

HEALTH TECHNOLOGY ASSESSMENT, RESEARCH, AND IMPLEMENTATION WITHIN A HEALTH REGION IN ALBERTA, CANADA

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Abstract

Objectives: To determine the need for and implement health technology assessment (HTA) to inform decision making and policy within a regional health care system in Calgary (Alberta, Canada).

Methods: Published literature and organizational materials for the Calgary Health Region (CHR) and HTA units worldwide were reviewed. Key individuals within the provincial health ministry (Alberta Health and Wellness), CHR, the University of Calgary (U of C), funding agencies, and HTA organizations were consulted in a structured fashion. A structure for a regional HTA program was developed, taking into account relationships between these organizations.

Results: A locally focused HTA and implementation unit was deemed desirable. The Calgary Health Technology Implementation Unit (CaHTIU) was established. The CaHTIU was designed to efficiently integrate with CHR planning as well as undertake independent research activities. HTA activities focus primarily on CHR needs and are managed by a Health Technology Advisory Committee (HTAC) that consists of CHR management and other key individuals. Working groups contribute to and coordinate HTAs and implementation under the leadership of the unit Director, and include content as well as management individuals. The unit cooperates where appropriate with extant Canadian HTA organizations.

Conclusions: The Calgary HTA unit is unique in Canada, because it functions within a regional health care system as well as a research institution. Advantages include a local focus in terms of applied HTAs, a systematic process for implementation of recommendations, and a collaborative atmosphere for research within the U of C.

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Keywords: Health technology assessment, Health technology implementation, Health policy, Organizational structure

We describe the process that led to formation of a regional level health technology assessment (HTA) and implementation unit (the Calgary Health Technology Implementation Unit, or CaHTIU), the current operations of the unit, and an example of a current project.

Existing HTA programs in Canada are housed within government, agencies, or foundations. For example, there is a national-level unit in the form of the Canadian Coordinating Office for Health Technology Assessment (CCOHTA), as well as a provincial HTA unit in Alberta operated by the Alberta Heritage Foundation for Medical Research (AHFMR). These units typically serve a broad “client base,” including regional, provincial, national, and international projects. These projects generally rely on published literature, as opposed to involvement in primary research projects.

These units have generally met HTA needs in Canada by addressing issues arising in provincial ministries of health. Typically, they are not focused on a hospital or community-program level within an administrative region of a provincial or national health care system. Also, they are not typically involved in implementation of the findings or recommendations of HTAs into decision making and planning, that is, they have operated at “arms’ length” from policy and decision makers.

The Calgary Health Region (CHR) was formed in 1994, along with sixteen other Regions, under a program of health care reform in Alberta. It currently serves a population of approximately 1 million and has an annual budget of \$CAN 1.5 billion and, thus, is one of the largest health care regions in Canada. Historically, there has been no established process or structure for evaluating proposals for new technology initiatives (broadly defined; thus including devices, procedures, programs, etc.). The need was identified by the CHR and University of Calgary (U of C) for an HTA and implementation program within the region that could provide advice on local issues to inform decision making.

This need arose from the lack of a specific process and structure for evaluating new or “changed” technology initiatives that were beyond the scope of individual departmental responsibility. Proposals for new technologies or approaches were envisioned and lobbied for in an ad hoc manner; thus, the process was inefficient and resulted in sometimes “surprising” or inappropriate acquisitions, leading to inequities across departments. Additionally, decision making and planning tended to be reactive to budget requirements and essentially could be characterized as “survival” behavior.

Although a provincial-level HTA agency (AHFMR) already existed, it was not possible for this unit to service the broad scope and large number of CHR-specific needs. Furthermore, there was a desire within CHR for a regionally focused unit to extend beyond assessment into implementation of technologies and subsequent monitoring and review. This approach would require close and ongoing interaction with regional administrators, providers, and other key individuals. There was also a need for integration with regional planning and the focused use of decision facilitation techniques, in combination with close collaboration with an academic institution to achieve a state-of-the-art in terms of innovative approaches to decision making.

METHODS

In 1996 and 1997, one of the authors (Dr. Marshall) coordinated a series of consultations with a large number of key stakeholders to determine the need for and the organization

of the CaHTIU. These individuals included CHR department heads; CHR chief medical and executive officers; University of Calgary Faculty of Medicine researchers; University of Alberta Department of Public Health Sciences researchers; senior staff from Alberta's Capital Health Region (which services the Edmonton metropolitan area); British Columbia's Greater Victoria Hospital Society; AHFMR HTA Unit, CCOHTA, British Columbia Office for Health Technology Assessment; Alberta Health and Wellness (the provincial health ministry); and, other administrative and content experts.

Additionally, relevant literature was reviewed and synthesized. CHR literature included core value, vision, and mission statements, strategic planning reports, business implementation and financial plans, and medical staff bylaws. International HTA agencies' strategic plans were reviewed, and the published and "gray" literature was reviewed with a focus on formation of HTA units in other jurisdictions, HTA identification and prioritization frameworks, HTA methodology, and integration of HTA with decision-making and policy. Prior examples of hospital-based HTA efforts in Canada (e.g., the Greater Victoria Hospital Society) were particularly relevant (2;3;7). Additionally, the previous experience of developing a provincial HTA unit in Alberta was useful (6).

This process resulted in a draft report in late 1997 (5), which made a series of recommendations for which there was strong support within the region. Unfortunately, shortly after this report was completed, budget issues put the new unit on hold. This historical note is of interest because it speaks to the requirement for a long-term funding commitment to such an initiative to achieve sustainability. The initiative was realized in late 2001 by means of a joint funding agreement between the U of C, AHFMR, and the CHR, with additional funding from the Institute of Health Economics (IHE, in Edmonton, Alberta). Because CHR organizational changes had occurred in the four-year period since the original consultation and report, additional efforts to update the original recommendations were necessary; however, the recommendations did not change in a substantive way. Additionally, a framework for guiding health regions in using HTA had been developed by AHFMR (3), and working frameworks for CHR micro- and macro-level business prioritization and planning had been developed at the U of C (8–10). For the new unit to function in an efficient and effective manner, it was desirable that its activities integrate with the regional planning frameworks. Additional consultations were conducted with the originators of the prioritization and planning frameworks and management staff to ensure seamless integration of the new unit's activities into CHR business planning.

RESULTS

The results of the original consultation process identified the desire and need for a structured HTA identification, prioritization, practice, and implementation process within the CHR and that this process should be integrated with research activities (Figure 1). There was agreement that a Health Technology Advisory Committee (HTAC), largely comprised of key CHR management staff, and a unit to coordinate HTAs and facilitate technology implementation (the CaHTIU) were desirable. Terms of reference for the HTAC and a structure for the CaHTIU were drafted. HTAs and implementation exercises were to be conducted by Working Groups comprised of key stakeholders, under supervision of the HTAC and assisted and facilitated by the CaHTIU. The rationale for this structure was determined through prior experience of other units in the context of the organizational structure of the CHR and the U of C.

The unit's funding partners determine the scope of CaHTIU activities. The CHR provides infrastructure and the means to integrate the unit's activities with regional decision-making and policy. The U of C and IHE provide mechanisms for research collaborations, infrastructure, and external funding. AHFMR provides a link to the established HTA

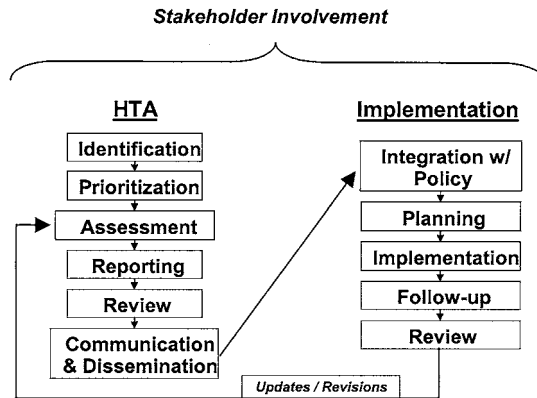


Figure 1. Health technology assessment and implementation process in the Calgary Health Region. Methodological research activities are potentially integrated with all levels of this process. HTA, health technology assessment.

- ◆ Serve as a central resource for evaluation of technologies and decision facilitation
- ◆ Provide administrative and technical support to the HTAC and Working Groups;
- ◆ Chair Working Groups as appropriate
- ◆ Serve as a primary internal and external contact point for CHR on HTA and decision facilitation
- ◆ Facilitate integration of initiatives into business planning
- ◆ Develop linkages and collaborations with provincial, national, and international HTA units
- ◆ Develop linkages and collaborations with provincial, national, and international academic researchers
- ◆ Develop linkages with CHR departments and other appropriate agencies such as Alberta Health and Wellness and Health Canada
- ◆ Promote education and awareness of HTA and decision facilitation techniques
- ◆ Conduct academic and applied research
- ◆ Conduct other academic responsibilities; including teaching, graduate student supervision and support, and capacity building for HTA research

Figure 2. Activities of the Calgary Health Technology Implementation Unit. HTAC, Health Technology Advisory Committee; CHR, Calgary Health Region; HTA, health technology assessment.

community and a means for provincial-level collaboration. The CaHTIU’s scope is to serve as a central resource for evaluation and implementation of technology initiatives in CHR and a base for HTA and decision facilitation research. The CaHTIU’s main activities are listed in Figure 2.

The CaHTIU currently consists of a full-time director, with part-time administrative support, data analyst, health economist, and librarian support. The current annual budget includes salary support for these individuals, as well as infrastructure support for office space, supplies, and equipment. Working Groups composed of key CHR administrative and clinical individuals, academic researchers, and other stakeholders will be typically charged with the majority of tasks associated with HTAs and implementation. Projects are prioritized according to a systematic identification and ranking framework that is based on similar frameworks used by international HTA agencies. The CaHTIU has formed linkages with

- ◆ CHR Deputy Chief Medical Officer
- ◆ CHR Executive or Medical Directors of major hospitals
- ◆ CHR Medical Directors of community-based programs
- ◆ CHR Executive Director of Quality Improvement and Health Information (responsible for data management and analysis)
- ◆ CHR Director of Pharmacy
- ◆ Member of the Medical Advisory Board, which represents medical staff
- ◆ Member of the Health Advisory Council, which represents providers aside from physicians
- ◆ Director of CaHTIU
- ◆ Director of the AHFMR HTA Unit
- ◆ Chief Executive Officer of the Institute of Health Economics

Figure 3. Composition of Health Technology Advisory Committee. CHR, Calgary Health Region; CaHTIU, Calgary Health Technology Implementation Unit; AHFMR, Alberta Heritage Foundation for Medical Research; HTA, health technology assessment.

existing HTA organizations and agencies in Canada (e.g., AHFMR, CCOHTA), as well as with international organizations (e.g., ISTAHC), which facilitates efficient communication.

The HTAC was formed along the lines of the original consultation recommendations. Because of the large size of the CHR and the number of potential stakeholders, the competing objectives of inclusiveness, staff availability, and manageable size of a committee had to be balanced. In the CHR, “portfolios” represent major acute care or community health responsibilities and are generally organized around physical units such as hospitals. Each portfolio has medical and executive directors. Additional senior staff members are responsible for key areas such as pharmacy and surgical suites. Many physicians are not directly tied to the CHR administrative system but operate under a fee-for-service system. This method results in the need for continuous communication and involvement of these key stakeholders in the process. The current composition of the HTAC is listed in Figure 3.

The HTAC identifies and prioritizes potential HTA and implementation projects according to a process and set of criteria that integrates with the existing planning framework. Briefly, high priority issues have potentially large impacts on quality-of-care and/or resource allocation. The HTAC provides guidance to the CaHTIU in terms of the type and scope of projects. The CaHTIU produces information and analyses that inform CHR resource allocation decisions (along with many other sources), within the context of other constraints (e.g., laws, medical bylaws, practice guidelines, etc.) and organizational values. This process is integrated into annual business planning, which in turn occurs within the context of a 5-year plan (Figure 4).

The composition and efforts of each Working Group are specific to the particular issue of interest. By way of illustration, we describe an ongoing Working Group formed to address the issue of arthroplasty operations in the CHR. Although arthroplasty is generally recognized as cost-effective procedure, appreciable cost savings can be realized through various strategies, and operational concerns such as surgical capacity and wait times are current pressing issues in the region. A Working Group, which consisted of the Director of the CaHTIU, CHR management individuals, the Director of a provincial bone-and-joint health program, a senior orthopedic surgeon, a senior data analyst, and a consulting expert in simulation and optimization, was formed to address these issues.

This Working Group identified the specific short- and long-term scope and tasks of the project, and facilitated data collection. The CaHTIU conducted a systematic literature

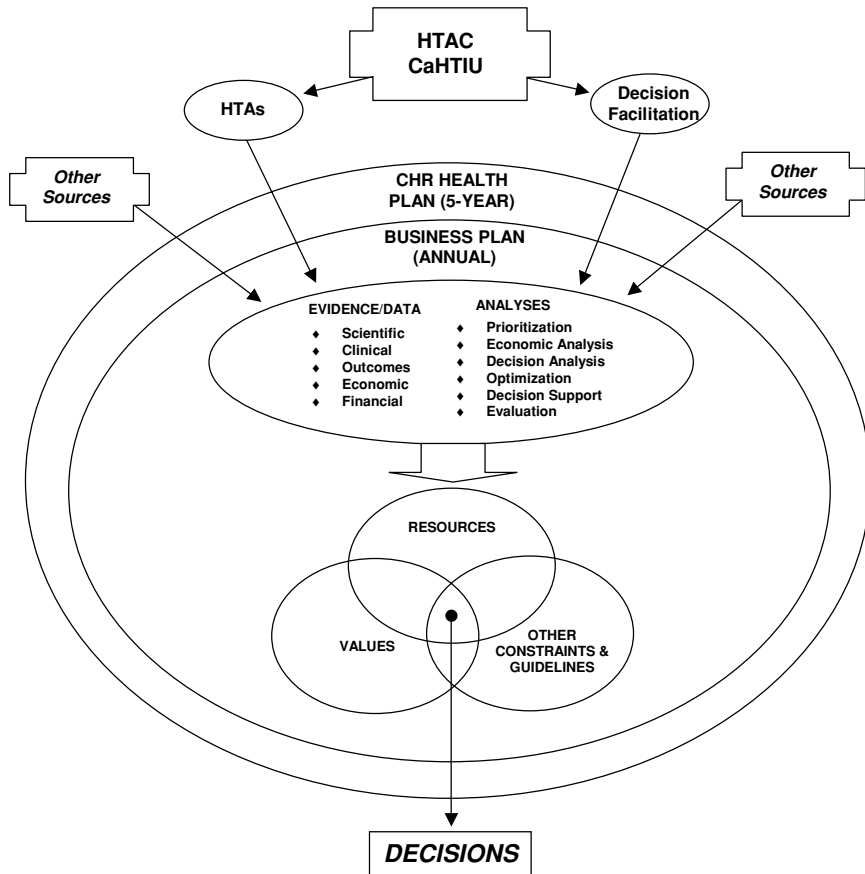


Figure 4. Relationships between the Health Technology Advisory Committee (HTAC)-led health technology assessment (HTA) and implementation process, and Calgary Health Region (CHR) decision-making and planning. CaHTIU, Calgary Health Technology Implementation Unit.

review, and the simulation and optimization expert devised user-friendly computer models for assessing operational issues, using CHR data. Regular meetings of Working Group members and external content experts were held for information exchange and for progress reporting. A peer-reviewed progress report of these activities has been disseminated by means of hard copies upon request as well as through the CaHTIU Web site (1). Savings estimated at \$CAN 1 million annually have been identified through orthopedic supply standardization and a new contract with vendors; these resources are being re-allocated toward increased surgical capacity. This ongoing effort is being incorporated into business planning and is planned to eventually inform the activities of the bone and joint health program, which in turn will inform a larger-scale waiting list project (the Western Canada Waiting List Project).

This example illustrates the integration of “traditional” HTA activities (systematic literature review) with issue-specific decision facilitation and application of innovative techniques (simulation and optimization modeling) that is likely to be typical of CaHTIU projects. Other ongoing projects involve economic evaluation, formal decision analysis, and other decision facilitation techniques. Thus, collaborations with academic researchers at the U of C and other institutions are a key strength in the CaHTIU’s operations.

Activities of the HTAC, CaHTIU, and Working Groups are “tracked” and evaluated by means of progress reports and comparisons against action items and goals. Research activities (e.g., publications, research funding, etc.) for involved individuals who have academic appointments are evaluated according to standard U of C procedures. CHR-specific activities are evaluated in the context of goals of the health care and business plans. As previously discussed, in many cases projects have both an academic and an applied component, and thus are evaluated in both contexts. The scope of these projects has been limited because of the short existence of the CaHTIU, but is likely to become very broad in the future.

POLICY IMPLICATIONS

To our knowledge, the CaHTIU is unique in Canada in terms of a regional focus, involvement in implementation of HTA recommendations, and collaboration with academia. For example, the arthroplasty project not only involved a brief systematic review of the literature, similar to such “products” produced by many HTA programs, but it also involved operational modeling of surgical systems. Also, emphasis is placed on continuous monitoring and evaluation of implementation. To our knowledge, no other Canadian programs have been integrated with regional decision-making in this fashion. The unit in general has been working toward incorporation of evidence and decision facilitation into CHR decision-making, planning, and policy and is making contributions to HTA and decision facilitation research; for example, see Patten and Lee (11).

The formation of the HTAC and CaHTIU represents an important evolution in the health care decision making culture in Alberta. It provides a structure and process for proactive, rational, systematic decision making that did not formerly exist. Although the consultation process indicated that there was general agreement regarding the desirability of the unit, appreciable challenges exist. These challenges include the following:

- An oft-fluctuating provincial health care budget, which in turn affects resource allocation at the regional level. This fluctuation is in part due to Alberta’s resource-based economy and is not likely to change in the near future;
- A long history of “squeaky wheel” (i.e., inequitable) funding for technologies and programs, which poses challenges in terms of implementation of the new system;
- Related possible tensions between a transparent HTA and implementation process and other CHR policy considerations;
- The existence of fee-for-service physician funding outside of the regional administrative system, which poses challenges in terms of provider involvement and incentives;
- The likelihood of additional rounds of health-care reform in Alberta and elsewhere in Canada; which poses challenges with regard to organizational structure, funding, and sustainability;
- The need for awareness of provincial- and larger-scale implications of issues addressed by the CaHTIU.

However, the nature of the HTAC and CaHTIU are well suited to address these challenges by means of directly integrating evidence and decision facilitation into the decision- and policy-making process, and through continuous liaison with other HTA programs. It is difficult to judge at this point whether this structure will indeed be successful in the long term, but continuous evaluation of the CaHTIU will reveal strengths and weaknesses and facilitate evolution.

CONCLUSIONS

As a result of a high level of interest from U of C and CHR leaders, the CaHTIU was conceived and formed as a regionally based mechanism for HTA and technology

implementation. This accomplishment was made possible by means of a thorough consultative effort that identified desired structural and operating characteristics of such a unit, previous experience with hospital-based units, and a collaborative funding arrangement across the U of C, CHR, AHFMR, IHE, and other funders. It is expected that the Calgary experience will stimulate the use of evidence to inform decision making, planning, and policy in other health regions. The CaHTIU has been successful in its inaugural research and applied roles, and continuous monitoring/evaluation will determine long-term value-added.

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