Health Technology Assessment and Economic Evaluation: Arguments for a National Approach

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Introduction
Health technology assessment (HTA) is now an established input to health-care decision-making in many countries. For example, the International Network of Agencies for Health Technology Assessment (INAHTA) has members from 24 countries including North and Latin America, Europe, Asia, Australia and New Zealand, and provides a “forum for the identification and pursuit of interests common to health technology assessment agencies” [1]. Organizations such as INAHTA have come about because HTA is based upon a general set of principles and involves the study of the medical, social, ethical, and economic implications of the development, diffusion, and use of a health technology. In this article, arguments are presented to illustrate that despite these common principles, the process of HTA, and more particularly its economic evaluation component, needs to take a national approach toward evaluation. These arguments are not against the learning of lessons from work conducted in other jurisdictions, but rather that the differences between countries mean that the results of an economic evaluation conducted in one setting might not be applicable to another and as a consequence, country-specific evaluations are needed that reflect the needs of the decision-makers in that country.

Generalizability and Transferability
It is argued by Simoens that the results of economic evaluation are generalizable from one setting to another if, without modification, they are believed to be applicable to that setting. For this to happen, not only do the data inputs to the economic evaluation have to be applicable but also the way in which they relate to each other in the original setting has to be consistent with the way in which they should be brought together in the new setting. Differences in the culture, organization of health care and other sectors of the economy may all change the patterns of care between settings and hence change the way in which costs and benefits are accrued. If patterns of care and other factors affecting the delivery of health care are similar, it may be possible to repeat an analysis using local data on costs, utilities, etc. This was an approach adopted by Coyle et al. who adapted a UK model comparing the cost-effectiveness of minimally invasive total hip replacement with standard total hip replacement to a Canadian setting [2]. In this analysis, Canadian data on costs and utilities were substituted for UK data. Underlying data on the epidemiology/natural history of people after total hip replacement and on the relative effectiveness of the two procedures were assumed to be the same as that used in the UK model. Such an approach was thought acceptable as the underlying patterns of care were believed to be similar between the two countries. In this particular situation, the policy conclusion with respect to the use of minimally invasive total hip replacement was similar for both the UK and Canada—primarily because of the absence of evidence on relative effectiveness. In other situations, it is possible that a different policy conclusion might be drawn. For example, in an economic evaluation of the cost-effectiveness of bisphosphonates to prevent hip fractures, it was found that bisphosphonates were likely to be cost-effective in Ottawa but not in Texas [3]. One of the reasons for this was that the underlying risk of falling, and hence the risk of hip fractures, was lower in Texas than in Ottawa. This meant that the capacity to benefit from bisphosphonates was much lower in Texas than in Ottawa. What these examples illustrate is that, as Simoens argues, it may be possible to make economic evaluations transferable between settings.

In such a situation, international cooperation may be desirable and indeed the hip replacement example was completed from start to finish with the express intention of conducting an evaluation for both the UK and Canada.
It may be possible to refine the data inputs from an evaluation conducted in one jurisdiction to make them applicable to another. Nevertheless, although collaboration may be useful, it has been argued that there are many reasons why the results of single economic studies may not be transferable between different places and times [4–6].

**The Need to Reflect National Decision-Making Requirements**

One reason that can limit the transferability of economic evaluations is that an economic evaluation conducted in one setting may use methods that are deemed inappropriate for use in another setting. This might be caused by variations between analysts in terms of what makes an acceptable evaluation. It may also reflect lack of standardization of methods; lack of compliance with accepted methods of economic evaluation; and methodological creep over time. International efforts to develop and apply standards may help in this respect. Nevertheless, within HTA an economic evaluation has to inform the judgements that the national or local decision-maker has to make. In economic terms, a decision-maker should consider the opportunity costs of changing the patterns of care in his/her own jurisdiction. Nevertheless, each country has its own health-care systems with its own particular pattern of resource use and its own particular set of alternative uses for these resources. Therefore, the opportunity cost of these resources will differ. The type of information that each jurisdiction decides as necessary to inform decisions about the allocation of resources also differs. A good example of this can be drawn from the comparison of the way economic evaluation is used to inform decisions in England and Germany. In England, the National Institute for Health and Clinical Excellence (NICE) has tended to focus on the incremental cost per quality-adjusted life-year (QALY) gained. It has adopted an explicit threshold of £20,000 per QALY and recommends that a common approach be taken to measure costs and benefits across therapeutic areas [7]. In contrast, in Germany the Institut Für Qualität und Wirtschaftlichkeit im Gesundheitswesen (Institute for Quality and Efficiency in Health Care, IQWiG) has focused on the efficiency of resource use within a specific therapeutic area and has advocated the use of an efficiency frontier to inform decisions [8].

Methodological criticisms can be advanced for both approaches. The use of a threshold value for a cost per QALY does not inform a decision-maker about where the resources required to implement a more effective intervention will come from. It also requires a method of eliciting QALYs that can capture the benefits of all relevant health-care interventions. The use of an efficiency frontier can be criticized because what interventions lie on the efficiency frontier will depend upon the method used to measure benefits. Therefore, choosing a different measure of benefit may change the shape of the efficiency frontier in a given therapeutic area. Furthermore, without a common method of measuring benefits, it is difficult to draw judgements about efficient allocation of resources across therapeutic areas.

The merits or otherwise of the approaches adopted within individual jurisdictions can be debated and over time, if necessary, refined. Nevertheless, at any given point in time, those analysts conducting economic evaluation for national decision-makers such as NICE or IQWiG are expected to conduct them using methods deemed relevant to that organization.

**The Importance of Context**

The IQWiG Technical Document on Modelling states that:

...data...are relevant to Germany, including not only costs, but also clinical practice patterns, demographics and epidemiology [9].

Therefore, when judging whether an economic evaluation can be made applicable to Germany requires an understanding of the context into which a new intervention might be introduced. How an intervention will be adopted in a given setting, what service or services it might displace, and how it might fit into an overall package of care may depend upon a range of factors including providers’ personal and professional characteristics, patients’ physical and psychosocial characteristics, practice settings, and organizational and structural features of health-care systems. Hence, costs, effectiveness, and cost-effectiveness will vary.

An example of the effects of context can be seen by considering the hypothetical example of an economic evaluation comparing two different methods of surgical treatment for angle closure glaucoma (a common cause of blindness). If the economic evaluation were to be conducted for both the UK and Singapore, then it is likely that the care pathways that patients would follow in each country will differ. Specifically, care after successful and unsuccessful initial treatment might differ because the beliefs of practitioners about the value (and hence availability) of subsequent treatments might differ. Furthermore, differences in the method of financing health care may alter patients’ behavior. For example, differences in out-of-pocket expenses may alter the use of services after surgery, and hence alter both longer-term effectiveness as well as costs. The implication of this is that the structure of a model in terms of the sequence of therapies may vary between countries.

**The Need for Collaboration**

Thus far, some arguments have been presented as to why economic evaluation needs to take a national approach. It has been argued that because of differences in terms of the decision-making context and how this context affects the type of data deemed relevant, the relationship between costs and benefits, and the values attached to costs and benefits, the scope for generalizing the results of an economic evaluation between jurisdictions is limited. Further, because of the complexity of the decision-making context, simple substitution of data inputs may not be informative.

This is not, however, an argument against collaboration but rather that the nature of collaboration is more sophisticated. Several arguments can be presented in favor of using systematic reviews of economic analyses to inform decision-making. These same arguments can also apply when considering the value of an economic evaluation conducted in one setting to inform decision-making in another. In brief, existing evidence can be used to inform the development of a new evaluation more relevant to the jurisdiction of interest and the existing evidence can be used to identify the key economic (causal) trade-offs implicit in a given treatment choice. In terms of the adaptation scale discussed by Simoens, the default is that transferring an economic evaluation from one jurisdiction to another will require the sophisticated adaptation (restructuring of the analytical framework, replacement of data inputs, and potentially the introduction of new data inputs required as a consequence of the restructuring of the analytical framework) of an evaluation or the development of a wholly new evaluation. It may be possible that less sophisticated adaptation will be sufficient in certain circumstances but until an analyst is reasonably sure that differences in context requiring more sophisticated work are unnecessary, the results of simpler...
analysis may be misleading and lead to a less efficient use of resources and potentially worse health for those people living in the jurisdiction of interest.

Conclusion
This article has argued in favor of HTA and more specifically its economic evaluation component being tailored to fit national circumstance. Many of the arguments presented here may also apply to the other components of an HTA (e.g., the medical, social, ethical implications of the development, diffusion and use of a health technology). The economic aspect is not independent of these other components and it is the differences in these components and the way that they interact that require a national perspective to be taken. There is, however, considerable scope for collaboration between jurisdictions because lessons from one jurisdiction can inform development or adaptation of economic evaluations for another.

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References