International Journal of Technology Assessment in Health Care, 21:2 (2005), 268–275.

Use of health technology assessment in decision making: Coresponsibility of users and producers?

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Objectives: Health technology assessment (HTA) is a policy-oriented form of research designed to inform decision-makers on the introduction, use, and dissemination of health technology. Whereas research on knowledge transfer has focused on knowledge producers, little attention has been given to the user's perspective. This study examines how health-care provider, administrator, and patient associations across Canada use HTA reports and the limitations they encounter when accessing and using scientific knowledge.
Methods: This study draws from semistructured interviews ($n = 42$) conducted with three types of user, located in British Columbia, Alberta, Saskatchewan, Ontario, and Quebec. Applying well-established conceptual categories in knowledge utilization research, our qualitative analyses sought to define more precisely how HTA is used by interviewees as well as the most significant barriers they encounter.
Results: The vast majority of users recognize the usefulness and credibility of HTA reports. Of interest, the way they use HTA takes different forms. Although administrators and health-care providers are in a better position than patient associations to act directly on HTA messages—making an *instrumental* use of HTA—we also found *conceptual* and *symbolic* uses across all groups. Our results also indicate that significant organizational, scientific, and material limitations hinder the use of scientific evidence. Overcoming such barriers requires a greater commitment from both HTA producers and users.
Conclusions: This study argues that, to ensure better uptake of HTA, it should become a shared responsibility between HTA producers and various types of user.

Keywords: Health technology assessment, Knowledge dissemination, Knowledge use, Limitations in the use of scientific evidence, Decision making

THE OTHER SIDE OF THE KNOWLEDGE-TRANSFER COIN: THE USER'S PERSPECTIVE

Evidence-based medicine has penetrated the discourse of clinicians, managers, and policy-makers in various health-care systems (26). Although it is clear that decision making and clinical practice involve complex processes that go beyond the mere application of scientific evidence, the idea that policy and clinical decisions should be grounded on sound research findings is firmly established now (9). The introduction, use, and dissemination of health technology are no exceptions to that rule (15). In Canada, Health Technology Assessment (HTA) has grown considerably since the late 1980s, with nine HTA groups having been established at provincial and national levels. From the mid-1980s to the mid-1990s, these agencies were mainly concerned with establishing their scientific credibility and standardizing their

This research was funded by an operating grant from the Canadian Institutes of Health Research (CIHR, #42499). P. Lehoux holds a Career Award from the Institute of Health Services and Policy Research, CIHR (2003–2008). Jean-Louis Denis holds a Chair jointly sponsored by the Canadian Foundation for Health Services Research (CFHSR) and CIHR. We are grateful to the interviewees who participated in our study for sharing their experience and opinions.

methods. Since the mid-1990s, however, increasing their impact on decision and policy making has been a major focus (1;2;7). This strategy led HTA as well as other scientific knowledge producers to experiment with various knowledge-transfer strategies and to measure their varying effectiveness (4;5;12;20). However, little attention has been given to the perspective of knowledge users, and very little is known about how various groups perceive the usefulness of HTA. This finding prompted our research team to examine more closely the "other side of the knowledge-transfer coin": the user's perceptions and practices.

Stemming from a case study involving the participation of six Canadian HTA agencies, this study seeks to define how health administrators, health-care providers, and patients' representatives use HTA reports and to identify the limitations they encounter in using this kind of scientific input. Our aim here is not to measure the level of HTA use. Rather, we wish to provide a qualitative, in-depth understanding of the ways in which HTA is used by key players in Canada's health-care system and generate insight into ways to overcome some of their perceived barriers to use. Not only can it help fine-tune the dissemination strategies of HTA producers (10), but more importantly, it can flag issues to be put on the users' work agenda. As recent initiatives have shown—such as the October 2003 OECD workshop on New and Emerging Health Technologies—there is an urgent need to clarify how the uptake of HTA by decision- and policy-makers can be strengthened and organizationally supported.

Following seminal work on the use of science in public policy (27), we focus our attention on three concepts: instrumental, conceptual, and symbolic uses. We wish to examine the extent to which these concepts can be applied to the use of HTA. According to Pelz (23), instrumental use refers to research findings that directly shape policies and lead to action; conceptual use refers to change in awareness, thinking, or understanding of specific issues; and symbolic use tends to justify or legitimate existing policies or positions (23). There is a thin line between conceptual use and symbolic use. Pelz emphasizes the political underpinnings of symbolic use: "If information serves to confirm the decision-maker's own judgment of a situation, we have a conceptual use. If the evidence helps him justify his position to someone else, such as a legislative committee or a public group, the use is symbolic" (23).

These concepts will be used to present the first part of our findings, whereas the second part will examine the organizational, scientific, and material barriers to using HTA (10). A lack of "receptor capacity" in policy making may explain low levels of research uptake (10). This capacity refers to the availability of scientific advisors capable of decoding research results, the attitudes of policy-makers toward the policy-making process, the bureaucratic processes, the established career paths of policy-makers, and the presence of specific mechanisms facilitating the integration of research evidence into decisions. For Hanney et al., there is "an increased recognition of the significance of policy-makers in their role as recipients, or receptors of research" (10;16). Our study aimed at documenting not only the barriers affecting the use of HTA by government officials but also those facing health-care provider and patient associations.

METHODS

The findings presented in this study stem from a broader study (17) and draw more particularly on semidirected interviews with HTA users. We selected *formal* organizations representing three viewpoints: administrators, health-care providers, and patients. This was achieved for each jurisdiction of the six HTA agencies. Because one agency operated at the national level, its users were selected from national-level associations and the federal government. Other organizations were operating in British Columbia, Alberta, Saskatchewan, Ontario, and Quebec. We selected organizations in two steps. First, for each jurisdiction, we created an inventory of organizations belonging to the three groups mentioned above by using inclusion and exclusion criteria (see Box 1). Then, using the agencies' mailing lists, we added each organization that met our criteria but that had not been identified through our inventory. We approached individuals occupying the highest administrative level and whose responsibilities were directly relevant to HTA (22). In total, we contacted 86 organizations and conducted 42 interviews (health-care administrator associations and governments [n = 17], health-care provider associations [n = 11], and patient associations [n = 14]).

Face-to-face or telephone interviews (45–90 minutes) were conducted between May 2001 and October 2002. All interviews were tape recorded with the consent of the interviewees and transcribed (19). We used the NUD*IST software application to categorize verbatim excerpts (24;25) and created comparative tables (21) to contrast the opinions expressed by the various groups. Analyses sought to define, on the one hand, whether the three conceptual categories (instrumental, conceptual, symbolic) were helpful in synthesizing the diverse types of HTA use described by interviewees and, on the other hand, the most significant barriers users encounter (22).

RESULTS

Is the Use of HTA Instrumental, Conceptual, or Symbolic?

Our analyses show that all three categories help organize the numerous examples of HTA use given by the interviewees (see Table 1).

Instrumental Use. Almost all administrators used HTA reports instrumentally, by applying findings to guide

Box 1. Sampling Criteria

Health-care provider associations: Formal organizations of physicians or nurses mandated to safeguard the quality of clinical practice and protect the public. Excluded are bodies whose primary function is to defend the interests of their members (i.e., unions).

Government administrator and planner associations: Formal associations of government health-care administrators and planners, such as the Ministry of Health or Regional Health Authorities. Excluded are regional associations and associations representing members from a subset of a larger organization.

Patient associations: Formal associations of patients with a specifically health-related mandate that is sufficiently broad in scope and that represents a large number of individuals (e.g., heart disease, cancer, mental health). Excluded are regional associations and associations representing small groups (e.g., afflicted by a rare disease).

Note: For all groups, organizations were selected in each of the six jurisdictions where the participating health technology assessment (HTA) agencies were located. This included the national-level associations and the federal government.

The Web sites of provincial health ministries were the main source of information, supplemented by the HTA agencies mailing lists.

Table 1. Various Forms of Health Technology Assessment (HTA) Use by Three Types of Users

	Instrumental	Conceptual	Symbolic
Administrators	As a basis for coverage decisions As an evidence basis in court As a basis for staffing decisions As a trigger for further inquiry Eliminating services and withdrawing certain technologies in hospitals Re-evaluating existing programs Implementing services and programs Funding acquisitions of technology	As a framework for debating specific issues Orienting the government Positioning of province in regard to certain services	Enforcing decisions already made Clarifying controversy
Providers	As a basis for negotiations Identifying ineffective technologies Modifying practice standards and routine testing Organizing specific health-care services on a long-term basis Developing screening programs Developing clinical guidelines	As a framework for debating specific issues Formulating position statements	Justifying a position vis-à-vis the government
Patients	Lobbying health-care providers and the biomedical and pharmaceutical industries	Informing members and the public Updating personal knowledge Positioning in regard to certain policies	Does not apply

the implementation of services and programs; the withdrawal of specific health technologies; or staffing, coverage, and funding decisions. According to one interviewee, a report on radio-surgery produced by one of the participating agencies "did in fact affect policy, because they [the government] stopped people leaving the country to have this service because an equivalent service was available in Canada" (Planner 1, Jurisdiction 4 [J4]). Administrators also stressed how specific reports had triggered further inquiry:

"[The Agency] produced a cardiovascular atlas on patterns of heart disease and went further by saying to a couple of areas in the province, we are labeling your areas as geographic hot spots because you have a definite problem with heart disease and you need to be doing something about that. One of the areas was ours. Obviously, we were more compelled to look into it. [. . .] And then, it really falls on our shoulders [. . .]. So it did prompt us to take further actions" (Planner 1, J1).

At the clinical practice level, providers explained how certain reports had informed the preparation of clinical guidelines, the development of screening programs, and the long-term organization of certain health-care services. "The report on mammography was a good one and was used [. . .]. The government based its breast cancer screening program on it. [. . .] From there, we were able to evaluate how much resources and equipment were needed, how many centres, staff, etc. That's very good because we really started from the needs created by this disease and we organized the resources accordingly. It's very, very good!" (Provider 2, J5).

Health-care providers also paid particular attention to reports that pointed out to ineffective technologies.

"[The Agency] looked at tonsillectomy, far too many in [this province], and that was absolutely critical, and I applaud that kind of stuff, and they looked at the use of PSA testing for prostate cancer, and that it wasn't a very effective tool, and like for example, the government wanted the agency to look at bone densitometry and the agency was successful in convincing the government [. . .]" (Provider 1, J6).

Finally, some foresaw important changes taking place in their standard of practice as a result of collaboration with one agency. "So the actual decisions haven't been taken yet, but as a result of our work with their panel [. . .] and their working group [. . .], I foresee us changing our standards of practice. [. . .]. So yes, it's coming" (Providers 2, J6).

Patient associations also used HTA reports instrumentally. One interviewee explained how a radio advertisement had promoted bone densitometry tests. The patient association received calls from consumers asking whether or not this test should be recommended. After inquiring with two provincial agencies, the association found reports concluding there was no evidence to support the implementation of systematic bone densitometry screening programs. Subsequently, the association used the reports from both agencies to inform the public and wrote letters to the College of Physicians and Surgeons and to the advertising company, enclosing copies of the reports (Patient association 1, J4).

Conceptual Use. Administrators explained how they used reports as a framework to stimulate debate and orient government policies. For example, a report on the human genome pointed out contextual issues the government should act upon in the relatively short term, broader issues that should be discussed in the public arena and emerging issues that would need to be managed in the future. One key aspect of this report was that its findings were adapted to the provincial context:

"The important thing is that we have a report within the context of our province. There are many reports on the human genome, but this report has been elaborated in our province and told us what we should do in a province such as ours. And this is very useful to frame the debate, no matter whether we respond formally or not to that report" (Planner 1, J6).

Providers also used HTA reports conceptually, as a basis for debating specific issues or for taking positions.

"This [HTA report] will be a strong building block for us now to use, for the next part that we're working on is putting in some position statements. We actually have one drafted where we're getting feedback from [our members] around the province and other stakeholders about getting to best practice and what is that. So we will use some of this report as the building block for that document" (Provider 2, J4).

HTA reports produced within another jurisdiction may also contribute to enlarging the pool of evidence and recommendations one may draw from to elaborate a broad policy statement.

"[In Saskatchewan], like a year and a half ago, they did a study looking at home care, benefits of home care, right? And then there was another study done locally here, which had a somewhat different perspective on things. Well, you want to go back to the Saskatchewan review and compare it to the one here . . . " (Provider 1, J2).

Patient associations used HTA reports conceptually for slightly different purposes, mainly to update their knowledge, inform their members and the public, or possibly to refine their position. "One of the things that [the Agency] produces is surveillance information. We would use that information all the time, because part of our job is to ensure that we have a handle on what the latest statistics are around that disease and its economic burden in Canada" (Patient association 1, J1). In two cases, reports were completely counterintuitive to what patient associations had been advocating. Consequently, this finding led the associations to rethink their advocacy activities. "The [reports] were sort of saying almost the opposite of what we've been saying, so (laugh). So we wouldn't use them for advocacy other than to probably realize that we have to speak up even louder and try to balance some of that off" (Patient association 1, J6). Although research results ran counter to their thinking, they were used to anchor and flesh out their message.

Symbolic Use. One administrator discussed an HTA report on the new rheumatoid arthritis drugs: "I don't think they've changed practice, because I think that people had arrived at similar decisions, but they've certainly enforced the decisions the drug plan managers have made, absolutely" (Planner 1, J2). In another case, one Health District had mandated the provincial agency to assess a controversial surgical procedure. The report turned out to be very useful in distinguishing between solid evidence and evidence that needs to be qualified. Consequently, it reinforced the Ministry and the Health District in their recent decision to invest additional funding supporting this practice (Planner 1, J5).

Providers working in ethically and politically laden areas such as genetics stressed they would use reports from highly credible HTA agencies underscoring issues they considered crucial to lobby governments. In these cases, HTA would be used to give weight to their points of view.

"I think what we can do is point to the Agency's documents and develop in something like, the Down syndrome in maternal screening, we would say . . . if we were to write a letter, which I'm pretty sure our president did, that we support this and it's backed up by a report or a document" (Provider 1, J5).

Finally, patient associations were rarely in a position to make official decisions, thereby rendering symbolic use of information unlikely.

What Are the Most Major Limitations to the Use of Health Technology Assessment?

Table 2 organizes the limitations to a more extensive use of HTA into the following categories: (i) organizational, that is, limitations tied to the structure and organization of various working environments; (ii) scientific, that is, limitations due to users' level of scientific literacy; and (iii) material barriers,

Table 2. Limitations in the Use of Health Technology Assessment (HTA)

	Organizational	Scientific	Material
Administrators	Limited use of environmental scanning and lack of long-term planning Limited in-house communication restricting the circulation of information Vested interests	Lack of knowledge-brokers familiar with HTA and the organization's mandate	Lack of time and financial and human resources for following up on recently published reports
Providers	Consultation or dialogue difficulties in practice settings Complex procedure to set priorities in hospitals providing a broad range of services Political bargaining Dependency on government decisions Lack of authority over practice settings limiting their role as agents of change	Limited expertise in research, hampering the application of findings to practice	Lack of time as well as human, financial, and material resources
Patients	Not described	Lack of knowledge brokers hindering the translation of research into clear messages for the organization and its membership Lack of know-how for accessing and using scientific information	Lack of time as well as human, financial, and material resources, hampering access to scientific information and participation in dissemination activities

that is, limitations related to lack of material, financial, and human resources.

Organizational Limitations. One issue that surfaced often had to do with poor in-house communications within ministries, which were perceived as limiting the use of scientific advice. It is interesting to see that interviewees themselves recognized that HTA producers could hardly be held entirely responsible for low levels of use of their reports:

"There are a lot of people who work in this department and it's our own problem, in my mind, that we have to make up a way of communicating with each other in this department [. . .] And again, it's not HTA's fault. They can't predict who in the department is going to be using their information. They thought they answered the requester, they've had their pertinent people in the department to deliver their stuff to, so I wouldn't call it a shortcoming" (Planner 1, J4).

They also stressed that a lack of long-term planning and decision-makers' vested interests limited the use of HTA. Some health-care providers stressed they had little control over their practice settings, the established routines, and the prevailing distribution of authority. As long as regulatory bodies or the government make policies and decisions about resources allocation, their role as agents of change remains limited, no matter whether they agree or not with the content of a given report.

"Everyone read this report that went out, I think, 6 months, a year ago. And since then, everyone has had their eyes on the Ministry [. . .]. I called my colleagues at the Ministry, at the Health District, . . . what is your position? What are you going to do with this report? Because we, at the hospital, we are interested in this technology, [it] corresponds very well to our activities. But then . . . well . . . we wait, we wait" (Provider 2, J5).

The complexity of health organizations also hinders the use of HTA reports. Hospitals, for instance, involve various practitioners with different agendas and priorities. Consensus over technology issues becomes quite challenging and involves political bargaining: "If you know that if you don't purchase such technology, the specialist will go to the hospital where they have it, what do you do? Do you choose to please the doctor? Or do you choose to fill in the needs of the institution?" (Provider 2, J5).

Scientific Limitations. The absence of skilled staff having a good understanding of the science of HTA and of clinical and administrative practices were mentioned by all types of users. The need for such knowledge-brokers, however, was perhaps more acutely felt in patient associations.

"If your organization doesn't have somebody with a clinical background, then certainly the limitations are that you don't have an internal mechanism for interpreting the information. [. . .] You need that, because otherwise, you can't translate the information into something user-friendly and then pass it on to your membership. [And] when there are differing opinions, how do you sort through what is valid in research or not?" (Patient association 1, J2).

Another reason why HTA evidence was not always used to the fullest extent lies in what may be called the "art of scientific interpretation." Health-care providers did not feel entirely comfortable with interpreting HTA findings and translating such scientific results into clinical practice. They explained that it was partly due to their limited exposure to clinical trials or to health services research in general: "The majority of our members did not have research courses in their basic education and may have had little exposure to clinical trials in the practice setting, depending on where they work and how big their hospital or the facility is" (Provider 2, J4).

Material Limitations. A final set of limitations conveyed by interviewees belongs to a less-often debated but still fundamental node in the knowledge uptake chain: resources. Health-care provider, administrator, and patient associations all mentioned that a lack of time as well as human, material, and financial resources hindered a fuller integration of HTA into their routine. Some administrators recognized that, in principle, they should systematically follow-up on recently released HTA reports. However, as one of them called it, it may be the "eleventh priority on a top ten list."

"[. . .] the agency made recommendations to the Ministry and the Minister. In principle, we should respond to that report and elaborate whether the government will act or not upon the recommendations. But I'll tell you honestly, this is number 11 on our top ten priorities. We never get there! [. . .] It's always the question that we lack human and financial resources, but this being said, I think we have a responsibility in receiving and responding to the information provided by HTA agencies" (Planner 1, J6).

Why would the use of HTA be so low on the priority list? Part of the explanation has to do with the current workload of these organizations. "We have been invited to attend different meetings that [the Agency] had, but we have never attended, because we don't have the time. We are a very small office, so we have to focus on our own mandate, and of course sometimes that doesn't allow us to broaden what we'd like to do" (Patient association 2, J4). If for HTA agencies, inviting patient associations to meetings may represent an innovative strategy to increase and facilitate dissemination of their findings, it nevertheless requires something more than just good will on the part of these new potential partners. From the patient associations' perspective, diversifying one's portfolio of activities—no matter how promising it may prove—requires a strong organizational commitment accompanied by an appropriate level of resources. Indeed, representatives of patient associations also stressed that, often, small organizations cannot afford attending conferences or subscribing to scientific journals.

DISCUSSION AND POLICY IMPLICATIONS: HEALTH TECHNOLOGY ASSESSMENT USE TAKES ON VARIOUS FORMS, BUT BARRIERS REMAIN

While recognizing that clinical practice and policy making are shaped by a myriad of decisions made by several players who aim at various, and at times conflicting, objectives (14), this study indicates that HTA is used. This study's contribution is twofold.

First, by providing a qualitative understanding of the various ways HTA is used, this study draws a more realistic picture of the likely impact of HTA. The use of HTA does not fall under a single category. Planner and health-care provider associations may be in a better position than patient associations to use HTA instrumentally. Interviewees from these two groups were able to provide us with several examples of such use. Our findings also indicate that health-care provider and patient associations use HTA both conceptually and symbolically to inform their members, take positions on specific issues, or lobby decision-makers. Those findings call into question what scholars in the field of HTA mean when they refer to utilization, which often remains intertwined in its substantive and immediate "impact" (8;11;12). When examined from the perspective of its users, HTA is used for *several* purposes. Although conceptual and symbolic uses might appear to have less-immediate, direct and observable impact than instrumental use, they nonetheless contribute to shaping the policy environment within which decisions will be made and orientations taken (27).

Therefore, one lesson for HTA producers could be to examine more carefully the links between the content of their reports and the three types of use. Instrumental use of HTA could be facilitated if producers would increase their efforts to conclude their reports with clear, actionable messages (12). This requires interfaces that enable a clear understanding of the user's policy question and informational needs (6;13). Conceptual use could be increased by addressing more exhaustively, through a true interdisciplinary approach, the issues that would benefit from a broader public debate (16). According to Jacob and McGregor, "HTAs should normally be directed to those in the health care system who have the responsibility to act on their message" (12). Nevertheless, the application of conceptual or symbolic uses of HTA in users' lobbying activities suggests that HTA producers could seek to influence not only those who can act on the message but also those *who can act on those who can act* on the message. Securing the collaboration of health-care provider or patient associations could help achieve such enlightenment in the policy arena. Finally, producers may anticipate but never be in a position to concretely address the symbolic use of their findings. However, symbolic use can be desirable in defending established policies that may come suddenly under attack.

Second, by examining the "other side of the knowledge-transfer coin," this study indicates explicit barriers that often frustrate knowledge producers in their quest for evidence-based practice and policy but over which they have little if any influence (e.g., poor in-house communications, ad hoc decision-making processes). In other words, if the overall goal remains to increase the uptake of HTA findings, users themselves ought to re-evaluate their in-house capacity to acquire, absorb, and apply knowledge. If HTA producers may provide expertise and guidance to help them achieve this goal, the lack of resources that our study indicates remains a serious challenge. Ultimately, it is the responsibility of users to make sure HTA rises above eleventh place on their top ten priority list. They need to take action on the organizational, scientific, and material limitations described above.

In this respect, the lead taken by several university teaching hospitals in Quebec in creating in-house HTA units is interesting (3). Capacity-building initiatives fostered by university-based groups and funding agencies such as the Canadian Health Services Research Foundation or the Alberta Heritage Foundation for Medical Research (SEARCH program) may reduce some of the scientific limitations as well and help increase organizational research uptake.

CONCLUSIONS

This study confirms that health-care provider, administrator, and patient associations recognize the usefulness and credibility of HTA. However, it could be misleading to assume that HTA could and should always lead to immediate decision or action. HTA is also used conceptually, as a form of enlightenment that may inform future action, and symbolically, as a retroactive justification for decisions already made. Failure to recognize this complexity may undermine the legitimacy of current initiatives aiming to increase the use of scientific evidence by setting unrealistic expectations. Our study indicates that users are acutely conscious of the barriers limiting the use of HTA findings. A closer look at these limitations reveals that several do not fall under the immediate responsibility of HTA producers. Increasing the use of scientific evidence in health care, therefore, is *not* just a matter of enhancing the timeliness and format of HTA reports or their dissemination (18). Uptake of HTA should be seen as a coresponsibility, a shared commitment by both knowledge producers and users toward the appropriate use of health technology. Ultimately, for better management and use of scarce health-care resources to happen, users will have to act upon the various limitations we described.

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