, the exchange of methodologies and expertise between HTA units is possible and desired. For instance, the HTA units of the CHUS and Ste-Justine have considerable experience with field evaluations and that focus is less present in other HTA units of Quebec that prioritize their resources differently.

#### 4.7.2 Coordination of HTA resources

It is worthwhile mentioning that exchanges between local/hospital-based HTA units can go beyond that of the results of systematic reviews to cover the structure of the units. For instance, the HTA unit of the CHUQ has developed specific forms and tools that were adopted by the HTA unit of MUHC. Although HTA units in the province of Quebec have different expertise, they work in close collaboration, thanks to the leadership role played by the INESSS in setting up a community of practice in HTA.

This community of practice has two components. First, a Wiki (collaborative web-based tool) was developed in order to promote the exchange of information about ongoing and forthcoming evaluations and other activities performed by each HTA unit in the province. Second, face-to-face meetings, called *Ateliers enjeux et pratiques en ETMIS* (Workshops on issues and practices in HTA), are bringing together members from all HTA entities of the province. According to experts who have participated in these workshops, the sessions are extremely useful and are becoming more and more interesting for participants as they evolve and develop a specific expertise in HTA. These workshops serve as an exchange forum on current HTA activities and as a continuing professional development opportunity for HTA producers. During these workshops, participants share their knowledge and experience, and are inspired by each other. The workshops also ensure the integration of new members and the sharing of a common vision on HTA.

The INESSS publishes a bulletin, “*L’e-veilleur*”, a dissemination tool aimed at decision-makers from different levels of the healthcare system. This bulletin was created in 2006 to support hospital-based HTA units of Quebec and favour information exchange on ongoing and forthcoming HTA projects in Quebec and in other jurisdictions.

In summary, local/hospital-based HTA must be context-specific, but many of the tools, products, knowledge, and “know-how” developed in one place can be transferable to another. The linguistic and cultural diversity of Canada calls for specific networking and dissemination strategies regarding HTA in general and local/hospital-based HTA in particular. Contacted experts have indicated that a pan-Canadian HTA network existed but was of less interest for people involved in the day-to-day production of HTA at the local level. The strategy used in Quebec could eventually expand to other Canadian jurisdictions, taking into account the geographical and linguistic realities of the country.

Further research is necessary to explore the conditions under which local/hospital-based HTA results and recommendations could be transferable between hospitals and between provinces. Moreover, workshops such as the *atelier Enjeux et pratiques en ETMIS* should be carried out in other Canadian jurisdictions to promote the exchange between the different local/hospital-based HTA units, thus fostering the transferability of HTA results and avoiding duplication.

## 5 CONCLUSION

This knowledge synthesis shows that local/hospital-based HTA may influence decision making. There are reports from isolated experiences related to local/hospital-based HTA on hospital decisions and budgets, as well as positive perceptions from managers and clinicians. However, the available evidence does not allow us to assess which of the four models—the ambassador model, mini-HTA, internal committee or HTA unit—would be the best for Canadian hospitals.

There is also a general paucity of published information on the overall impact of hospital-based HTA activities. The only published study that assessed HTA impacts on hospital decisions and budgets was based on interviews with managers from a single university hospital centre and conducted by a member of the same hospital-based HTA unit. This lack of data, together with the fact that most hospital-based HTA experiences are recent, makes it difficult to evaluate these impacts at the different levels of health service delivery. Further research is necessary to explore the conditions under which local/hospital-based HTA results and recommendations can have an impact on hospital policies, clinical decisions and quality of patient care, and optimize the use of scarce resources in the Canadian healthcare system. It is necessary to conduct studies that will use high-quality qualitative and quantitative methods for evaluating the impact of HTA on several dimensions. One of the dimensions that deserves special attention is the impact of HTA on patients, as they should benefit from optimal resource allocation based on HTA.

Another concern is that the only information available about factors related to the success of HTA activities at the local/hospital level comes from units that work correctly. Although some units have experienced problems (implementation, lack of resources, and others), information concerning this issue is still scarce. Moreover, a unit can be well integrated into the healthcare organization but its recommendations may have little impact on hospital policy. Special attention should be paid to the factors that might hamper the implementation and success of local/hospital-based HTA units.

Scientific evidence is also needed regarding the transferability of HTA reports between hospitals and provinces. The experts have expressed concerns about the applicability of HTA recommendations produced by one organization to other contexts, given the specificity of most questions that are addressed to hospital-based HTA units. Nevertheless, expertise and methodologies can be shared between HTA units, and knowledge exchange activities are necessary in order to ensure that HTA reports meet standard scientific quality criteria and that duplication is avoided.

It was not within the scope of this project to carry out a field study, but the two experts meetings yielded many questions for further consideration, pointing out some of the actual gaps in knowledge about local/hospital-based HTA. For instance, it was mentioned that as the number of hospital-based HTA units keep increasing, it would be interesting to document how many of them have survived. What is their productivity level, and how many of them have closed and why?

A more comprehensive review of international experiences would be helpful for decision-makers. Promising models have been implemented in countries similar to Canada (Denmark, France, and Australia) and provide interesting examples that could inspire Canadian decision-makers.

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## APPENDIX 1: SEARCH STRATEGY

Previous reviews and syntheses by researchers of the team guided the elaboration of the search strategies.<sup>37, 44-47</sup> A literature search was conducted in relevant databases (Pubmed, Embase, CINAHL, Cochrane Library). We also searched for existing knowledge syntheses by using the Health Systems Evidence Service,<sup>48</sup> a continuously updated repository of syntheses of research evidence about governance, financial and delivery arrangements within health systems, and about implementation strategies that can support change in health systems. Standardized literature searches were conducted in relevant databases and in the International Journal of Technology Assessment in Health Care. Other literature was identified through Internet search engines and websites of governments HTA agencies and local/hospital based HTA units.

After first selecting potentially relevant articles, full text copies of these papers were retrieved and screened independently by two reviewers to assess which studies fit the inclusion criteria. These inclusion/exclusion criteria are presented below. Characteristics of the studies, descriptions of the local HTA structure and activities, reported effects and impacts of these activities, and factors facilitating or limiting the implementation of local HTA units and their recommendations were abstracted.

This expedited knowledge included 10 studies<sup>8, 17, 20, 21, 23, 24, 26, 27, 34, 41</sup> and three reports.<sup>6, 9, 10</sup>

### Inclusion/Exclusion criteria

#### *1. Not about local/hospital HTA activities*

Studies should be conducted in a context of local/hospital HTA activities.

#### *2. Not in a country similar to Canada*

Countries included in the study were Australia, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom, and the United States.

#### *3. Not relevant*

Studies should focus on one of the following topics:

- ▶ Impact of HTA recommendations on managers, clinicians or patients
- ▶ Obstacles and key elements that facilitate the uptake and success of local/hospital-based HTA
- ▶ Perceptions of various stakeholders towards local/hospital HTA activities (benefits and concerns)
- ▶ Financial aspects: Is hospital-based HTA cost-effective? What are the typical costs of a HTA review? What type of resources would be needed for implementing an hospital-based HTA unit?
- ▶ Key elements that should be put in place to facilitate the uptake and utilization of HTA recommendations within healthcare systems
- ▶ Transferability of the findings of HTA from one hospital to another and from one province to another.

#### *4. Not empirical study*

Quantitative, qualitative and mixed-methods designs will be kept.

Papers presenting a review, editorial, commentary, or opinion might be considered for providing background information.

#### *5. No English or French abstract*

Studies published in all languages will be considered as long as they present an abstract in English or in French.

## APPENDIX 2: DESCRIPTIVE CONTENT OF INCLUDED STUDIES

STUDY	COUNTRY	HOSPITAL-BASED HTA APPROACH	STUDY DESIGN	MAIN TOPICS
McGregor 2005 <sup>26</sup>	Canada	Hospital-based HTA Unit: Technology Assessment Unit of the McGill University Health Centre	Interviews, document analyses and budget impact analyses	<ul style="list-style-type: none"> <li>- Purpose and structure of the technology Assessment Unit of the McGill University Health Centre</li> <li>- The policy impact and the budget impact of the HTA unit's reports</li> </ul>
Mitchell 2010 <sup>41</sup>	USA	Hospital-based HTA unit: Center for Evidence-based Practice at the University of Pennsylvania Health System	Two case studies	<ul style="list-style-type: none"> <li>- The importance of integrating local data into hospital-based healthcare technology assessment</li> </ul>
Umscheid 2010 <sup>34</sup>	USA	Idem	Literature review	<ul style="list-style-type: none"> <li>- Challenges to operating a hospital-based HTA unit and possible solutions to overcome these challenges</li> </ul>
Catananti 2005 <sup>27</sup>	Italy	Hospital-based HTA unit: Agostino Gemelli University Hospital HTA unit	Literature review	<ul style="list-style-type: none"> <li>- Structure, methodology and areas of activity of Agostino Gemelli University Hospital's HTA unit</li> </ul>
Bodeau-Livinec 2006 <sup>8</sup>	France	Local HTA unit: French Committee for the Assessment and Dissemination of Technological Innovations (CEDIT)	Semi-directive interviews, case studies	<ul style="list-style-type: none"> <li>- Description of the structure and the activities of CEDIT</li> <li>- Perceptions about CEDIT activities</li> <li>- Impact of CEDIT recommendations</li> <li>- Factors facilitating or hampering the uptake of CEDIT recommendations</li> </ul>
Ehlers 2006 <sup>21</sup>	Denmark	Mini-HTA in Danish hospitals	Survey, literature study and interviews	<ul style="list-style-type: none"> <li>- Description of the Danish experience with mini-HTA. Perceptions of decision makers towards mini-HTAs</li> <li>- Factors facilitating or hampering the use of mini-HTAs</li> </ul>
Rosenstein 2003 <sup>23</sup>	USA	Internal committee	Survey	<ul style="list-style-type: none"> <li>- Description of internal committees in VHA West Coast hospitals</li> <li>- Key characteristics that ensure successful technologies assessment at the hospital level</li> </ul>
Gallego 2009 <sup>24</sup>	Australia	Internal committee	Survey	<ul style="list-style-type: none"> <li>- Key criteria for successful HTA process at the hospital level</li> </ul>
Jonsson 2009 <sup>17</sup>	Sweden	Ambassador model	Literature review	<ul style="list-style-type: none"> <li>- Description of the structure and the activities of the Swedish ambassador model</li> </ul>
Rashiq 2006 <sup>20</sup>	Canada	Ambassador model	Case study	<ul style="list-style-type: none"> <li>- Description of the Alberta ambassador model for chronic non-cancer pain</li> <li>- The application of this model in cancer pain</li> </ul>

## APPENDIX 3: CANADIAN HTA AGENCIES (NATIONAL AND PROVINCIAL)

AGENCY	LINK
Canadian Agency for Drugs and Technologies in Health (CADTH)	<a href="http://www.cadth.ca/">http://www.cadth.ca/</a>
Institute for Clinical Evaluative Sciences (ICES)	<a href="http://www.ices.on.ca/">http://www.ices.on.ca/</a>
Manitoba Centre for Health Policy (MCHP)	<a href="http://www.umanitoba.ca/centres/mchp/">http://www.umanitoba.ca/centres/mchp/</a>
Institut national d'excellence en santé et services sociaux	<a href="http://inesss.qc.ca/">http://inesss.qc.ca/</a>
Institute of Health Economics	<a href="http://www.ihe.ca/">http://www.ihe.ca/</a>

## APPENDIX 4: LOCAL/HOSPITAL-BASED HTA UNITS IN CANADA

HOSPITAL-BASED HTA UNIT	WEBSITE
<b>ALBERTA</b>	
Calgary Health Region/Foothills Medical Center/Department of Surgery	<a href="http://www.calgaryhealthregion.ca/surgicalservices/hta.html">http://www.calgaryhealthregion.ca/surgicalservices/hta.html</a>
<b>ONTARIO</b>	
London Health Sciences center/High Impact Technology Evaluation (HiTec)	<a href="http://www.lhsc.on.ca">www.lhsc.on.ca</a>
Technology Assessment at Sick Kids (TASK)/Toronto Sick Kids Hospital	<a href="http://pede.ccb.sickkids.ca/pede/task.jsp">http://pede.ccb.sickkids.ca/pede/task.jsp</a>
Evidence-Based Practice Center/University of Ottawa	<a href="http://www.health.uottawa.ca/rehabguidelines/en/login.php">http://www.health.uottawa.ca/rehabguidelines/en/login.php</a>
The St. Joseph's Healthcare Hamilton (SJHH) Health Technology Assessment Appraisal & Review Program (SHARP)	<a href="http://www.path-hta.ca/Programs/SHARP/Overview.aspx">http://www.path-hta.ca/Programs/SHARP/Overview.aspx</a>
<b>QUEBEC</b>	
Technology Assessment Unit of McGill University Health Center (MUHC)	<a href="http://www.mcgill.ca/tau/">http://www.mcgill.ca/tau/</a>
Unité d'évaluation des technologies et des modes d'intervention en santé /Centre hospitalier universitaire de Sherbrooke (CHUS)	<a href="http://www.chus.qc.ca/fr/general/gen_informationnelles.asp#etmis">www.chus.qc.ca/fr/general/gen_informationnelles.asp#etmis</a>
Direction de l'évaluation des technologies et des modes d'intervention en santé/Centre hospitalier universitaire de l'Université de Montréal (CHUM)	<a href="http://www.chumtl.qc.ca/notre-equipe/directions/detmis.fr.html">http://www.chumtl.qc.ca/notre-equipe/directions/detmis.fr.html</a>
Unité d'évaluation des technologies et des modes d'intervention en santé /Centre hospitalier universitaire Sainte-Justine (CHU Sainte-Justine)	<a href="http://www.chu-sainte-justine.org/Pro/micro-portails.aspx?AxeID=16">http://www.chu-sainte-justine.org/Pro/micro-portails.aspx?AxeID=16</a>
Unité d'évaluation des technologies et des modes d'intervention en santé /Centre hospitalier universitaire de Québec (CHUQ)	<a href="http://www.chuq.qc.ca/fr/evaluation/uetmis/evaluation_uetmis.htm">http://www.chuq.qc.ca/fr/evaluation/uetmis/evaluation_uetmis.htm</a>
Hôpital du Sacré-Coeur de Montréal	<a href="http://www.hscm.ca/evaluation-des-technologies-et-des-modes-dintervention-en-sante/index.html">http://www.hscm.ca/evaluation-des-technologies-et-des-modes-dintervention-en-sante/index.html</a>
Institut de réadaptation Gingras-Lindsay-de-Montréal	<a href="http://www.irglm.qc.ca/">http://www.irglm.qc.ca/</a>
Institut de réadaptation en déficience physique de Québec	<a href="http://www.irdpq.qc.ca/coordonnees/index.html">http://www.irdpq.qc.ca/coordonnees/index.html</a>

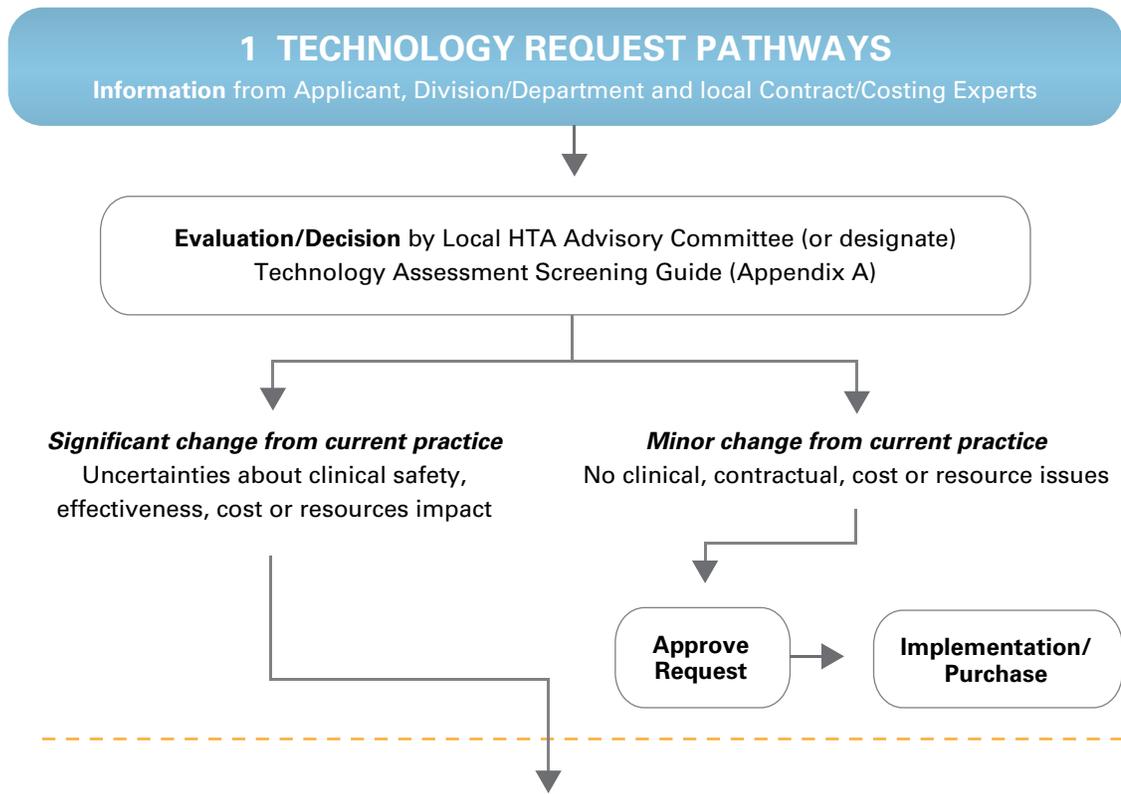
## APPENDIX 5: LOCAL HTA DECISION SUPPORT PROGRAM IN ALBERTA

One of the requirements of the Local HTA Decision Support Program in Alberta is the appointment of a local HTA advisory committee.<sup>12</sup> This committee ensures the following missions: managing the evaluation process, reviewing the suitability and the completeness of applications, and determining whether the technology represents a minor change of practice or requires further assessments.

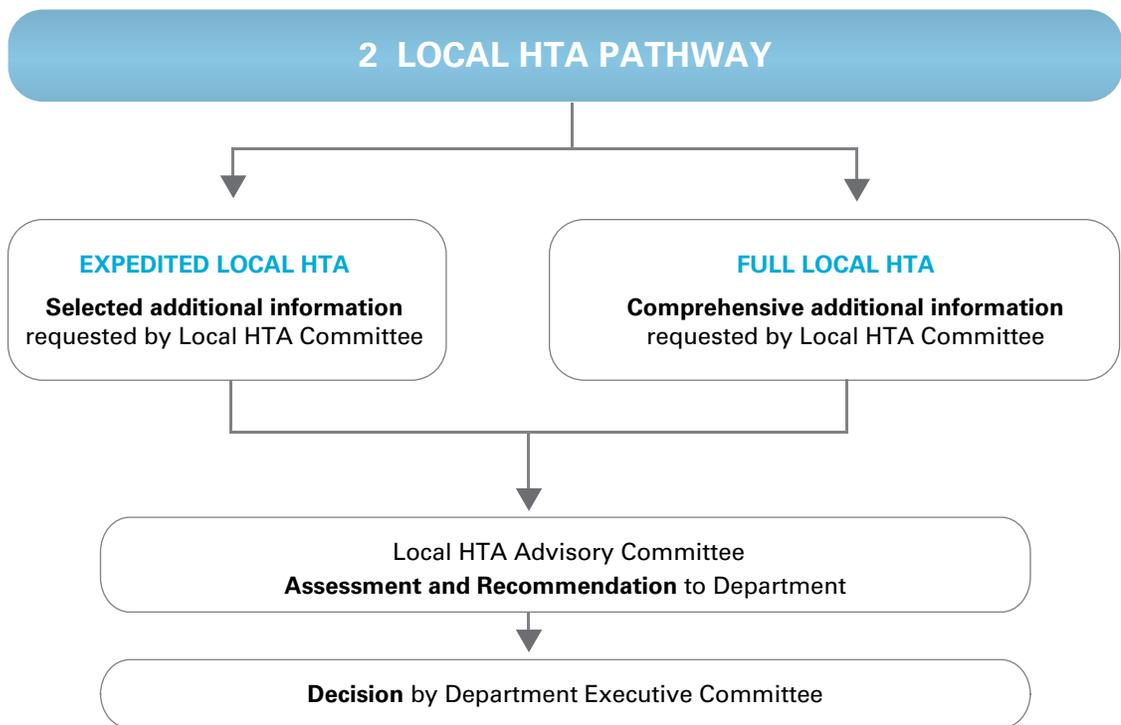
In other words, two pathways (See the diagram<sup>12</sup> below) for approving new technologies are possible depending on the technology:

- ▶ The “technology request pathway”: a rapid pathway (two weeks) under which a technology can be approved when it represents a minor change of practice as long as safety, cost, legal and contractual issues are respected.
- ▶ The “local HTA pathway”: a more extensive pathway (eight weeks) and which is used when a technology’s impact on clinical outcomes, training, resources or finances are uncertain. In this case, the local HTA advisory committee asks for extra information about the technology. The process is further divided into two sub-categories, the expedited local HTA pathway or the full local HTA pathway, depending on the amount of extra information required: selected additional information or comprehensive additional information.

TECHNOLOGY REQUEST PATHWAYS  
2 Weeks



LOCAL HTA PATHWAYS  
8 Weeks



## ABBREVIATIONS LIST

HTA: Health technology assessment

HTAi: Health Technology Assessment international

MUHC: McGill University Health Centre

CADTH: Canadian Agency for Drugs and Technologies in Health

INESSS: Institut national d'excellence en santé et en services sociaux

OHTAC: Ontario Health Technology Advisory Committee

MAS: Medical Advisory Secretariat in Ontario

IHE: Institute of Health Economics

CETMISSS: Consortium pour l'évaluation des technologies et des modes d'intervention en santé et services sociaux

SCN-HTAI: Surgery Clinical Network Health Technology Assessment and Innovation unit

TASK: The Technology Assessment at SickKids

HiTEC: High Impact Technology Evaluation Centre

SHARP: The St. Joseph's Healthcare Hamilton Health Technology Assessment Appraisal & Review Program

PATH: The Programs for Assessment of Technology in Health

SBU: The Swedish Council on Technology Assessment in Health Care

VHA: Veterans Health Administration

CHUQ: Centre Hospitalier Universitaire de Québec

CEDIT: The French Committee for the Assessment and Dissemination of Technological Innovations

CHUS: Centre hospitalier universitaire de Sherbrooke

RUIS en ETMIS: Réseaux universitaires intégrés en santé –Integrated University Health Networks

Wiki: collaborative web-based tool