ELEMENTS OF

EFFECTIVENESS

FOR

HEALTH TECHNOLOGY

ASSESSMENT

PROGRAMS

AHFMR
ALBERTA HERITAGE FOUNDATION
FOR MEDICAL RESEARCH

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Prepared by:
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HTA Initiative # 9

**Elements of Effectiveness for
Health Technology Assessment Programs**

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Design: Interpret Design Inc.

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Foreword

This paper has been prepared to provide a basis for discussion on the components of health technology assessment programs and approaches to measuring their effectiveness. There is increasing interest in better defining the role played by HTA agencies and in obtaining advice on how they might most appropriately be structured and operated. It is with the spirit of moving toward a continual improvement of activities that this paper has been prepared.

An overall theme of the paper is that there are a number of determinants of the effectiveness of an HTA program, only some of which are within the control of those who operate the HTA function. Some specific reference is made to the Health Technology Assessment Unit (HTAU) of the Alberta Heritage Foundation for Medical Research, but a number of the issues discussed should be more widely applicable to other HTA organizations.

The paper is not intended as a comprehensive guide to measuring effectiveness of HTA programs. Rather, it seeks to raise issues and provide managers with suggestions that may be helpful in developing specific administrative guidance for individual programs. It can be thought of as a self assessment tool to help identify opportunities for future improvement.

In the following discussion the term "HTA program" is used both to describe the staff and structure in organisations that conduct HTA and the wider picture that includes various other external determinants of effectiveness.

1. Components of an HTA program

A widely-used definition of health technology assessment, developed by the International Society of Technology Assessment in Health Care, is that "HTA is the systematic evaluation of the properties, effects and/or other impacts of health care technology. Its primary purpose is to provide objective information to support health care decisions and policy making at the local, regional, national and international levels." The main purpose of HTA is to provide objective information to support health care decisions and policy making. HTA programs have therefore to both produce good quality information and analysis and to use this material effectively to influence decision-makers in health care systems.

In general, the most visible indicators of effectiveness of an HTA agency will be its products – such as reports and electronic bulletins. Commonly, such products will be widely available and will form a general information source for organizations and individuals beyond the immediate targets of the original assessments.

At one level, the quality of such products can be judged against widely accepted criteria for conduct of evaluations, including HTAs (Scheme 1). These include the checklist for HTA reports issued by the International Network of Agencies for Health Technology Assessment (INAHTA)[1] and more comprehensive guidelines such as those prepared by the Danish Center for Evaluation and Health Technology Assessment.[2] Considerable detail is available on methods and standards for assessment and guidance on the need to make analysis and assumptions explicit and transparent.

Products of the HTA program (such as reports)   ▪ ▪ ▪ ▪ ▪ ▪ ▪   **Quality judged against guidelines, standards**
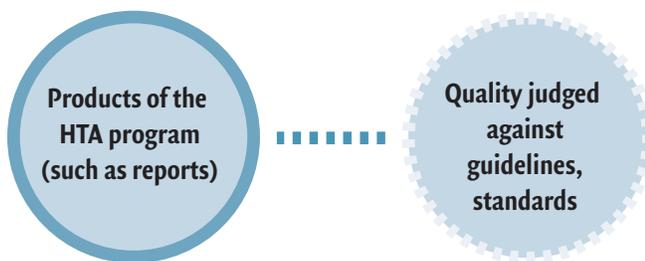
**Scheme 1
Determinants of effectiveness – HTA products**

Reports and other products (and, through them, the HTA program) will be judged by what they say, and how their conclusions are derived. The wider audience for HTA products may also take some account of the context of the assessments, numbers of titles available, topics covered and appearance/format.

Moving beyond the tangible products of an HTA program, the next clear determinant of effectiveness is the process by which decision-makers are informed and influenced. This will include the process of dissemination of the program's products. This crucial area is less easily described and
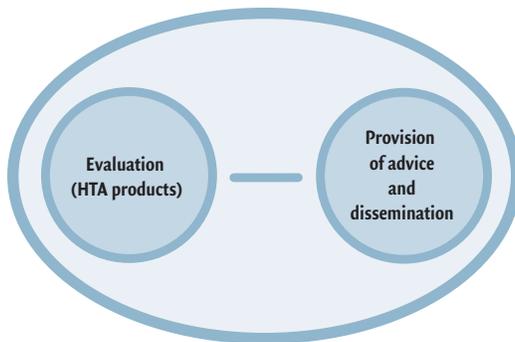
Scheme 2
**Determinants of effectiveness –
HTA products and actions**

categorized than the first and information about it will typically not be visible to an external observer of an HTA program. Measures to increase the visibility of an HTA program – such as media releases and newsletters – will be a first step. Further approaches will be needed for dissemination of material to targets for assessment, so as to increase the likelihood of the HTA having an appropriate impact.

Together, these two elements – HTA products and their dissemination – form the primary areas for determining effectiveness of an HTA agency: its outputs (Scheme 2).

Clearly, these outputs are dependent on various relationships, many of which will provide further dimensions to the description of effectiveness of an HTA program.

Governance

As a first input to a wider description of an HTA program, its governance can be considered (Scheme 3). Any program will have overall reporting obligations to some entity. The location of HTA programs and their administrative arrangements vary considerably. The diversity of organizations and governance arrangements within the membership of the INAHTA agencies provides an example.[3]

The governance entity will often determine and monitor the mandate of the HTA program and suggest directions at a high level – such as whether there is to be a focus on assessment of particular types of technology. Governance may be in relation to specific health care programs or organizations. Certain values may be brought to the HTA program and the governance can influence perspective.

In a number of programs there are bodies such as advisory committees, which in some sense support the governance. An advisory committee may, for example, have responsibility for considering all aspects of the work

Scheme 3
**Determinants of effectiveness –
governance**
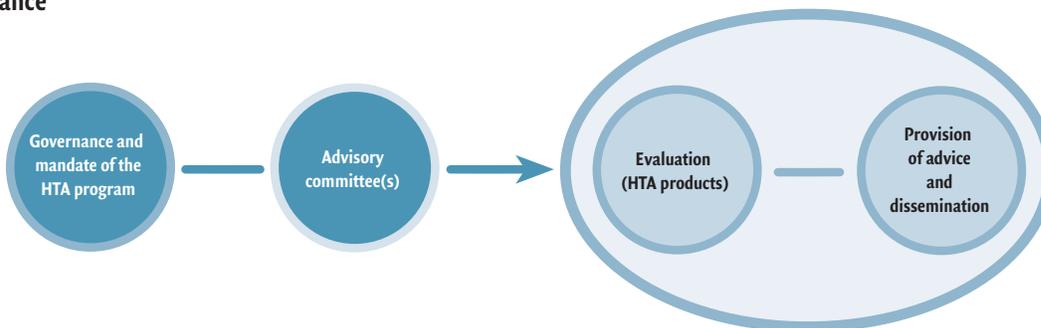
program or the approach being taken to evaluation. The actual role, level of expertise and extent of influence of such bodies will vary.

Staff and structure

The viability and quality of an HTA program will depend on the availability of experienced assessors, wherever they may be placed. In many programs, most assessments are carried out "in-house." Another option is to use external contractors to prepare an assessment. There may also be arrangements where the staff in an HTA program actively collaborate with external workers in the preparation of assessments.

As a minimum, there will need to be some coordinating and contracting function within the HTA program if the assessment is to be undertaken externally (Scheme 4).

Advantages of external contracting include the possibility of using leading experts in a field and of avoiding the demands of maintaining a group of assessors. Disadvantages may include lack of flexibility when there are time constraints, lack of availability of suitably expert persons for a particular task and difficulties in a program which has limited in-house capability being able to decide whether an externally produced product is of adequate quality.

Whether HTA activities are carried out in-house or contracted out, management and support of the staff concerned will be an important component that contributes to the overall effectiveness of an HTA program. Apart from standard personnel management issues, which will be common to many organizations, there may well be a need for particular focus on the experience and qualifications of assessors, and their continuing education. Provision of a suitable working environment will be a key issue.

Scheme 4
Determinants of effectiveness – staff and structure
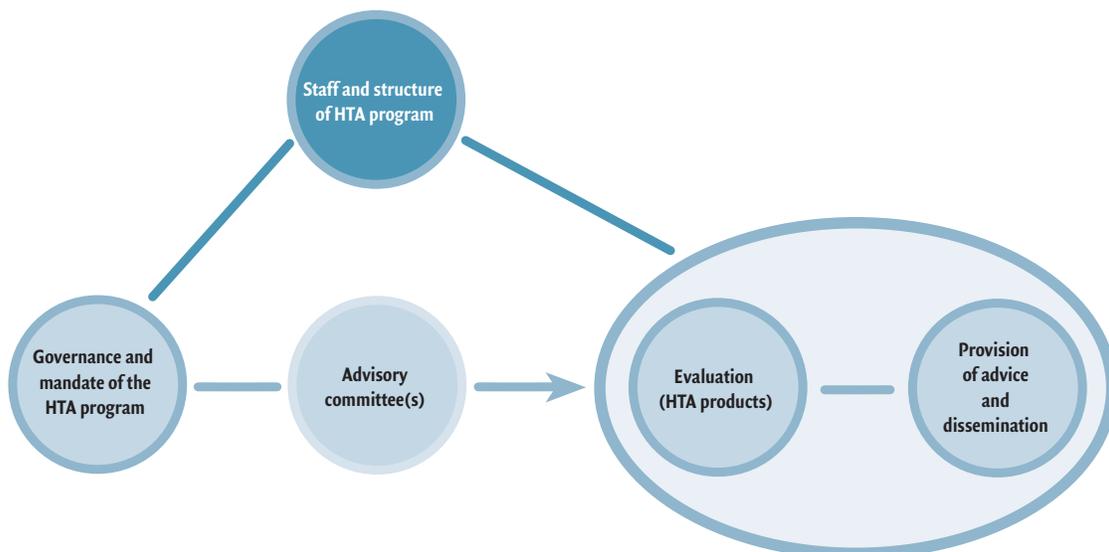
Assessors within an HTA program will need support of various kinds. In addition to basic administrative support, areas that will require attention include computer facilities, information science expertise, access to data and availability of specialized advice (for example on biostatistics) when necessary. Data needs may include access to administrative and other databases that require purchase and/or development of effective working relationships with those who administer them. Assistance with dissemination of HTA products and their findings may need to be considered.

Links between staff of the program and the governance function may include other dimensions such as affirmation of certain values that should apply to the organization.

Resources

The governance entity is often linked to or responsible for the overall resourcing of the HTA program, through determination and approval of a budget and approval for use of externally-sourced support. Management of financial resources will involve both the staff of the HTA program and its governance and is another dimension in determining effectiveness (Scheme 5).

Collaborative and contractual relationships

Collaboration involving staff of an HTA program will range from expert opinion/ advice and information exchange through to joint projects in which external assessors or other experts are co-authors of an HTA.

Scheme 5
Determinants of effectiveness – resources
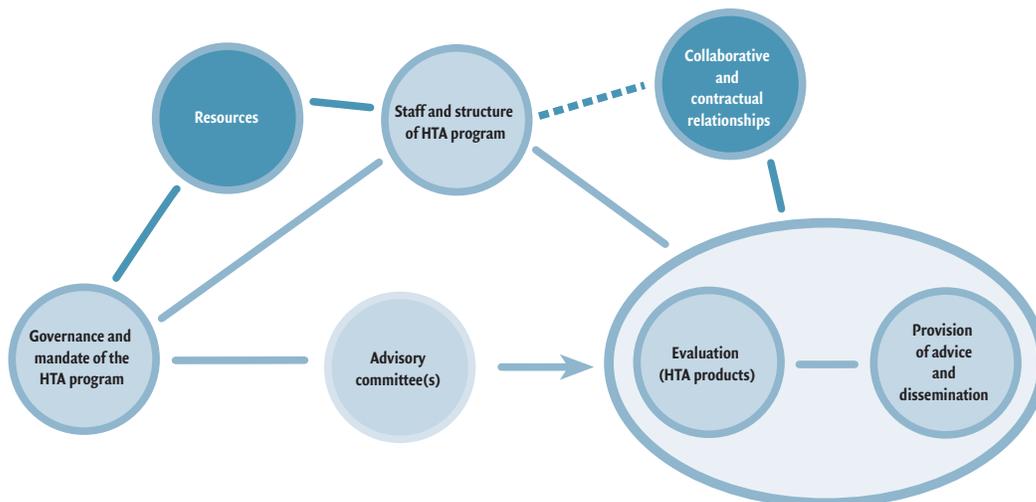
Staff within an HTA program and those with whom they collaborate will have a major, direct influence on the two interactive dimensions – preparation of HTA products and informing the decision making process.

There are also likely to be inputs from organizations and individuals who provide advice or services to the HTA program on a contractual basis without active collaboration.

Formulation of HTA questions

The components of the program identified so far have been concerned with resources of various kinds and the way in which they are managed. The remaining components are more concerned with other organizations and processes.

A key relationship is that between the health care system and health technology assessment, which includes the formulation of problems –deciding what to study and which approaches to take.[4] The organizations, or possibly individuals, that are the main targets for an assessment will often play a major part in raising and helping define the HTA question. There will typically be some interactive process between the requestor of an HTA and the HTA program (usually its staff) (Scheme 6).

The circles for primary target and formulation of HTA questions in Scheme 6 are multi-dimensional – there will be an array of questions, often from a number of sources. Identifying the relative importance of these, the levels of response that would be appropriate and then managing the conflicting demands of clients with the resources available are major issues in the management of an HTA program. HTA programs may use guidelines or explicit criteria to set priorities for assessment.

Scheme 6
Determinants of effectiveness – questions and targets
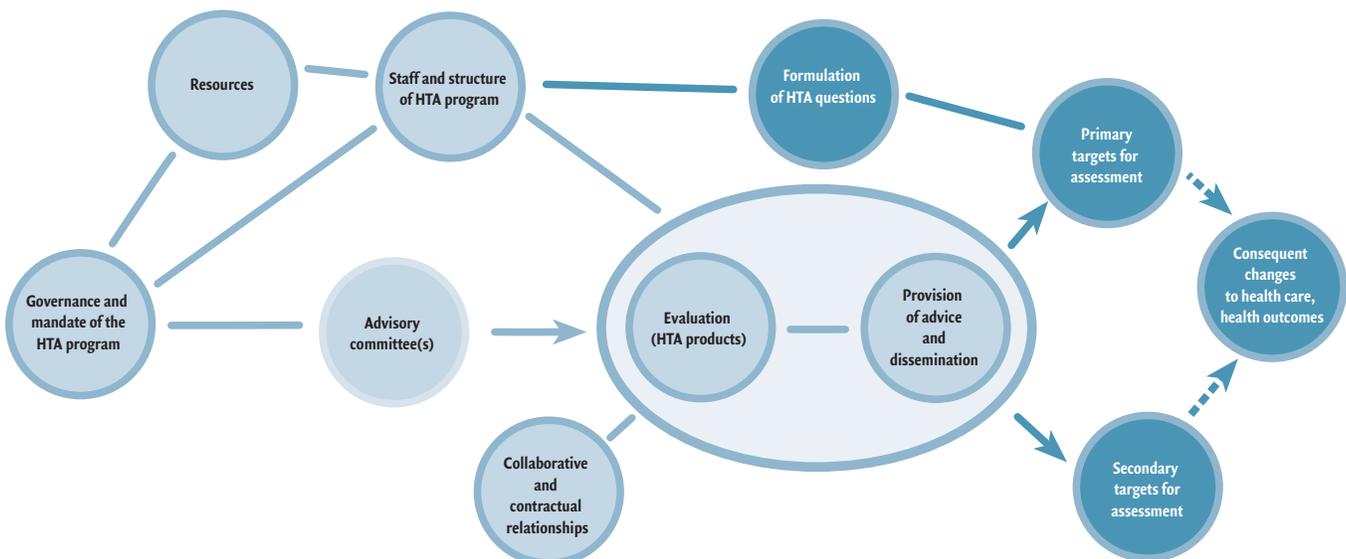
Influence on targets

The final components in this description of an HTA program, also indicated in Scheme 6, are targets for the assessment and any changes to health care and health status that may result. Interaction of the HTA program and products with targets for assessment may be a complex process. Immediate impact of an HTA on the decision-making process is often difficult to determine. Usually the HTA will be only one of a number of factors influencing a decision.

The final stage in the process, consequent changes to health care and/or health outcomes may have a tenuous link to the HTA. Influence of an HTA on subsequent action and outcomes can sometimes be discerned but activities and performance within a health care system may be influenced by many factors. Also, importantly, while changes to health care and improved health may be regarded as a measure of effectiveness of HTA programs, as suggested by Jacob and McGregor,[5] these events will all be outside the immediate control and influence of those who govern and manage the HTA program. They will be dependent on actions of many individuals and organizations. There is an inherent difficulty in determining how third parties actually use the specialised HTA information that has been provided.

The overall description of an HTA program and its relationships is shown in Scheme 7, which also includes reference to other parties outside local health care and to data access. The determinants of effectiveness include a complex mix of persons, products and processes.

Scheme 7
Determinants of effectiveness – program
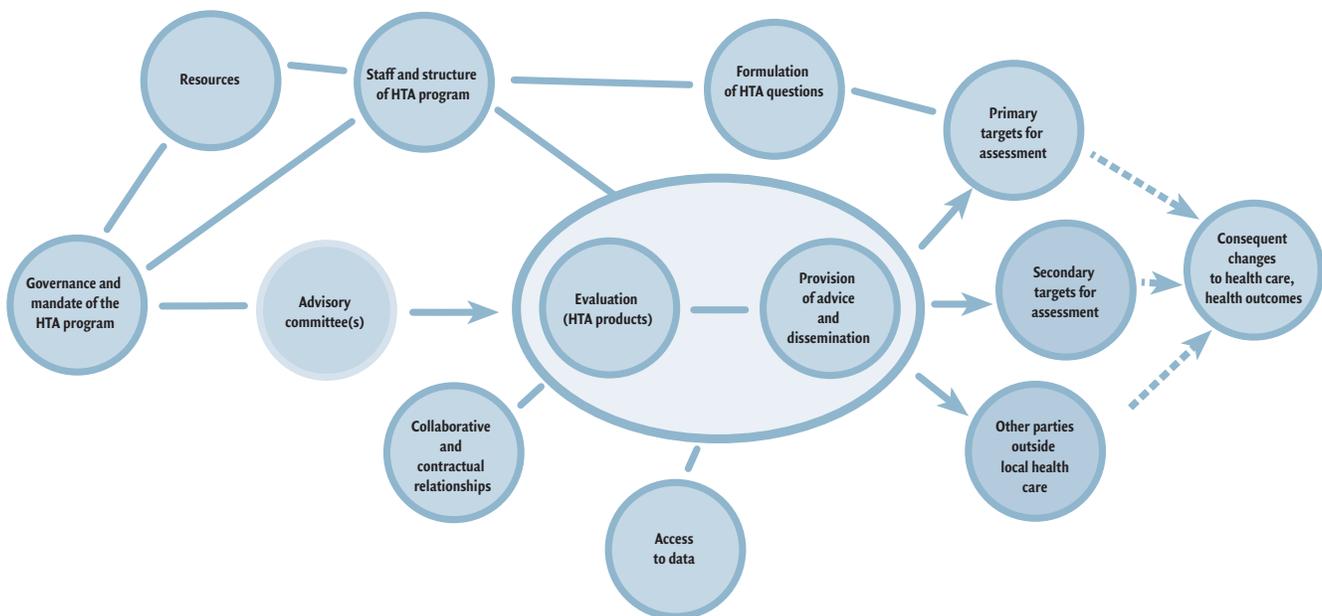
2. Organizational theory perspectives

The structure and process of an HTA program are complex, with dimensions that stretch well beyond the production of an HTA report. It was with these other dimensions in mind that an organizational theory approach to measurement of HTA program effectiveness was considered, and presented at a recent annual meeting of the International Society for Technology Assessment in Health Care.[6] Some of the material from that presentation is included here.

There are various, competing, definitions of organizational effectiveness, some of which are shown below. Achievement of goals, reaction of different constituencies of the organization, adaptation to external influences and survival are important themes.

SOME DEFINITIONS OF ORGANIZATIONAL EFFECTIVENESS

- the degree to which an organization realizes its goals

- to have effects… with many outcomes wanted and unwanted by different constituencies

- human judgments about the desirability of the outcomes of organizational performance from the vantage point of the varied constituencies directly and indirectly affected by the organization

- a multifaceted concept in which the organization "does the right things," such as achieving organizational goals, adapting to the external environment, and addressing stakeholder needs

- the degree to which the organization can preserve the integration of its parts….adaptation and survival become measures of organizational effectiveness

Effectiveness of HTA programs might be considered in terms of different organizational models. The presentation at the ISTAHC annual meeting discussed possible application of four of these – the Goal, Constituency, Open Systems and Competing Values models.

The Goal Model

In the Goal Model, effectiveness is assessed on the degree to which organizations achieve their diverse, formal, stated goals. For an HTA program, stated goals might include some or all of the following:

Overall effectiveness: Subjective assessments of goal accomplishment by stakeholders knowledgeable about the HTA organization.

Productivity: Volume assessments of the major products of the HTA organization.

Efficiency: A ratio that reflects a comparison of some measure of performance (such as number of evaluations produced) to the costs incurred.

Revenue: Funds received to carry out HTA activities

Quality: Subjective perceptions of the utility of the primary products produced by the HTA organization by knowledgeable stakeholders. As indicated in Section 1, objective measures of quality are available for some HTA products.

Growth: Represented by an increase/change in HTA organization variables such as total workforce employed, annual operating budget, number of evaluations performed.

Employee-related factors: A range of indicators of employee behaviour which are interdependent. They include Absenteeism, Job satisfaction, Motivation, Morale, Interpersonal skills and Conflict/cohesion – the degree to which HTA program employees like one another, work well together and communicate openly and fully.

Employee participation: The degree to which HTA employees participate in making decisions that affect them directly.

Employee task skills: The overall level of HTA employee technical skills.

Training and development: Expenditures on the training and development of HTA program employees.

Turnover: The number of HTA program employee voluntary terminations per period of time.

Role and norm congruence: The degree to which HTA employees agree with such things as performance expectations and role requirements.

Goal consensus and internalization: The degree to which all HTA employees perceive the same goals for the organization and identify with stated organizational goals.

Control: The degree and distribution of management control that exists in a HTA organization for influencing/directing program members.

Flexibility/adaptation: The ability of a HTA organization to change its standard operating procedures in response to a change in the environment.

Readiness: The ability of an HTA organization to readily perform a new function if asked to do so.

Stability: The ability of the HTA program to maintain its function and resources in times of stress.

Planning and goal setting: The time and resources that an HTA program spends on planning and goal setting.

Information management: The degree to which the HTA program manages its flow of information to ensure information completeness, accuracy, and efficiency.

Utilization of environment: The ability of a HTA organization to acquire scarce resources (government/third party funding, qualified personnel, etc) from its environment

Achievement: The degree to which a HTA organization places its emphasis on achieving new goals.

A number of these points emerge from the description of the HTA program process given earlier. These elements are important, diverse and at different levels.

The Goal Model has a number of limitations or qualifications:

- HTA programs have multiple and conflicting goals: When goals are in conflict, which of them will be pursued?

- HTA programs pursue goals that have short-term and long-term horizons: Which goals should be pursued for evaluation purposes?

- HTA programs pursue goals that are difficult to measure: When goals cannot be objectively assessed, how well can effectiveness be evaluated?

- HTA programs are affected by environmental forces outside their control: How can organizations achieve all their goals when the means to do so will be partly, perhaps largely, determined by others?

- The goals that HTA organizations pursue may be rationalizations of past actions rather than deliberate attempts to shape a desired future: Are goals what organizations should strive for or what organizations have achieved?

The Constituency Model

In the Constituency Model, effectiveness is assessed from the perspective of various interest groups, both inside and outside the HTA organization. Major constituencies for HTA organizations might include:

Customer (user) perspective

- Timely, intelligible and accurate evaluations

Government/third party funder perspective

- Value for money and accountability
- Public safety

Employee/staff perspective

- Compensation, benefits and working conditions
- Career potential

A limitation with this approach is that constituencies have competing interests: Which stakeholder group(s) should be favoured? In what order and by which means should the priorities of these be pursued?

The Open Systems Model

In the Open Systems Model, effectiveness is evaluated on the ability of HTA organizations to regulate or control elements of their internal and external environments.

Open system criteria for HTA programs

Approach	Focus on	Description	Sample Criteria
System Resource Approach	Inputs	Evaluates the HTA program's ability to optimally acquire and use scarce and valuable resources.	• Access to funding • Access to human resources • Access to information
Goal Approach	Outputs	Evaluates the HTA programs ability to achieve its various goals in terms of quantity and quality of outcomes.	• Quantity of HTAs • Quality of HTAs • Impact of HTAs
Internal Process Approach	Transformation	Evaluates the internal procedures, work climate and economic efficiency of the HTA program.	• Quantity of HTAs / $ • Accuracy of HTAs • Employee job satisfaction
Strategic Adaptation Approach	Adjustment	Evaluates the HTA program's ability to react and adapt to external forces, challenges, and contingencies.	• Multiple funding sources • Dissemination of HTAs • Speed of decision making

Limitations of the Open Systems approach include:

- Not all elements of the model are equally important for effectiveness: Should HTA organizations pursue a "balanced" approach to managing their performance?

- As with the Constituency Model, this model downplays the fact that organizational stakeholders have multiple and competing interests: How can HTA organizations incorporate the perspectives of multiple constituencies?

- The model does not explain "equifinality" – the ability of organizations to reach similar goals through dissimilar means: Is it more important for HTA organizations to pursue a desired end (irrespective of means) or the means that will lead to a desired end?

- The impact of managerial strategy and organizational culture on goal-setting is ignored: How should the strategy (what the HTA program wants to achieve) and culture (what the HTA program espouses or values) be incorporated in goal setting?

The Competing Values Model

In the Competing Values Model, effectiveness of HTA organizations would be assessed from the perspective of management values, recognizing the need to be congruent with the culture and strategy of the organization.

Competing values model

Effectiveness criteria			
Focus on	**Value**	**Means**	**Ends**
Human Relations	HTA program flexibility with focus on internal issues.	Maintaining HTA program employee cohesion and morale.	• Human resource development • Employee cohesion • Employee job satisfaction
Open Systems	HTA program flexibility with focus on external issues.	Maintaining HTA program flexibility and readiness to adapt quickly to outside forces.	• Resource acquisition for growth • Readiness • Flexibility / adaptation
Rational Goal	HTA program stability with focus on external issues.	Enhance HTA program planning and evaluation.	• Planning and goal setting activities • Constituent satisfaction • Third party audits
Internal Process	HTA program stability with focus on internal issues.	Enhance HTA program information management and cohesion.	• Information management • Productivity / efficiency • Control

In this approach, the focus chosen depends on the values, interest, goals and perspectives of the HTA program's "owners," sponsors, or managers. All will be significant to any HTA program but the balance will vary from case to case. The focus adopted depends on whether issues inside or outside the program are considered more important.

A limitation of the Competing Values approach is that most organizations do not fit neatly into any one of the focus areas shown in the table. How can HTA program managers accurately assess and weigh their own multiple (and competing) interests?

These different organizational models identify factors that can usefully be taken into account in considering management and measurement of effectiveness of HTA programs. However, none of them appear to be entirely applicable to an HTA program. Also, as presented here in summary form, they raise questions rather than provide answers and lack detail on how issues could be dealt with in practice. For the purposes of this paper they are seen as further inputs to a possible framework for considering the effectiveness of an HTA program.

3.   Approaches to measurement of effectiveness

All of the determinants discussed in Section 1 are important in influencing the effectiveness of an HTA program. A possible approach to measuring effectiveness is to a base a framework around these determinants, considering each in turn and selecting those features that are of particular applicability to an HTA program for further appraisal.

Organization of such a framework is to some extent arbitrary. In the approach suggested here, the framework consists of two sections. In the first of these, the elements in the "assessment chain" – based on the formulation of the US Office of Technology Assessment and others – are considered. From the determinants identified previously, and specifying impacts rather than targets, this brings together Formulation of the HTA Question, HTA Products, Dissemination, Impact of HTA and Indirect Impact. The second section brings together the "resources chain" including Governance, Resources, Staff and Structure, and Collaborative and Contracted inputs. Items in these groupings overlap with each other and care would be needed to avoid any "double counting."

There are some significant challenges in assessing effectiveness of HTA programs. Some form of "standards" exist for reports and other products, on the basis of well – recognized international guidelines. There will also be standards, some of them with a legislative basis, for aspects of managing human resources and financial resources. Other aspects of an HTA program are less easy to address through a potentially "objective" effectiveness appraisal process. Comparison with the experience of other HTA agencies may give some indications based on shared experiences. However, given the organizational diversity of HTA programs and the varied contexts within which they work such approaches are limited at best.

An obvious difficulty for HTA programs is that many aspects of their effectiveness are determined by other parties. An HTA program may well have substantial control over output of its products and of its internal management. Other areas, notably overall impact, will tend to be well outside the control of the program. The effectiveness of the HTA program will in part be affected by the effectiveness of other organizations.

Some issues relating to HTA operation and output are complex, so that there is a danger of applying measures which may be simplistic. On the other hand, some relatively straightforward measures are needed if effectiveness is to be appraised in a practical way so as to provide input to program management decisions.

In Section 2, material relevant to different organizational models gave indications of measures of effectiveness, together with various limitations and difficulties. These are helpful in informing directions for practical assessment of program effectiveness.

The following tables provide examples of issues that may need to be considered, possible measures that could be applied, HTA program areas, other than Staff and Structure, that may be involved and various qualifications that will need to be borne in mind. The tables are not intended as a comprehensive guide to factors in the assessment of HTA program effectiveness. Those managing and governing an HTA program will need to decide which issues are of most importance to it and how these should be measured and assessed. Assessment of effectiveness may for many issues be in relation to locally-determined goals, which will need to be kept under review as further experience is obtained by the program.

Formulation of HTA questions

Issue	Possible measure	Other program areas	Qualifications
Number of assessments requested	Number received/year.		A crude measure of input.
Requests declined	Number/year.	Governance (appropriateness) Resources (feasibility)	Basic measure would need to be supplemented by reasons why.
Sources of questions	List sources, number per source.	Governance (appropriateness)	Some HTA questions may be generated in HTA program with particular targets in mind.
Scope of questions – technology, area of health care, type of analysis needed	List numbers, areas as indication of activity.	Governance	May need to account separately for information/ educational initiatives undertaken by program.
Policy or administrative question to be informed by HTA	List type of issue (eg reimbursement decision).	Governance	Questions should be compatible with the program's mandate.
Extent to which the topic has been considered by other HTA programs	Make appropriate reference in individual reports. Possibly list other reports considered.		Could only be assessed in qualitative terms. Note that there will often be a need to consider local issues even if an HTA has been completed elsewhere.

HTA *products*

Issue	Possible measure	Other program areas	Qualifications
Level of activity	Number of HTA products/ year.	Formulation of questions Resources	No indication of type or complexity.
	By topic, report or other product.		Basic categorisation.
Quality	Whether externally reviewed.		Only one indicator; some good quality products may not be reviewed.
	Whether consistent with recognized guidelines.		Eg: INAHTA checklist. Full assessment of this quality indicator would need to be qualitative. Note that individual assessments need not consider all attributes of a technology.
	Whether transparent as to methods, data, analysis.	Governance	Qualitative appraisal needed of a key element.
Accessibility	Responses to surveys of targets on whether products were intelligible and useful.	Dissemination Governance	Qualitative appraisal.
Time taken	Record time taken from receipt of request/ start of project to completion of HTA product.	Formulation of HTA questions Resources Governance	Time may vary considerably, some elements are outside the control of HTA staff. An area where trade offs are made to accommodate work programs.

Dissemination

Issue	Possible measure	Other program areas	Qualifications
Vehicles/methods used	Record of mail outs. Record of web site items. Record of media releases, presentations etc.	Resources Formulation of HTA questions	Basic description/indication of approaches taken.
Reaction to disseminated material	Responses to surveys of targets.		These establish contact with the HTA product but not necessarily comprehension.
	Hits on websites.		
	Citations in literature, data bases etc.		
Related publications in journals etc	Citations, data bases, responses received.	Resources	May give a message to a wider audience; may give additional information to that in the HTA.

Impact of HTA

Issue	Possible measure	Other program areas	Qualifications
Whether report considered	Responses to questionnaire. Correspondence received.	Dissemination	Likely variable response. Extent of consideration not easy to establish.
Recommendations made in HTA products are accepted.	References in media releases dealing with policy, program changes. Questionnaires, interviews.	Formulation of HTA questions	Not all HTAs will include recommendations. Not necessarily a causal link between recommendations and related action.
The HTA demonstrates that a technology meets specific requirements for a program.	Comparison of analysis and conclusions of the HTA with published criteria.	Formulation of HTA questions	For example, in a situation where minimum standards must be met before some type of approval is given.
Material from an HTA product is incorporated into policy or administrative documents	Cite as appropriate.		
Information in HTA is used as reference material for future activities	Cite as appropriate.		For example, in subsequent development or refinement of guidelines.
Number of HTA products having some impact	Judgements based on input from areas listed above.		General guidance on the HTA program but information is likely to be limited.

Indirect impact of HTA

Issue	Possible measure	Other program areas	Qualifications
Influence on others in the health care system	Responses received – surveys, interviews.	Dissemination	Qualitative, intermittent information.
	Citations in documents recording decisions.		
	Decisions/actions in areas related to HTA conclusions.		May not be consistent with HTA conclusions. Many other factors likely to have influenced activities.
	Trends in relevant administrative data		Administrative data will often only partially reflect HTA influence.
Broader influence, other health care systems	References in other HTAs, policy decisions.		Progressively less easy to confidently establish link with the original HTA.

Governance

Issue	Possible measure	Other program areas	Qualifications
Legislative or administrative basis	Statutory or administrative documents.	All	
Mandate or specifications for program	High level documentation, general availability. Operational strategies for local manager.	Formulation Targets	Reference material on program. More detailed local directions needed for management.
Values	Consistency with basis and mandate.		
Interaction with political, other processes external to program	Possibly a negative – absence of intrusion.	All	
Interaction with HTA program management and staff	Formal meetings – frequency. Documented decisions on program.		Difficult to quantify.
Support for generating program resources	Continuity of program budget. Availability of resources for new initiatives	Resources	Degree of influence of Governance.
	Endorsement and approval for external funding.	Resources	Dependence on issues given above.

Resources

Issue	Possible measure	Other program areas	Qualifications
Availability of resources at an appropriate level for program	Comparison with historical levels.	Governance	Beloved of some administrators, no account taken of program changes etc.
Allocation to program components	Relate to estimates for work program components.	Governance Collaborative and contractual inputs	Historical component? Change in line with additional commitments agreed to by Governance.
Management of program components	Local measures of outputs and impact vs costs.	Formulation of questions Collaborative and contractual inputs	What is the comparator? Are goals set? Are units of output realistic?
	$/ report $/activity $/ citation $/influence		Difficult to get consistent and meaningful measures for some of these. Eg: significance of influence of HTA products hard to capture. $ per items of advice to a decision-maker, perhaps linked to type of technology and/or disease may be of value.

Staff and structure

Issue	Possible measure	Other program areas	Qualifications
Primary function	Quality, timeliness and delivery of HTA products.	HTA products Formulation of questions	As indicated for other program areas.
What it takes to produce an acceptable HTA product	- technical competence - writing ability - awareness of other issues in the health system - availability of data and other back up	Resources Formulation of HTA questions Collaborative and contractual inputs	Need for on-going active management, adequate staff training.
Experience and competence of assessment staff	Exposure to HTA tasks, HTA and related literature. Adequate qualifications. Appropriate training. Aptitude for communication and consultation.	Resources	The level and nature of qualifications will vary. Background in science, quantitative methods, often advantageous.
Effectiveness of structure for dissemination	Availability of staff (contractors) to support the dissemination process. Adequate vehicles for dissemination.	Dissemination Resources Collaborative and contractual inputs	Dissemination will typically involve assessment staff but require additional inputs to be very effective.
Morale and stability of HTA program staff	Conditions of employment. Acceptance of mandate and values of the organization. Workload and work scope. Capacity to communicate and collaborate.	Governance Resources	Multiple factors involved, some at the individual level. A major demand for local management.

Collaborative and contractual inputs

Issue	Possible measure	Other program areas	Qualifications
Collaborative projects with other agencies or individuals	HTA reports and other products of the collaboration, with associated measures of impact etc. Additional skills or knowledge brought to project by collaborator.	Resources Governance Dissemination	Competence and availability of collaborators? Value added through collaboration? Effect on other parts of work program.
Provision of data or reports on specialised topics by agencies or individuals	Quality, consistency and usefulness of the data supplied. Adequacy of a report in terms of contract specifications. Usefulness of contracted reports to the work program.	Resources Governance	Costs and delays in obtaining some information (eg: administrative data) may have to be considered.
Provision of services related to the production or dissemination of HTA products	Quality of service / product provided as judged against specification and by any external impact. Consistency of service.	Resources Dissemination HTA products	Judgements to be made regarding affordability and value for money.

4.

Use and misuse of effectiveness measurements for HTA programs

The preceding sections have described a number of components of HTA programs and their effectiveness. The relative emphasis placed on different components of a program will vary, as suggested in Section 2, and there are numerous limitations and qualifications to take into account. Nevertheless, it is reasonable to expect some measurement of effectiveness for each component. Managers will need indications of the outputs of a program, whether these are of good quality and relevance, and whether they are being produced efficiently and in accordance with the overall mandate of the organization.

All of the elements considered in Section 1 will contribute to the overall effectiveness of the HTA program and help determine a long term effectiveness issue noted in Section 2 – the continuity of the program and indeed whether it will survive.

Data required and their collection

The level of detail and data to be collected for measurement of effectiveness need consideration. In principle, most of the components of an HTA program could be looked at in considerable detail. Some information can be readily collected from routine administrative processes within the organization. Other areas of effectiveness measurement will require commitment of further resources. For example, data on the potential impact of HTA reports may be dependent on use of survey approaches or more elaborate studies. A balance has to be struck. Some information on effectiveness is needed if the HTA program is to be managed competently and its usefulness demonstrated to those who will influence whether it will continue to operate. On the other hand, excessive data collection and analysis will be demanding and may not contribute very usefully to the management and viability of the program. They might even be counterproductive through diverting efforts of assessors – the producers in the program – towards undue levels of self-appraisal.

Collection, analysis and presentation of data that relate to effectiveness are not resource-free. How are these tasks to be handled? Who will be

Elements contributing to continuity of an HTA program

responsible? Will appropriate resources be built into the program budget? Some involvement and input from HTA staff will be needed, given the technical features of HTA and the potential for misinterpretation by analysts who do not have an appreciation for the background and details. However, there have to be some limits or the time taken will intrude unduly into assessment activities.

How is information on effectiveness to be used?

Data related to effectiveness are important for those who manage and make use of HTA program and for the staff who work within it. However, there will be a wish to avoid being overwhelmed by detail and by excessive demands to generate material for the record. It is also essential for there to be some appropriate reporting back to Governance. Key, meaningful measures need to be selected for that purpose.

Information on HTA program effectiveness is required by program managers and governance. Provision of such information outside the program will require consideration. Points to be addressed include who needs to have access to material on determinants of effectiveness, what use will be made of such information and which data components are appropriate for any wider release.

The effectiveness of an HTA program is determined by many factors. HTA products are largely under the control of the program, other downstream components, which make up so much of the HTA cycle, are not.

In a perfect world, there would be a "level playing field" for interaction of the HTA program with other parties. Organizations with interests related to the program would be rational, stable and well-managed. Experience with actual operation of HTA programs suggests a very different situation in practice. Instability and inefficiencies in client and other organizations external to the HTA program will undermine the potential impact of HTA products and contribute to inefficiencies in their production. Such adverse influences are largely beyond the control of the program. If a "societal" effectiveness measure could be contemplated, the measures of effectiveness of an HTA program would take account of the shortcomings of other organizations. In reality, HTA programs and those that manage them do not have that luxury. They must continue to operate in an imperfect environment with "bounded rationality" that includes parties with interests that may be inimical to HTA. Open communication of the HTA program with its clients will help to decrease such difficulties.

A further reality is that the HTA process will often reach conclusions and deliver messages that are unpopular in some quarters. Health technologies may not meet the expectations of their proponents, on the basis of available evidence. Definitive answers sought by policy makers may not be deliverable in the absence of data and presence of complicating or confounding factors. Data related to the operation of HTA agencies could be used selectively, and inappropriately, to undermine their operation.

It seems wise for HTA programs to proceed with caution in the application and dissemination of data on their effectiveness. Some types of information should be made widely available. Others may require a restricted audience.

5.   Components of effectiveness and the AHFMR HTA program

In this section, an overview of the AHFMR HTA program is presented as a case example of how the HTA effectiveness profile might be applied. It draws on the material outlined in Section 3, and covers a number of issues under the different program components. Details are presented in tabular form and include information and comment on areas where there is already action by AHFMR or where there has been some discussion of issues. Possible directions and points to follow up are indicated by questions that may need to be addressed.

The following tables are not intended to provide a comprehensive framework for the HTAU at AHFMR. Examples have been given on some items that appear to be significant for each of the elements of effectiveness. These may be helpful in any further development of local approaches to consideration of program effectiveness for management purposes.

Formulation of HTA questions

Topic	Circumstances for AHFMR	Approaches already taken re: measurement	Questions	Possible further action?
Number of requests received	Open ended approach. Most from ministry and health regions but other inputs too.	Recorded and presented in annual reports for the HTAU, information provided to,management and governance.		Continue as is.
Sources of requests			What are relative priorities?	Issues for local management, consultation as necessary with Governance.
Specification of projects	Often questions of efficacy, effectiveness, safety. Not always clearly formulated.	Documentation for longer HTA products to establish purpose, scope.	Is current procedure/ documentation sufficiently flexible? What detail/ clarification is needed for shorter reports?	Confirm that the intent and scope of projects are clearly stated in the subsequent products.
Timelines for project	Some requests are urgent, with short timelines.	Details of timelines have been reported to Governance, no current comprehensive consideration of basis for timelines.	Are the timelines for projects realistic in terms of specifications and unit workload? Is there a need for clarification/ negotiation with requestors?	Consider detailed recording of timeline details for management purposes. Potential for linking timeline details to measurement of impact.

HTA products

Topic	Circumstances for AHFMR	Approaches already taken re: measurement	Questions	Possible further action?
Methodological approach taken	Main focus is on non- quantitative systematic review approaches.	Consideration of literature searches, data extraction.	Is there a realistic balance between comprehensive coverage and relevant coverage of the topic, taking account of the question asked?	Perhaps give more attention to including measures of study quality, where appropriate.
Quality of the product	Commitment to providing products that are consistent with best standards of practice for HTA programs.	Use of external review process for many reports. Consideration of reports against HTA standards and guidelines.	Is quality of the product acceptable, having regard to the purposes of the assessment, methodological considerations, timelines and resources available?	Ongoing internal appraisal of program products.
Timelines for the product	As under "Formulation of HTA questions;" typically, a number of projects for each assessor at any one time.	Timeline details reported for governance.	Is progress on a project reasonable, having regard to its complexity, urgency, workload and expertise of the assessor?	Ongoing internal appraisal of timelines.

Dissemination

Topic	Circumstances for AHFMR	Approaches already taken re: measurement	Questions	Possible further action?
Dissemination to primary target of the assessment	Typically, ministry or regional health authorities (RHAs) are the primary targets.	Use of questionnaires, sometimes interviews.	Does process take sufficient account of changes to personnel, organization?	Possibly more detailed follow up, if that is feasible for the target and for HTAU resources. Formal documentation of action and responses.
Dissemination throughout Alberta	Some topics of specific interest to primary target. Not always easy to define appropriate focus within an organization (eg: an RHA).	Reports and summaries circulated to RHAs and others. Occasional meetings and workshops.	Relevance to other targets? Rate of return from wider dissemination?	Difficult to develop without further resources.
Dissemination to secondary targets outside Alberta	Paper copies to some targets. Reports, titles, on AHFMR website. Advice for inclusion on INAHTA website.	Recording of actions in these areas.	Consistency and timeliness of these routine activities? Accessibility of sources to interested parties?	Obtain further information on website hits.
Visibility of HTA program and its products	Wide circulation of products, including newsletter. Availability of information through website. Products included in HTA and other data bases.	HTA products, press releases etc, website entries recorded, also significant comments or queries made.	Do other areas of AHFMR assist this process as well as possible? Is electronic access to HTA products easy and current.	Use of further types of vehicle to summarise and explain HTAU work might be explored. Higher visibility within AHFMR publications/ publicity mechanisms.

Impact of HTA

Topic	Circumstances for AHFMR	Approaches already taken re: measurement	Questions	Possible further action?
Whether HTA reports are considered by potential targets	Main targets for assessments the ministry and RHAs.	As under Dissemination. Follow up by questionnaire, sometimes by interview.	Does information obtained actually reflect use of the report?	Maintain approach; ensure consistency in follow up.
Whether action was taken as a result of an HTA	Variation in nature of topics for HTA. Range from advice informing relatively straightforward and open administrative decisions to assessments that give input to policy on complex programs which may take some time to develop.	Several ad hoc appraisals of impact, based on responses from targets and perceptions of administrative action. Some of these published,[7-9] others used to inform AHFMR governance. Impact analysis by HTAU of their products after a year from release.[9]	Degree of accuracy and relevance of the information that can be obtained.	Include statements of perceived impact in annual reports (some information already included). Impact study following up with interviews of clients to identify how the product was used.
Whether there are requests to follow up HTAs	With several topics (eg radiosurgery, brachytherapy, HBOT) follow up assessments are requested to update advice.	Recorded in annual reports etc.	Extent to which original HTA report had been used.	

Indirect impact

Topic	Circumstances for AHFMR	Approaches already taken re: measurement	Questions	Possible further action?
Influence on others targets in Alberta health care	Other health authorities, professional groups etc may take note of findings from HTAs.	Ad hoc recording of examples; possible response to newsletter articles.	Whether limited information on this area could be extended by wider follow up.	Consider some further initiatives under Dissemination, but there will be greater demand for resources.
Broader influence, other health care systems	AHFMR reports widely available, often referred to in HTAs (etc) from other agencies.	Ad hoc information, no systematic recording of examples. Some input via information requests.	Relevance of such information to immediate mandate of the HTAU.	List such examples in annual reports.

Governance

Topic	Circumstances for AHFMR	Approaches already taken re: measurement	Questions	Possible further action?
Mandate/ specifications for program	Specified under Health Research Collaboration Agreement (HRCA). Further definition under legislation, administrative arrangements for AHFMR.	Review of HRCA Ongoing monitoring of program in context of AHFMR arrangements	Range and nature of program activities still consistent with mandate? Any aspects of the mandate that are unreasonably restrictive for an HTA program?	Potentially, formal statement, overview in annual report.
Interaction with program	Reports to AHFMR Board of Trustees, presentations at their meetings. Ongoing communication with CEO and executives. Contact with ministry.	Formal decisions/ recommendations of Trustees. Decisions of CEO and deputies.	Extent of appreciation of HTAU requirements, nature of tasks. Relevance and accuracy of advice from HTAU. Appropriateness of tasks requested, perceived role of HTAU.	Ongoing liaison and review.
Values	HTAU one of several AHFMR programs, most of which are concerned with research funding and training. Intent of HTA program was to provide independent advice at "arm's length" from government agencies. HTAU is intended to meet accepted standards of practice for HTA programs.	Formal AHFMR requirements (eg: confidentiality) built into agreements, contracts etc. Scope of HTA products agreed with government agencies, documented. Reference made to INAHTA guidelines, eg: on issues such as transparency of advice.	Are formal AHFMR requirements always compatible with needs of a transparent, open access HTA program? To what extent are requests from government reasonable and realistic in terms of the HTAU mandate and resources?	Review, document requirements.

Resources

Topic	Circumstances for AHFMR	Approaches already taken re: measurement	Questions	Possible further action?
Level of resources for the HTAU	Funding under the provisions of the HRCA.	Monitored under AHFMR administrative arrangements.	Is the level of funding consistent with current demands and requirements?	Consider funding implications should major additional tasks be given to the Unit.
Resource allocation to program components	Local decisions in consultation with CEO, delegates.	Routine monitoring under AHFMR administrative arrangements.	Is the balance of allocations between elements appropriate for overall program?	
Measures of use of resources	No consistent approach to recording resources use per unit of output. Historical basis for resourcing levels.	Notional time requirements for different types of product available as a guide.	Would formal measures of resource use (eg: cost per full HTA report) help management? If so, how would account be taken of variations and complexities of HTA program?	Formulation in terms of, eg: products/ outputs per staff member might be considered (data already available in annual reports).

Staff and structure

Topic	Circumstances for AHFMR	Approaches already taken re: measurement	Questions	Possible further action?
Experience of assessors	Small core staff with experience in preparing HTA reports, with a focus on systematic and other reviews. Other persons on short term placements, usually without much HTA experience.	No formal measures. Administrative arrangements recognise previous contact of individuals with assessment of particular technologies and with methodologies. Mentoring as required for short term workers.	How well do the experience and aptitude of individual assessors match the tasks they are given? Exit interviews with short term placements?	Consider preparing summaries of assessments and other tasks undertaken as guide to management and career development.
Staff training	Staff are supported for participation in university and other courses and for attendance at scientific conferences. On the job training as required, often via collaboration on specific projects.	Conference attendance and presentations recorded in reports (eg: to Board of Trustees).	Appropriateness of training activities for the overall HTA work program, AHFMR mandate and career development of the individual.	Possibly formal record of training – related activities for each individual as aid to management. Record funding/ proportion of budget allocated to training – related purposes.
Activities of support staff	Currently one permanent support person in HTAU. Also support from AHFMR Librarian on various projects. Other AHFMR staff provide "overhead" support in functions such as reception and communications.	Occasional reviews of workload and activities.	Is there sufficient support to provide an efficient HTA program? Is Information Services support at a level that would be considered acceptable by best standards of HTA practice?	Possible need to review level of support activities in terms of individual capacity, HTAU work program and accepted requirements of assessment staff.

Collaborative and contracted inputs

Topic	Circumstances for AHFMR	Approaches already taken re: measurement	Questions	Possible further action?
Collaboration with other HTA agencies	Several collaborations with other agencies, eg: Institute of Health Economics, projects on behalf of INAHTA.	Considered in context of overall work program. Listed in annual reports, advice to Board of Trustees etc.	Degree of value added by involvement of the other organization? Are there possible disadvantages such as delay in completing tasks, different perspectives/ approaches to those of AHFMR.	Include brief review/appraisal of experience in annual report.
Collaboration with individuals outside AHFMR on preparation of assessments	Several assessments where authors have included non-AHFMR staff. These may be senior persons with particular clinical or methodological expertise, or those with less experience, such as graduate students, who are used to provide capacity that is not available within HTAU.	Collaborators listed in annual reports etc.	As above. Degree of value added by involvement of such persons? Possible disadvantages such as delay in completing tasks, different perspectives/ approaches to those of AHFMR?	As above.
Contracts with individuals or organizations to provide information/ advice on specific topics	Ad hoc use of external contractors where advice is needed in specific areas.	Quality of deliverable assessed against contract specifications.	Are the terms of the contract fulfilled? Overall, does the value of the service provided justify the costs and other resources involved?	Possible formal documentation on nature and outcomes of such contracts.

6.   Concluding comments

The health technology assessment process is complex. This paper has identified some key features of HTA programs and suggested directions for assessment of their effectiveness.
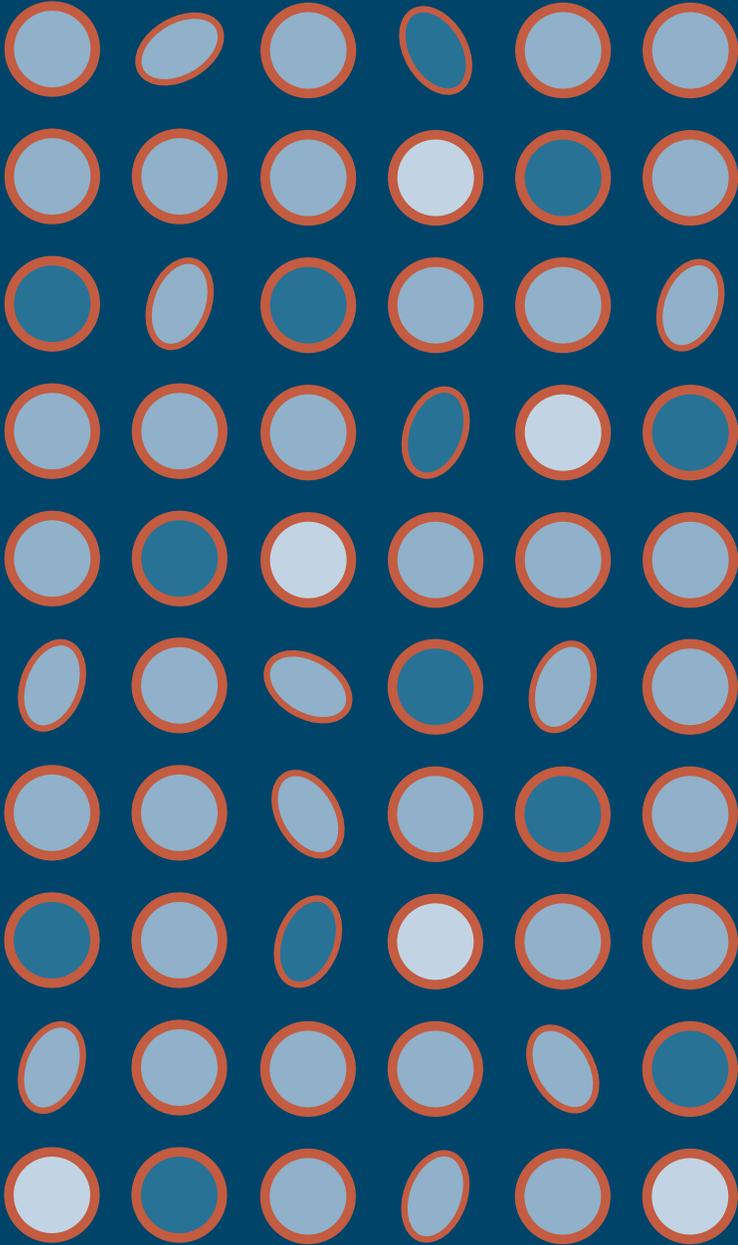
There is no easy answer to the question of how to assess effectiveness of HTA programs. Individual programs will vary considerably in their structure and in their values and the level of importance that are placed on different attributes. There is also a question of the perspective from which effectiveness is measured. The discussion in this paper has tended to reflect the perspective of a manager from within an HTA program. Different emphases and perceptions on various issues may emerge from other stakeholders.

In practice, HTA involves a series of trade offs. HTA programs will typically be dealing with many topics, which will have differing priorities and require varying levels of assessment. The potential ideal of a comprehensive, methodologically rigorous assessment has to be balanced by the realities of available resources, data and time, and put into further context by the question asked of the HTA program and the likely impact of the subsequent HTA product. It is not possible to specify a definitive approach to management and measurement of complex processes such as these, or of relationships with other organizations that will to a large extent determine the impact of HTA products.

 The discussion given earlier suggests some areas that might be considered when appraising the effectiveness of HTA programs. Measures of effectiveness ought to include at least some consideration of activity, continuity, relevance, quality and impact. It will be a matter for HTA program managers to determine how these might be brought together for routine administrative purposes and how the information obtained should be used. The level of detail needed will depend on what these measures of effectiveness are to be used for and by whom – internal management, accountability to governance, or advice to the external environment . Keeping assessment of HTA programs focused, concise, practical and useful will continue to present challenges.

References

1. International Network of Agencies for Health Technology Assessment. A checklist for health technology assessment reports, 2001.
[http://www.inahta.org, last checked March 2003]

2. Kristensen, F.B., Hørder, M., & Poulsen, P.B. (eds.) *Health Technology Assessment Handbook (1st edition)*. Copenhagen: Danish Center for Evaluation and Health Technology Assessment, 2001.

3. Hailey D, Menon D. A short history of INAHTA. *International Journal of Technology Assessment in Health Care* 1999;15:235-41.

4. Selby Smith C, Hailey DM, Drummond M. The role of economic appraisal in health technology assessment: the Australian case. *Social Science in Medicine* 1994;38:1653-62.

5. Jacob R, McGregor M. Assessing the impact of health technology assessment. *International Journal of Technology Assessment in Health Care* 1997;13(1):68-80.

6. Rondeau K, Hailey D. A framework for assessing the effectiveness of Health Technology Assessment programs. (Poster). 17th Annual Meeting of the International Society for Technology Assessment in Health Care, Philadelphia, June 2001.

7. Hailey D, Corabian P, Harstall C, Schneider W. The use and impact of rapid health technology assessments. *International Journal of Technology Assessment in Health Care* 2000; 16 (2) : 651-56

8. Hailey D, Topfer L-A, Wills F. Providing information on emerging health technologies to provincial decision-makers: a pilot project *Health Policy* 2001; 58:15-26.

9. TurnKey Management Consulting. A study of the impact of 2000-2001 HTA products. Edmonton: Alberta Heritage Foundation for Medical Research, *Information Paper* IP-11, January 2002.