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ISPOR Report

Challenges of Health Technology Assessment in Pluralistic Healthcare Systems: An ISPOR Council Report

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ABSTRACT

Health technology assessment (HTA) has been growing in use over the past 40 years, especially in its impact on decisions regarding the reimbursement, adoption, and use of new drugs, devices, and procedures. In countries or jurisdictions with "pluralistic" healthcare systems, there are multiple payers or sectors, each of which could potentially benefit from HTA. Nevertheless, a single HTA, conducted centrally, may not meet the needs of these different actors, who may have different budgets, current standards of care, populations to serve, or decision-making processes.

This article reports on the research conducted by an ISPOR Health Technology Assessment Council Working Group established to examine the specific challenges of conducting and using HTA in countries with pluralistic healthcare systems. The Group used its own knowledge and expertise, supplemented by a narrative literature review and survey of US payers, to identify existing challenges and any initiatives taken to address them. We recommend that countries with pluralistic healthcare systems establish a national focus for HTA, develop a uniform set of HTA methods guidelines, ensure that HTAs are produced in a timely fashion, facilitate the use of HTA in the local setting, and develop a framework to encourage transparency in HTA. These efforts can be enhanced by the development of good practice guidance from ISPOR or similar groups and increased training to facilitate local use of HTA.

Keywords: health insurance, healthcare systems, health technology assessment, pluralism.

VALUE HEALTH. 2022; 25(8):1257–1267

Introduction

Although there are several possible policies to improve resource allocation and cost-effectiveness in healthcare, health technology assessment (HTA) has been growing in use over the past few years, especially in its impact on decisions concerning the reimbursement, adoption, and use of new drugs, devices, and procedures.[1] Typically, HTA comprises an *assessment* of the evidence on the effects, costs, and other consequences of health technologies, accompanied by an appraisal of these and other factors in a decision-making process. This growth in HTA was documented by a previous ISPOR HTA Council Working Group, but one area identified for further study was the contextualization of HTA.[2] Much of the discussion on the use of HTA worldwide has concerned countries having a single payer for healthcare, such as a national health service or a national health insurance (eg, several countries in northern Europe). In these settings, a single HTA can be conducted to inform a single coverage reimbursement or adoption decision for the whole healthcare system, although in practice this is more often done for pharmaceuticals than other health technologies.

In "pluralistic" healthcare systems, there are multiple payers or sectors, each of which could potentially benefit from HTA. Nevertheless, a single HTA, conducted centrally, may not meet the needs of the different payers, who may have different budgets, different current standards of care, or different populations to serve or be using different decision-making processes. Therefore, the resources for undertaking HTAs are likely to be more widely dispersed throughout the country, and HTAs may be duplicated in more than one location. They may also be less rigorous, depending on whether the same level of resource and expertise typically available at the central level can also be made available locally.

This article reports on the research conducted by an ISPOR Health Technology Assessment Council Working Group, established to examine the specific challenges of conducting and using HTA in countries with pluralistic healthcare systems (The full remit of the Group, its membership, and working methods are given in Appendix 1 in Supplemental Materials found at https://

doi.org/10.1016/j.jval.2022.02.006). The members of the Group were selected based on their experience of healthcare systems exhibiting different types of pluralism. Therefore, for most of its deliberations, the Group relied on the knowledge and contacts of Group members. Nevertheless, this was supplemented by a narrative review of existing published and gray literature to identify documents discussing the challenges of and potential solutions for conducting HTA in pluralistic payer systems. In addition, given the particularly complex and rapidly changing nature of the US multiple payer private sector, a survey of US healthcare decision makers was conducted. Details of the narrative review and the US payer survey are given in Appendices 2 to 4 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2022.02.006.

Within HTA more generally, a particular focus for the Group was the economic component of analyses, such as cost-effectiveness. There were 2 reasons for this. First, all reimbursement decisions already involve some consideration of the clinical data, although sometimes not with the rigor, such as the use of systematic review, that one would typically expect from an HTA. Second, it is likely that the economic component of HTAs is one aspect that is less generalizable from setting to setting, because of differences in standards of care, relative prices, resource use, and other geographic differences.[3]

Types of Pluralism Analyzed

Many countries exhibit various forms of pluralism in their payer or decision-making structure. Some countries have decentralized systems, where much of the responsibility for financing and delivering healthcare is devolved by geography to provinces, states, or regions (eg, Canada, Italy, and Spain). In Latin America and some Asian countries, there are parallel *systems*, where several systems operate alongside each other in largely overlapping geography but on different segments of the population. For example, most Latin American countries have a mandatory national health insurance or social security system with employee and employer contributions, but this is often supplemented by a subsidized public program and by private health insurance.[4] Finally, the United States has a unique parallel system, with a much more prominent multiple payer private system than those existing in other high- or middle-income countries. Two-thirds of the population has private insurance[5] compared with an average of $<$10% in other Organisation for Economic Co-operation and Development countries.[6] These private payers (of which there are $>$900) provide employer-sponsored insurance, individual market insurance, and supplemental insurance for the older population. These exist alongside several public systems covering different segments of the population (primarily for the older population, people with low incomes, and veterans).

The types of pluralism and the countries studied, plus the United Kingdom as an example of a "single-payer" country, are characterized in Figure 1. The distinction between "single-payer" and "pluralistic" healthcare systems or among the different types of pluralism is not hard and fast. It is better to think of countries as being on a spectrum. In the figure, countries are classified from low to high on 3 dimensions: level of decentralization, number of parallel healthcare systems, and number of payers (for more details of the judgments made in characterizing countries, see Appendix 5 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2022.02.006). In most countries, several different types of pluralism coexist, to varying degrees. Nevertheless, in the discussion below, we refer to countries by the dominant form of pluralism existing in the country concerned.

Challenges Arising From Pluralism

The challenges identified in the narrative review are presented in Table 1.[7-31] One group of challenges relates to the resourcing and organization of HTA. These include limited resources to conduct HTA at the local level, difficulties in transferring results for HTAs conducted elsewhere to the local setting, limited availability of local data to populate economic models, and limited availability of relevant HTAs in a timely fashion.

Another group of challenges relates to structural features of the healthcare system. These include central or local restrictions on the use of HTA, differences in how reimbursement decisions are made in different systems, differences in the current standard of care in different systems, the need for decision-making procedures to remain confidential in competitive systems, and local stakeholder objections to the use of HTA.

From the review, it appears that many of the challenges are common to all countries, but some are more contextual. Nevertheless, this was difficult to untangle, given that some published articles presented data for groups of countries and very few discussed a particular country in detail. Therefore, the Group explored the challenges faced in more detail, according to the 3 types of pluralism.

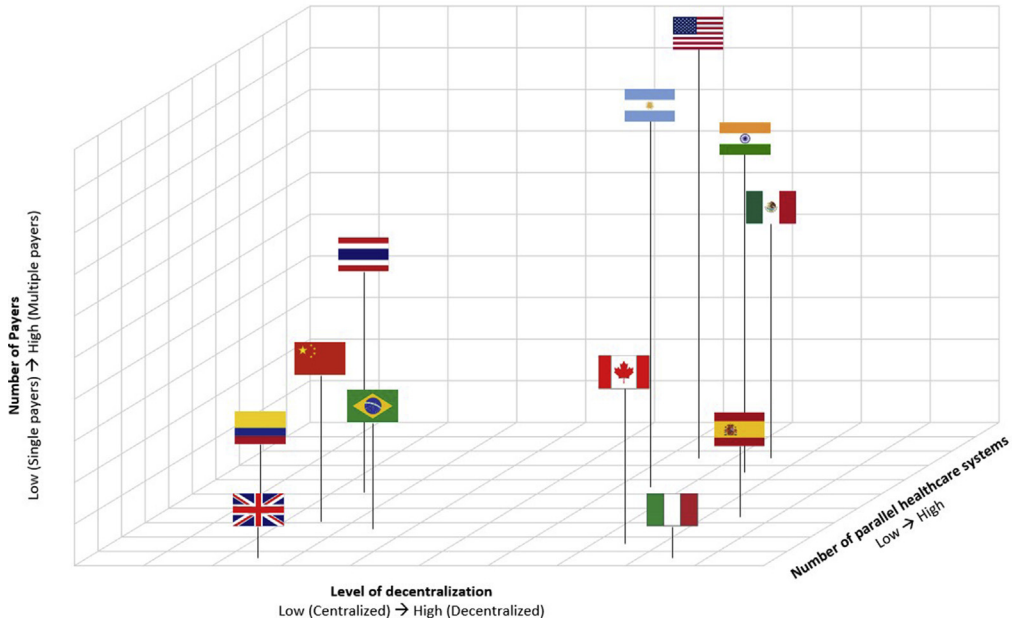
Decentralized Healthcare Systems

The higher level of autonomy given to local/regional governments can be implemented in many ways. For example, in Italy, the 21 regional health authorities are charged with allocating the healthcare budget (equivalent to almost 80% of the total regional budgets), determining the number and type (eg, public vs private) of providers entitled to deliver healthcare services, regulating the remuneration system for hospital and community services and the copayment schemes for resident populations. The central government in Italy remains in charge of setting national standards to guarantee that all Italian citizens have equal access to healthcare no matter where they live. The central government is also expected to gather regional policies and streamline local experience to synergistically maximize and harmonize, from the bottom-up, successful initiatives and experiments at the national level.

In Canada's decentralized public healthcare system, the 13 provinces and territories are largely responsible for the financing and delivery of healthcare with support from the federal government through fiscal transfers known as the Canada Health Transfer. In addition to having responsibility for the regulation of pharmaceuticals, food, and medical devices via the regulatory work of Health Canada, the federal government is responsible for providing healthcare services to specific populations including veterans, prison inmates, members of the Canadian Armed Forces, refugees and refugee claimants, and eligible First Nations and Inuit peoples. Each province and territory administers its own insurance plan, which covers all medically necessary hospital services and physicians' services at no cost at the point of care.

One of the greatest challenges in conducting and using the HTA in decentralized healthcare systems is a disparity in knowledge and HTA capabilities across the country and between regions and the government. This challenge has been particularly evident in Southern Europe (ie, Italy, Spain). In Italy, several regional HTA bodies have emerged over time, with various competencies and investments made to strengthen their internal capacity. For example, the body in charge of HTAs in Emilia Romagna (ie, the Regional Healthcare Agency) is a highly specialized institution with technically advanced skills because it relies on a consolidated stratum of multidisciplinary expertise. In Veneto, 3 bodies divide responsibilities for HTA activities in the region, 2 at the hospital

Figure 1. Different types of pluralism across selected countries.



level and 1 at the regional level. In Lazio, the perspective for the evaluation of new technologies is that of a single hospital or hospital networks, and major investments have been made at local level. In some cases, regions have opted for an internal group for conducting HTA, with the support of the industry to provide data or a university as consultant. In other cases, such as Campania and Liguria, local multidisciplinary teams exist at the hospital level, following the hospital-based HTA paradigm. The largest Italian region, Lombardy, decided to appoint an external expertise to conduct priority setting and assessment of new technologies

The issue of varying competences for conducting and using HTA have also arisen in Spain, which has 17 regions.[32] Some regions, most notably Catalonia, Andalucia, and the Basque Country, have a well-developed capacity to conduct HTAs, whereas many of the 17 regions have almost no capacity. Italy and Spain can potentially benefit from a number of initiatives to harmonize HTA taken by the European Network for Health Technology Assessment, a joint action funded by the European Union (EU) (www.eunethta.eu). These have included the development of core methods (the "core model") and approaches to early engagement between technology manufacturers, the European Medicines Agency and national HTA bodies. To date, the EU's activities in harmonizing HTA have been voluntary, but a new proposal will mandate the production of "joint clinical assessments" of pharmaceuticals and some high-risk medical devices, which will be available to all EU member states and the regions within them.[33]

Canada has a long-established history in HTA.[34] The first established HTA process was in Québec, and many other provinces have developed capacity for HTA over the years, including Ontario, Alberta, and British Columbia—at the provincial, regional, and local (ie, hospital-based HTA units) levels. The Canadian Agency for Drugs and Technologies in Health (CADTH), the pan-Canadian HTA agency, was established as the Canadian Coordination Office for Health Technology Assessment in 1989, and the Common Drug Review (CDR), for branded prescription pharmaceuticals used outside of a hospital setting, was introduced in 2003 (https://cadth.ca/sites/default/files/pdf/early_history_of_CDR.pdf). Drivers for the creation of the CDR included the potential for greater efficiency of resources and expertise, reduced duplication, and greater consistency in the pharmaceutical assessment process. Importantly, the CDR was viewed as a mechanism to support rigorous and evidence-based information being made available to all participating drug plans in a timely manner, thereby addressing the challenges of jurisdictions with very limited capacity to conduct reviews on their own. In addition, a pan-Canadian review process (pan-Canadian Oncology Drug Review [pCODR]) was established for oncology drugs in 2010.

After an assessment by CADTH through the CDR or the pCODR, a reimbursement recommendation is issued by the respective expert committee (ie, appraisal committee). Recommendations issued by CADTH are nonbinding and the final decision on whether to reimburse rests with the federal, provincial, and territorial plans. In Canada, fiscal circumstances can also vary across the country with some provinces potentially being in a financial position to reimburse certain health technologies, whereas other provinces and territories are not, or at least not in the short term. Therefore, despite the presence of a national HTA body that makes pan-Canadian recommendations for drugs (excepting Québec), access to health technologies varies across Canada in terms of what is reimbursed and when the final reimbursement decision is made. This can result in differences in coverage between Canadians living in different parts of the country.

The use of HTA can also vary because of the level of enthusiasm of local decision makers. In India, although the central government has established resource hubs in different states for conducting HTA for public health services and the health benefit packages, some state governments have been more enthusiastic and aggressive in using HTA for their healthcare decisions.

Therefore, given the autonomy to conduct and use HTA in decision making at the local level, plus potential differences in resourcing, HTA activities across regions in decentralized countries can be profoundly different. These outcomes generate concern on national issues such as equity of access to healthcare technologies, which should be guaranteed uniformly across the

Table 1. Summary of challenges and solutions of conducting HTA in pluralistic healthcare systems from 25 reviewed studies.

Study	Region or country	Challenges	Potential solutions
Allen et al[7]	Canada	Inconsistency in coverage across localities leads to equity concerns.	Extralocal pricing negotiations to increase consistency in pricing and coverage decisions (for equity) Participation in extralocal HTA bodies to share capacity and data
Brogan et al[8]	United States	Plans operating in competitive environment result in a lack of incentive to collaborate.	Public payer leadership in HTA would accelerate adoption by private payers.
Chambers et al[9]	United States	Inconsistency in whether cost is considered in HTA process	
Ciani et al[10]	Italy	Inconsistency in coverage across localities leads to equity concerns.	Participation in extralocal HTA bodies to share capacity and data
Drummond et al[11]	Asia, Eastern Europe, South America	A lack of cost and outcomes data that is specific to local payer. A lack of human resources to perform HTA and interpret its results. Different standards of care.	Use current published transferability checklists. Consider investing in local data generation for categories of data normally considered to have low transferability (eg, unit costs, health state preference values, and epidemiological data). Participation in extralocal HTA bodies to share capacity and data. Invest in training in the relevant expertise in economic evaluation as its use in reimbursement and coverage decisions increases.
Flume et al[12]	European Union countries	Inconsistency in coverage across localities leads to equity concerns.	
Hellstein et al[13]	Canada	Different health policy priorities A lack of cost and outcomes data that is specific to local payer Inconsistency in approaches to evaluating impact of HTA decisions	Standardize input measures at the extralocal level.
Lessa et al[14]	South America, Caribbean	A lack of funding and human resources to perform HTA and evaluate impact of HTA process A lack of cost and outcomes data that is specific to local payer Inconsistency in approaches to evaluating impact of HTA decisions	Participation in extralocal HTA bodies to share capacity and data
Leung et al[15]	United States	Inconsistency in whether cost is considered in HTA process and how HTA output is used in pricing negotiations with manufacturers A lack of cost and outcomes data that is specific to local payer	
Löblová[16]	Czech Republic	Desire of local HTAs to maintain autonomy	
Menon et al[17]	Canada	Inconsistency in coverage across localities leads to equity concerns	
Morgan et al[18]	Canada	Inconsistency in how HTA output is used in pricing negotiations with manufacturers Inconsistency in coverage across localities leads to equity concerns	Extralocal pricing negotiations to increase consistency in pricing and coverage decisions (for equity)
Nestler-Parr et al[19]	Not specified	A lack of cost and outcomes data that is specific to local payer	Participation in extralocal HTA bodies to share capacity and data
Niraula[20]	Canada		Extralocal pricing negotiations to increase consistency in pricing and coverage decisions (for equity) Participation in extralocal HTA bodies to share capacity and data

continued on next page

Table 1. Continued

Study	Region or country	Challenges	Potential solutions
Ollendorf[21]	United States	Diversity of stakeholders at extralocal levels leads to lower likelihood of coming to extralocal consensus	Standardize input measures at the extralocal level.
Stephens et al[22]	Australia, Europe, North America, South America	A lack of cost and outcomes data that is specific to local payer	
Trosman et al[23]	United States	Extralocal HTA has challenges: small number of reviews, a lack of timeliness, reviews are too costly Inconsistency in whether cost is considered in HTA process Different health policy priorities due to different local regulations	Participation in extralocal HTA bodies to share capacity and data
Vella Bonanno et al[24]	Europe	Inconsistency in coverage across localities leads to equity concerns. • Different health policy priorities due to different local regulations • Different standards of care	Participation in extralocal HTA bodies to share capacity and data
Gallio and Berto[25]	Not specified	Different health policy priorities due to different local regulations	Authors believe the most appropriate HTA agencies in Italy are local organizations, and they could best benefit from the availability of local databases and data sources, to target local needs and regional policy makers' requests.
Jørgensen and Kefalas[26]	Europe		Focus on identifying a few key innovative products and devolve decisions on prices to local authorities.
McAuslane et al[27]	United States, Europe	A lack of payer incentive to share data for postmarket approval studies to understand consequences of extralocal coverage decisions	
Pericleous et al[28]	Canada	A lack of consensus methods for conducting HTA	
Rizzardo et al[29]	Canada		Standardize input measures at the extralocal level
Tadrous et al[30]	Canada	A lack of timeliness of reviews	Participation in extralocal HTA bodies to share capacity and data
Wilking et al[31]	Europe	A lack of timeliness of reviews A lack of funding and human resources to perform HTA and evaluate impact of HTA process	

HTA indicates health technology assessment.

country. Consequently, to decrease inequalities generated by decentralization, cross-subsidies are often introduced among countries' different regions. These measures can create tensions between the national and local levels. Indeed, a frequent cause of tension between different local governments is the unwillingness of richer local governments to help fund services in poorer regions (See Appendix 6 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2022.02.006).

Parallel Healthcare Systems

Many countries in in Latin America have parallel healthcare systems, in which mandatory health insurance or social security systems for workers, subsidized public programs, and private mechanisms coexist (Peru, Costa Rica, Mexico, and Argentina). Brazil and Colombia have a predominantly single-payer system and common benefits for the population, although many individuals also have private insurance. Although Brazil, Colombia, and Uruguay have central HTA institutions that issue recommendations for all the country, some countries have implemented agencies/units that make recommendations that apply only to a specific population (eg, Institute of Health Technology Assessment and Research in Peru, National Commission for Incorporation of Technologies in the Ministry of Health of Argentina). Some have no formal mechanism of HTA at all (eg, some Central American countries), although the development of an HTA capacity is an

important component of the health reforms being considered in some countries, mainly with the objective of achieving universal coverage.

A major challenge relates to the absence of methods guidelines for conducting economic evaluation studies in some of the countries, which makes it difficult for studies to be carried out using a standardized methodology. Additionally, the lack of local epidemiological data or standardized unit costs means that on many occasions the adaptation of a model within a country can only involve consideration of the adequacy of ad hoc unit costs or practice patterns. Finally, the lack of trained human resources in government bodies is a challenge because the pharmaceutical industry usually hires the better trained government personnel.

Very few countries in Latin America have explicit decision rules, such as a cost-effectiveness threshold, for the acceptance of new technologies. A threshold of 1 times gross domestic product per capita per life-year or quality-adjusted life-year has been explicitly stated in Mexico, but this has proven challenging in making decisions about high-cost treatments, such as many of the newer cancer drugs.[35] One problem in parallel systems is the possible existence of different explicit or implicit cost-effectiveness thresholds across the various sectors, owing to the variation in budgets among private, public, and social security systems. Another major limitation on the use of HTA in Latin America arises because most of the countries recognize health as a basic right in their local laws and constitutions. In many countries, this has led to "judicialization" of prescribing, or litigation through the courts, in situations where members of the population find that they are unable to gain access to expensive new technologies.

Two of the Asian countries studied could be considered to have parallel systems and experience most of the challenges mentioned above. The framework for conducting HTA is being developed in China, not only for drugs but also for devices and medical services, and the National Health Security Administration has used HTA to review drugs for inclusion in the national reimbursement drug lists. Thailand has a well-established HTA program (Health Intervention and Technology Assessment Program), which was established in 2007 as a semiautonomous research unit under Thailand's Ministry of Public Health. The main recurring challenges in these countries are (1) how to make centrally conducted HTAs relevant to decision makers with quite diverse needs and (2) the general lack of capacity to conduct or interpret HTAs (see Appendix 7 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2022.02.006 for more details of parallel systems).

Multiple Private Payer Systems

The privately funded healthcare system in the United States operates alongside the public system and involves a complex set of interactions between employers, insurers, health plans, pharmacy benefit managers, and health providers. The use of HTA, particularly cost-effectiveness analysis (CEA), has been historically low in the United States. Neumann and Sullivan[36] reported that the average US decision maker was not routinely using or conducting CEAs. In addition, the competitive nature of the private system may inhibit the sharing of information on any analyses that are conducted. The Agency for Healthcare Research and Quality develops evidence-based clinical guidelines and recommendations, and another current federal body, the Patient-Centered Outcomes Research Institute, is not permitted by law to use information on cost per quality-adjusted life-year in its recommendations.[37]

Nevertheless, recent reports have indicated an increased appetite for HTA among private payers in the United States. A 2019 survey of 31 payers indicated that >90% agreed or strongly agreed with the need for an independent HTA body in the United States, >70% were familiar with the processes and reports of an independent privately funded nonprofit organization, the Institute for Clinical and Economic Review (ICER), and approximately two-thirds felt that ICER's value-based pricing range is likely to be used moving forward in price negotiations with manufacturers.[38]

Of the respondents to our US decision-maker survey (N = 104), 18% worked in pharmacy benefit managers, 47% in health plans, and 29% in hospitals or integrated care networks. Their main roles were clinical or information pharmacist or pharmacy director/associate director. The geographic coverage of their organizations was 23% national and 77% regional. The level of use of CEA as part of HTA was reported to be always (16% of respondents), very frequently (22%), occasionally (51%), and rarely or never (11%). This use was spread evenly among coverage decisions, informing cost share, informing prior authorization, and price negotiations with manufacturers. In the use of CEA, externally conducted studies were widely consulted. Documents used very frequently or always were ICER reports (49% of respondents) and manufacturer dossiers (43%).

With respect to challenges, a lack of local resources for HTA was not mentioned explicitly in our survey and is unlikely to present a problem for the larger national health plans, some of which cover populations equivalent to smaller European countries with national HTA capability. Nevertheless, it is clear from the responses that decision makers were heavily reliant on externally conducted studies. Consequently, the main challenges rated either extremely or very important were that CEAs are not available for most coverage decisions (47% of respondents), that they are only available after the decision is made (52%), or that local data are not available to adjust external CEAs for local use (45%).

The timeliness of HTA reports is critical for US health plans because it is necessary to have coverage criteria in place at launch of a new product. In tightly managed plans, delaying the development of formulary criteria can limit access to the drug for patients that need it. With more loosely structured benefit designs, patients may gain initial access, only to find that they do not meet the coverage criteria that are eventually adopted. In 2018, the Food and Drug Administration approved a proposal to allow Pre-approval Information Exchange between manufacturers and payers, which in principle could lead to new drug information being available earlier[39] (see Appendix 8 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2022.02.006 for more details of multiple private payer systems).

HTA Arrangements and Initiatives Taken in Pluralistic Contexts

Current HTA arrangements in the countries studied are summarized in Table 2. Although several countries have HTA organizations, these bodies generally serve only one segment of the healthcare system or a single region or have a limited role. A few countries have an HTA body serving more than a single system or region. For example, Canada has established a body comparable with those existing in many single-payer countries, in terms of the nature of its role and functions. The CADTH has a wide range of functions, including the coordination of national programs for the HTA of drugs, through the CDR and the pCODR and the development of guidelines for economic evaluation.[40] In addition, Thailand has established national HTA organization that serves the need of 3 main payers for drug coverage decisions through the National List of Essential Medicines, which directly uses HTA to make evidence-informed decisions.

Table 2. HTA arrangements and initiatives taken in the countries studied.

Country	HTA arrangements	Initiatives taken
Argentina	Small HTA unit (CONETEC) in the Ministry of Health; small public HTA network (RedARETS); longstanding academic HTA agency serving an important group of private and social security payers (IECS)	RedETSA HTA Network BRISA database of HTA reports (https://sites.bvsalud.org/redetsa/brisa/) CONETEC methodology documents.
Brazil	HTA conducted by the MoH and the CONITEC	As Argentina
Canada	CADTH at federal level Most provinces have local HTA capability (eg, INESSS in Québec)	Guidelines for the economic evaluation of health technologies (CADTH) Common Drug Review (CDR); pan-Canadian Oncology Drug Review (pCODR)
Chile	CCA formulates recommendations to the MoH.	As Argentina
China	National HTA Centre developed by the National Health Commission to implement pharmaceutical comprehensive evaluation at hospitals. Some HTA centers at universities and research institutes established recently.	The NHSA has used HTA to determine whether drugs are included in the national reimbursement drug lists. HTA is not just used for reimbursement but also technology-related management at central-province-local administration level.
Colombia	IETS (an independent institution, created by law) provides technical nonbinding recommendations to MoH on the effectiveness, safety, cost-effectiveness, and budget impact of health technologies; longstanding academic groups working on HTA	IETS guidelines for the economic evaluation of healthcare technologies RedETSA (PAHO), INAHTA, DIME (some Latam countries) and Alianza CINETS (Colombian universities) networks
Ecuador	National Directorate of Health Intelligence (DIS) issues nonbinding reports to the National Directorate of Medicines and Medical Devices (DNMDM)	As Argentina
India	HTAIn at federal level; state governments coordinate with HTAIn through technical partners in their state	
Italy	Some regions have HTA capacity (eg, Emilia-Romana); many have limited capacity.	PNHTADM Activities of EUnetHTA at the European Union level
Mexico	General Health Council is the main HTA body for public institutions, with the sole responsibility for maintaining and updating the National Formulary; 6 public institutions participate in the decision making.	As Argentina
Peru	National HTA network governed by the CNSP (National Public Health Center) of the Peru NIH and the regulatory agency (DIGEMID)	As Argentina
Spain	Some regions have HTA units (eg, Andalucia, Catalonia, Basque Country); most have limited or no capacity.	SEHF GENESIS reports. Activities of EUnetHTA at the European Union level
Thailand	HITAP research unit in the Ministry of Public Health	HTA guidelines (versions 1, 2, and 3); HTA process guideline; Repository of HTA database in Thailand; Standard cost list for health economic evaluation; HTAsiaLink (a collaborative research network of HTA agencies in the Asia-Pacific region established in September 2010)
Uruguay	FNR: has responsibility for defining, financing, and monitoring highly specialized health technologies for the PIAS	As Argentina
United States	AHRQ at federal level (excludes CEA, infrequently assesses drugs)	AMCP format for methods; ICER reports AMCP eDossier system submissions ICER Interactive Modeler™ platform

AHRQ indicates Agency for Healthcare Research and Quality; AMCP, Academy of Managed Care Pharmacy; BRISA, Base Regional de Informes de Evaluación de Tecnologías en Salud de las Américas; CADTH, Canadian Agency for Drugs and Technologies in Health; CCA, Consultative Advisory Committee; CEA, cost-effectiveness analysis; CINETS, Crimmigration Control International Network of Studies; CNSP, National Public Health Center; CONETEC, National Commission for Incorporation of Technologies; CONITEC, National Committee for Technology Incorporation; EUnetHTA, European Network for Health Technology Assessment; FNR, Fondo Nacional de Recursos; HITAP, Health Intervention and Technology Assessment Program; HTA, health technology assessment; HTAIn, Health Technology Assessment in India; ICER, Institute for Clinical and Economic Review; IECS, Institute for Clinical Effectiveness and Health Policy; IETS, Instituto de Evaluación Tecnológica en Salud; INESSS, Institut national d'excellence en santé et en services sociaux; MoH, Ministry of Health; NHSA, National Healthcare Security Administration; NIH, National Institutes of Health; PNHTADM, National HTA Program for Medical Devices; RedARETS, Red Argentina Pública de Evaluación de Tecnologías Sanitarias; SEHF, Spanish Society for Hospital Pharmacy.

Details of the initiatives the Group identified in the countries studied are also presented in Table 2. This is not a comprehensive list, but it does give some indication of the attempts to deal with the consequences of pluralism or to fill the vacuum caused by the lack of a national program for HTA. For example, in the absence of official national guidelines for HTA in the United States, the Academy of Managed Care Pharmacy, a professional society, has developed a format for manufacturer submissions to private payers. Similarly, in the absence of national HTA reports for drugs, the Spanish Society for Hospital Pharmacy has fulfilled that role, as has ICER in the United States. Nevertheless, in common with many single-payer countries, HTA initiatives for nondrug technologies are far less common.

Potential Solutions and Recommendations

The objective of this project was to examine the specific challenges of conducting and using HTA in countries with pluralistic healthcare systems and to suggest ways to address them. Some of the challenges arise from legal or constitutional framework in the countries concerned, which can have an impact on the conduct and use of HTA, either by mandating the use of particular health technologies irrespective of the evidence of their clinical and cost-effectiveness or by preventing the use of cost-effectiveness considerations in making decisions on the coverage or availability of healthcare. These measures are often taken based on a broader set of considerations, but their influence on the use of HTA and the implications for the use of healthcare resources should be taken into consideration.

Nevertheless, most challenges can be addressed, and some recommendations were made in the studies identified in the narrative review. Those mentioned included greater local investment in HTA (including capacity building), more sharing of information relating to HTA and participation in joint HTA bodies, and more leadership by national public payers in standardizing healthcare priorities, costs, and outcome measures. The work of this Group has identified several other initiatives that have been taken in different settings. The precise responses to the challenges are undoubtedly influenced by the local context, but several general solutions can be proposed. These solutions are similar to those that have been applied in single-payer settings, but can be harder to deliver under conditions of pluralism. They are grouped under 5 broad themes below.

Establish a National Focus for HTA

Even in pluralistic settings, there is almost always a need for a national focus for HTA activities. In single-payer settings, this would normally be provided by an HTA agency or organization funded by the major payer, which would typically be the government or national/social health insurance scheme. The potential roles of organizations providing a national focus can vary and include standard setting for HTA, coordinating HTA activities, or conducting studies. A recent report has suggested a publicly funded national coordinating body for private sector HTA in the United States[41] but, depending on the country context, there are a range of possible options for the funding and organization of a national focus for HTA. For example, it could be an independently funded organization such as ICER in the United States; a government funded body with a coordinating function, such as the National HTA Program for Medical Devices in Italy; or a body jointly funded by central and regional/provincial governments, such as CADTH in Canada.

Develop a Uniform Set of HTA Methods Guidelines

Although a greater level of uniformity in HTA methods would typically be expected in a country with a single payer, the Group's work suggests that even in parallel healthcare systems, where care is being delivered by different healthcare systems for different subsets of the population or by a largely private system with multiple payers, there is still interest in the production of high quality studies according to a widely agreed methodology and in sharing knowledge from the conduct and use of HTA.

Therefore, efforts should be made to develop a uniform set of methods guidelines for HTA, drawing on experience from guidelines developed in other jurisdictions or international collaborations,[42] or proposals for methods reference cases developed by academic groups, such as the Second Panel on Cost-Effectiveness in Health and Medicine in the United States.[43]

Ensure That HTAs Are Produced in a Timely Fashion

Even in single-payer systems, it is a challenge to produce timely HTAs for all the new health technologies entering the healthcare system, so it is important to establish priorities. The criteria for determining priorities for HTA differ,[44] but most approaches consider the size of the likely clinical and economic impact of the new technology and the level of disease burden and unmet need in the relevant patient population.

Issues relating to whom should conduct HTAs and how they should be conducted were complex in all the pluralistic systems studied. In some settings, a large region or health plan could have the resources available to conduct HTAs in a timely fashion to support many of the decisions it makes on the adoption and use of health technologies. Nevertheless, it was more commonly the case that these resources were not available at the local level and most use of HTA would be reliant on studies conducted elsewhere. In particular, this appeared to be the case for many private health plans in multi-payer systems, smaller or poorer regions in decentralized systems, and some of the payers in parallel systems.

The key components of producing relevant, high quality HTA reports would be (1) agreeing on the methods for conducting HTAs, (2) recognizing the varying timelines for making decisions about the adoption of technologies, (3) making reports available by the time most decision makers decide on technology adoption, (4) producing reports in a way that they can easily be adapted, and (5) helping local decision makers to develop the local capacity, in terms of personnel and local data availability, to make these adaptations.

Second, it appears to be more challenging to produce HTAs in a timely fashion in pluralistic settings because of the larger number of independent decision makers and the fact that, unlike many systems with a single payer, adoption decisions cannot easily be postponed in all sectors until the results of the HTA are available. For example, private payers may face consumer pressure to make a new technology available as soon as possible. For pharmaceuticals, the critical time window is during the time between submission of the clinical dossier to the licensing agency and market approval being issued. Therefore, ways need to be found to make information available on the likely positioning of the new drug in the treatment sequence and estimates of its relative clinical effect compared with current standard of care.

These items can sometimes be inferred from published clinical trials of the drug, but will probably also require access to some data that are not publicly available. In single-payer systems, the major public payer may be able to obtain this information by request or as part of its submission requirements. This may be more difficult in pluralistic systems with many payers. The

measures in the United States to make preapproval data available to decision makers, mentioned in Section 3.3, are a step in the right direction.[36] In addition, it would be possible to conduct HTAs on an iterative basis, by building the decision-analytic model at an early stage of the development of the technology and adding new data as they become available.[45,46]

Facilitate the Use of HTA in the Local Setting

HTA must be fit for purpose for the setting in which it is being used. Applicability of HTAs to the local setting is likely to be an issue in all healthcare systems, including single-payer countries. Given that it is likely that many decision makers in pluralistic systems will be adapting an HTA from elsewhere for local use, attention should be paid to the methods for making these adaptations. This may be a greater challenge for the economic component of the assessments than the clinical component, although several checklists for transferring economic evaluations already exist.[47]

Development of the skills to adapt externally conducted HTAs should be a priority for methods development and training. Adaptation of analysis conducted elsewhere would be facilitated by the availability of economic models. ICER has launched a cloud-based platform called the Interactive Modeler™, where models from previous reports and all future economic models will be accessible by stakeholders through a subscription. Other US research groups including the Innovation and Value Initiative (https://www.thevalueinitiative.org/open-source-value-project/) and academic groups such as the Tufts Center for the Evaluation of Value and Risk in Health (https://www.cevr.tuftsmedicalcenter.org) are also proponents of facilitating access to economic models, either through freely available source code or registries of open-source models.

If an interactive economic model is available, it may be a relatively simple task to repopulate the model with local resource use and cost data. Therefore, the development of a standardized cost database is critical in all settings and may be a barrier to the use of in some low and middle-income countries. Adaptation of external HTAs might be more difficult if the local standard of care is different from the one used as a comparator (to the new technology) in the model or if the local population served is different from that where the study was conducted. In these situations, extra analyses may be required to generate an estimate of relative clinical effect comparing the relevant alternatives, rather than using the one in the existing HTA.

In some cases, adaptation of an existing HTA may be even more complex if the current model structure was considered unsuitable, perhaps because current clinical practice or availability of healthcare facilities differs greatly from those in the setting where the original HTA was conducted. In these situations, the process of "adaptation" would be closer to that of conducting a new HTA.

The local use of an external HTA not only involves additional analyses but also requires incorporation of the HTA results into local decision-making practices. In a pluralistic healthcare system, it is unlikely that all decision makers would be using the same decision rule, but the most common ones are (1) to make a judgment on the "added clinical value" of the new technology or (2) to apply an explicit or implicit cost-effectiveness threshold. Therefore, if an HTA contains a systematic review of the relevant clinical evidence and an estimate of incremental cost-effectiveness, it should contain enough information to inform most coverage or reimbursement decisions, although it may be difficult to anticipate all the information needs that different decision makers have. For example, different decision makers may be interested in the presentation of results for different subgroups of the patient population.

In addition, although HTAs conducted in single-payer settings do not always make firm recommendations for decision makers, this makes even less sense in a pluralistic system with several payers, having different decision rules and different budgets. For example, in contrast to the United Kingdom, where the National Institute for Health and Care Excellence's recommendations from its technology appraisal program (although not others) are binding on the National Health Service, ICER does not make binding recommendations on the adoption of technologies by health plans in the United States. Rather it reports the price of the technology required to reach different cost-effectiveness thresholds and assessments of value for money at different thresholds.[48]

Develop a Framework to Encourage Transparency in HTA

A major advantage often claimed for HTA is that the assessment is more transparent, enabling the basis of the decision to be questioned, although the level of transparency varies, even among single-payer systems.[49] In pluralistic systems, coverage decisions are generally made public, but the underlying analyses and the considerations leading to decisions are often not publicly available, but it may be useful for a decision maker to know other decision makers' views on the strengths and weaknesses of the data or analysis in HTAs or contextual factors that influenced a decision in a given setting. Although payers may share this information on a private, informal basis, greater transparency also adds to the legitimacy of the decision-making process from the patient and public perspective.

Nevertheless, in pluralistic systems, it is difficult to achieve the same level of transparency often seen in single-payer systems, as would enable comparisons to be made among different payers. In multiple private payer systems, transparency may be problematic because of commercial considerations; in parallel and decentralized systems, it may make the inequalities between different regions and patient populations more explicit. Indeed, these would become apparent if different adoption decisions were made based on the same HTA study, irrespective of whether the decision rule and contextual considerations were made explicit.

Therefore, it is worth considering whether a framework could be developed to facilitate exchange of information about HTAs within the boundaries necessary to protect confidentiality. This could be a secure website or a platform where information could be posted anonymously or summarized in a way that would prevent an individual payer's information from being identified.

Conclusions

Pluralism in healthcare systems poses several challenges for the conduct and use of HTA. Nevertheless, most of these challenges can be addressed, and we have made several recommendations for how this can be achieved. We hope that this provides the basis for the ISPOR Health Technology Council, other similar groups, and HTA stakeholders in countries with pluralistic systems to take matters forward, by developing good practices for the conduct of HTA in pluralistic settings and initiating further training and research to help decision makers in local settings conduct or use HTAs. There is no fundamental reason why HTA cannot be successful in pluralistic healthcare systems.

Supplemental Materials

Supplementary data associated with this article can be found in the online version at https://doi.org/10.1016/j.jval.2022.02.006.

Article and Author Information

Accepted for Publication: February 10, 2022

Published Online: April 27, 2022

doi: https://doi.org/10.1016/j.jval.2022.02.006

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Administrative, technical, or logistic support: Guerino

Conflict of Interest Disclosures: Dr Drummond is an editor for *Value in Health* and had no role in the peer-review process of this article. Dr Campbell reported serving as a member of the Senior Management Team at the Institute for Clinical and Economic Review. Dr Ollendorf reported receiving grants from the Institute for Clinical and Economic Review and Health Technology Assessment International and reported receiving honoraria and support from the National Health Technology and Assessment Key Lab, Shanghai, China, during the conduct of the study. Dr Torbica is an editor for *Value in Health* and had no role in the peer-review process of this article. Dr Watkins is a contracted writer for *Value & Outcomes Spotlight* and reported serving as a member of the ISPOR Board Audit Committee. No other disclosures were reported.

Funding/Support: The authors received no financial support for this research.

Acknowledgment: ISPOR HTA Council Working Group on HTA in Pluralistic Healthcare Systems collaborators: Marcelo Fonseca (University of Saõ Paulo, Brazil) and Carly Rodriguez (Moda Health Services, Portland, OR, USA). The authors are grateful to members of the ISPOR Health Technology Council for their comments on an earlier draft, logistical support and to the reviewers for their constructive comments on earlier drafts. We are grateful to XCenda for their support of the survey of US decision-makers.

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