

# The “natural history” of health technology assessment

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The collective experience of health technology assessment (HTA) in different countries delineates a pattern of development, a “natural history,” of HTA in three phases: emergence, consolidation, and expansion. This study examines the rationale for HTA, definitions of its scope and breadth, its methods and organizational models, and its knowledge translation strategies, as HTA moves from one phase to the next. The study then identifies factors that facilitate or delay the transitions.

**Keywords:** Health technology assessment, Natural history, Evolution

For more than three decades, health technology assessment (HTA) has grown rapidly in both developed and emerging economies around the globe. Examining the development of HTA in different countries, the “natural history” of HTA proceeds through three phases: emergence, consolidation, and expansion.

Drawing from these country’s experiences, we identify factors that facilitate or delay progress of HTA. As countries move through these phases of development of HTA, the rationale for HTA (Why?) becomes crisper, the definition of the scope and breadth of HTA (What?) clearer and broader, the methods and organizational models of HTA (How?) more complex, and the knowledge translation (KT) strategies (and, Then What?) more refined. Table 1 summarizes the natural history of HTA.

## **EMERGENCE**

### **Why?**

As noted in several countries, the development of HTA requires a combination of identified information needs that HTA is thought to be able to meet, demands for such information from decision makers, and a supply of human and organizational capacity able to meet the need and demand. Whereas need is often identified by analysts or researchers who may be external to decision-making processes, demand

is expressed by the decision makers themselves in ways that provide a viable basis for HTA activity and an initial audience for HTA products.

Emergence also highlights the important role of one or more “champions,” often academics, civil servants, or both, who personally work to create enthusiasm for HTA and promote its development. One means to bolster such interest is the organization of seminars or short-term courses with participation of prominent colleagues in the field in trying to create interest among a variety of local stakeholders, including decision makers and researchers. Although necessary, “champions” alone are rarely sufficient to spark the development of HTA.

In practice, the policy and political environment has to be receptive and provide traction for the champions’ efforts. Reviewing the country experiences, these circumstances clearly vary from country to country, but typically include some combination of interest in depoliticizing allocation decisions in times of increasing resources constraints, a more general policy pragmatism that marks the late 20th century and early 21st century, and a reasonable faith in “scientific approaches” that enables the evidence syntheses and analyses, the outputs of HTA, to be introduced into policy dialogues. Moreover, in most countries, there is usually a progressive recognition that the existing levers for managing technology diffusion, for example, global

**Table 1.** The “Natural History” of HTA

	Emergence	Consolidation	Expansion
Why?	<ul style="list-style-type: none"> <li>• Convergence of needs, demands, and supply</li> <li>• Key individuals are “Champions” of HTA</li> <li>• Receptive policy/political environment</li> </ul>	<ul style="list-style-type: none"> <li>• Early successes attract interest of more decision makers</li> <li>• Expansion of demand for HTA products</li> <li>• Formalized priority setting process</li> </ul>	<ul style="list-style-type: none"> <li>• HTA as part of official political discourse</li> <li>• Increased demand for diversified products</li> </ul>
What?	<ul style="list-style-type: none"> <li>• Narrow interpretation of health technology</li> <li>• Focus on high intensity technology (Imaging)</li> <li>• Exclusion of pharmaceuticals</li> </ul>	<ul style="list-style-type: none"> <li>• Broadening of scope of HTA</li> <li>• Possible addition of pharmaceuticals</li> <li>• Shift from specific technologies to care processes for the management of health conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Further broadening of scope of HTA (pharmaceuticals, public health, delivery models, social services)</li> <li>• Existing practices and new interventions</li> </ul>
How?	<ul style="list-style-type: none"> <li>• Modest resources, at times project or deliverable specific</li> <li>• Minimal scientific capacity</li> </ul>	<ul style="list-style-type: none"> <li>• Expansion of scientific team</li> <li>• Modest addition of resources</li> <li>• Research partnerships sought</li> </ul>	<ul style="list-style-type: none"> <li>• Significant increase in resources</li> <li>• Expansion of scientific team and partnerships</li> <li>• Diversification of products</li> <li>• Clinical practice guidelines</li> </ul>
and, Then What?	<ul style="list-style-type: none"> <li>• Knowledge translation minimal</li> <li>• Efforts directed to policy makers, often by means of personal communication</li> </ul>	<ul style="list-style-type: none"> <li>• Progression of knowledge translation efforts</li> <li>• Broadening of target audiences</li> </ul>	<ul style="list-style-type: none"> <li>• Consolidation of multiple target audiences</li> <li>• Specialization of KT instruments</li> <li>• Increased proportion of resources to KT</li> </ul>

budgeting of hospitals, are not sufficient to face the mounting pressure on health systems from technology innovation and that valid and timely information is needed to guide decisions regarding health technology acquisition and utilization.

### What?

Although the definition of health technology is broad in theory, it is usually interpreted more narrowly in the early phase of development of an HTA organization. Indeed, surveying the country reports, the “What” question can be answered in a remarkably consistent way. Initially, HTA organizations typically focus on technologies with high capital costs, notably diagnostic imaging such as computerized tomography (CT) and for later emerging HTA efforts, magnetic resonance imaging (MRI).

The power of the images produced by these technologies make their “effects” more accessible to a far wider range of decision makers and stakeholders than would be the case for pharmaceuticals or even other equipment. The forcefulness of the resulting images, providing views inside the body previously never seen, appears to have triggered a powerful demand for access from healthcare professionals who wish to be able to offer these technologies to their patients, hospitals wanting to maintain their competitive advantage to attract patients and staff, and patients. The high visibility of these technologies combined with their high costs can be argued to have created an opening for HTA.

An additional striking feature of HTA’s emergence is the distinction between pharmaceuticals and other technolo-

gies. Although HTA advocates have defined HTA in ways that include pharmaceuticals, the regulatory and financing regimens for pharmaceuticals typically remain untouched by HTA during the emergence phase.

Nascent HTA organizations generally keep some distance from the complex, if not overwhelming, domain of pharmaceuticals, particularly as these are already regulated to varying degrees on the basis of safety and efficacy data by pre-existing government bodies.

### How?

The emergence phase is marked by the focus on developing an initial capacity to meet modest demands from a relatively small group of like-minded decision makers, most often within government. Budgets are typically very modest, time-limited, and may even be tied to single projects.

Scientific capacity, a constant challenge in all phases of HTA, is usually minimal, drawing on epidemiological, economic, and engineering expertise. In the emergence phase, a lot of time and energy is thus devoted to the development of the scientific know-how in HTA. Although this capacity is distinct from academic health research, training initiatives in clinical epidemiology through the Rockefeller Foundation-supported INCLIN program dating back nearly 30 years, have been closely connected with the emergence of HTA in several emerging economy countries.

### and, Then What?

KT in the emergence phase is notable for its modest, perhaps implicit, presence given that the culture of evaluation is only starting to permeate decision makers. The KT efforts are

usually directed to policy makers in Ministries of Health, rather than to managers, clinicians, and the public. In addition, the presence of a champion among decision makers will only enhance the diffusion of this culture.

## **CONSOLIDATION**

### **Why?**

The consolidation phase marks the transition from HTA as a “venture investment” by health systems to an “operational feature.” In several countries, this consolidation has been marked by more structured organizational forms, sometimes linked more closely to public policy development organs of government, and by modest increases in resources.

The consolidation of HTA can be understood as a sign of success as initial investments in HTA, coupled with positive news from other jurisdictions prompt a cautious expansion of demand for HTA products. As more decision makers start to recognize the real potential of HTA, an iterative and more formalized process of priority setting and technology selection can be expected to replace the “one-off” approach that marks the emergence phase. Managing this demand requires a delicate balance between the desire of HTA producers to expand the scope and volume of their products and the desire of HTA consumers and funders to steer HTA resources to particular technologies or policy objectives.

### **What?**

An additional feature of the consolidation phase is the expansion of scope of HTA away from capital-intensive technologies to less capital-intensive technologies with greater engagement of practitioners, health managers, and citizens/patients in the HTA process. In some cases, evaluation of pharmaceuticals will be added to the mandate of the organization. More complex interventions will be assessed as the focus shifts from specific technologies to care processes to manage health conditions. As a result of this growing complexity, the tools of HTA may also need to evolve.

### **How?**

Consolidation in all countries requires an expansion of both the depth and disciplinary breadth of the scientific team with additional expertise in epidemiology, health economics, and engineering, and disciplinary contributions from other social sciences, ethics, and law.

Resources will be increased accordingly, but typically remain modest. The interdisciplinary nature of HTA will be strengthened, and at times will require some rethinking of the structure and processes of the organization. Partnerships will be sought, to varying degrees, with academic research groups as well as health research funding organizations.

### **and, Then What?**

Important progress will be registered on the KT front. More decision makers will join the initial leaders in recognizing the

usefulness of HTA and requesting assistance. Although policy makers will remain the primary target audience, linkages will start to be forged with clinicians, managers, and the public. The intensification of KT efforts emerges as a response to the need for HTA producers to cement more strongly their role and their claim to policy-making influence, and thus demonstrate impact and results in a context of heightened scrutiny and competition for increased funding.

## **EXPANSION**

### **Why?**

In the expansion phase, the need for HTA becomes widely recognized and promoted by high-level figures in government such as Health Ministers and Presidents of Review Commissions mandated to assess the state of the health system and propose future directions. Hence, the demand for assessments increases accordingly and calls for a diversification of the products of HTA intensify.

### **What?**

In several countries, the most noteworthy feature of the expansion phase is arguably the redefinition of the scope of technologies amenable to HTA’s tools and methods. The most common example is the joining of pharmaceutical assessment, distinct from but complementary to the regulatory approval process. This represents a recognition of the opportunities to compare drug and nondrug approaches when looking for the optimal management strategy of health conditions.

But the broadening of the scope of HTA also encompasses public health interventions, models of health services delivery, and in some cases social services. In addition to new interventions, existing practices will be increasingly scrutinized while coverage decisions will be revisited.

### **How?**

In the expansion phase, resources dedicated to HTA increase significantly as the organization gains status in the decision-making hierarchy. The scientific team and partnerships expand markedly, allowing rapid diversification of HTA products including in-depth assessments, rapid responses, and “mini-HTA,” as well as horizon scanning. In some cases, the development and implementation of clinical practice guidelines will become part of the mandate of the organization, thereby strengthening links with clinicians.

### **and, Then What?**

On the KT front, expansion is marked on the one hand, by a consolidation of the multiple target audiences of HTA, including policy makers, managers, clinicians, and the public, and on the other hand, by the development of instruments more specific to the needs of each target audience. For example, some HTA organizations will generate several outputs

from the same assessment process, clearly differentiated for different audiences.

The expansion phase typically includes a growing distinction between the “doing of HTA” and the “KT of HTA,” with different skill sets associated with each. A more institutionalized approach to KT, paralleling the institutionalization of HTA, is generally accompanied by a greater proportion of HTA resources being allocated to KT activities.

## CONCLUSION

The pattern of emergence–consolidation–expansion provides a useful framework for understanding the “natural history” of HTA. However, the details of each country’s approach to each phase and, specifically, the timings and determinants of transitions from one phase to another are most strongly influenced by country-specific health system and culture features. The diversity of experiences in developing HTA in different countries testifies to the fact that we are always searching for the best model of organization for HTA, a search that calls for an artful management of the known tensions between the academic side of HTA and decision making. Perhaps, there is no “best” model for HTA but rather different models, which may explain the fragmented picture of HTA in some countries and the successive transformations of HTA organizations witnessed in other countries. Clearly, HTA remains a very dynamic field.

Two major challenges remain for the development of HTA, irrespective of where a country is on the emergence–consolidation–expansion continuum: scientific capacity building and KT. In response to the first challenge, progress has been made in developing training programs in HTA and multiplying short-term teaching initiatives, including distance learning. More needs to be done to keep pace with the demand. Equally important is the consolidation of a career path in HTA sufficiently attractive for individuals hesitating

between academic and civil service careers. Nonetheless, an important part of the solution to the problem of scientific capacity could very well rest with a greater convergence of HTA with academically based activities, such as clinical epidemiology research, health services and policy research, the Cochrane movement, evidence-based practice, and public health research.

With respect to KT, our understanding of the mechanisms of translation have become more refined over the years. This finding matches the increasing recognition of the specific needs of policy makers, managers, clinicians, and the public, and the response of HTA organizations in diversifying their products and the means to bring them to the appropriate users. The growing trend of hospital-based HTA is just another illustration of the acknowledged relevance of HTA. These sustained efforts are reinforced by the growing need for organizations to justify their budgets by demonstrating impact on decision making and practices.

HTA is reaching a new level of maturity as clearer links between innovation, HTA, and health systems emerge, and the power of networking, nationally and internationally, is being experienced in HTA. Clearly, HTA appears poised for further growth as health systems and decision makers around the world grapple with ever more complexity and demands for services that show no signs of abating.

## CONTACT INFORMATION

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