The International Decision Support Initiative

Health Technology Assessment Toolkit

- Set the scene for HTA
- Make HTA an inclusive process
- Ensure political commitment
- Compile the best HTA evidence
- Build capacity to support HTA
- Set up a transparent and consistent process

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Introduction to the HTA Toolkit

i. Why do we need Health Technology Assessment?

All health systems, regardless of country or income level, waste large amounts of money. The WHO estimates that 20-40% of all healthcare expenditure is wasted as a result of inappropriate use of medicines, inefficient resource allocation and weaknesses in essential functions[1].

This is a concern in the context of Universal Health Coverage (UHC). Many LMICs are on the path to UHC, pledging to increase investment in essential health services in order to meet the needs of their populations. **They need to put their limited resources to maximum benefit for their population.** Decisions are now taken that will shape the development of their healthcare systems for decades to come, which means that it is an important time to ensure those decisions are sustainable and based on the best quality evidence.

This is where building a sustainable and locally relevant Health Technology Assessment (HTA) mechanism for priority setting can support progress toward UHC.

ii. What is HTA?

HTA attempts systematically to document the expected consequences of new health technologies such as drugs, medical equipment, diagnostic techniques and public health programs. HTA helps you to decide whether a health technology is good value for money or cost-effective for your local health system. It also allows you to compare different policy-scenarios and select what is best for your health system. Some of the big decisions HTA can inform include the creation of an Essential Medicines List and a Health Benefits Package for UHC.

Typically, the term 'HTA' refers to individual studies on a specific technology. However, increasingly, HTA is used to refer to a more systematic 'process at the systems level to inform priority setting and decision-making, i.e. as a tool for priority setting with its explicit consideration of costs and benefits'[2]. In this toolkit, we are interested in this latter definition of HTA. When referring to individual studies, we will

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[1] p.xi, WHO (2010). World Health Report: http://apps.who.int/iris/bitstream/10665/44371/1/9789241564021_eng.pdf

[2] Grieve, E., Hesselgreaves, H., Wu, O., Chalkidou, K., Ruiz, F., Smith, P., ... & Briggs, A. (2017). The Value of Health Technology Assessment: a mixed methods framework. *F1000Research*, *6*.

use the abbreviation ‘hta’ (in small caps); in contrast to ‘HTA’ when discussing institutionalisation.

iii. Aims of the Toolkit

iDSI has developed this toolkit to support technical staff from Ministries of Health and other government agencies by providing guidance on how to build a sustainable and locally HTA mechanism for priority setting in health. While the toolkit is primarily intended for technical staff with some knowledge of HTA and decision-making processes in health, we have tried to make it accessible to lay readers as well.

The toolkit is organised around six key ‘**building blocks**’, illustrated by real world examples and populated by an ample number of external references. These building blocks are not designed to be read chronologically or in any particular order, so users can read each building block separately. We anticipate that some countries will be more advanced on some topics than others: *country A* might be have suitable trained capacity but lack in political commitment and building the institutional support to HTA, whereas *country B* might already have high political commitment but low availability of evidence and capacity. As a result, we invite readers to freely navigate between the different building blocks based on your own needs.

Glossary of Terms

Cost-effectiveness analysis: A form of economic analysis that compares different health interventions on their relative costs and outcomes (effects), using a single, non-monetary outcome measure such as deaths averted, quality-adjusted life years gained.

Cost-effectiveness threshold: the ceiling incremental cost-effectiveness ratio (ICER) beyond which interventions are no longer considered cost-effective, reflecting the maximum value decision makers attach to health.

Disability-adjusted life year: A measure of overall disease burden, expressed as the number of years lost due to ill-health, disability or early death.

External/development partners: Terms widely used in the field of international development aid to describe any organisation working in partnership with national and local government bodies; including international organisations, bilateral organisations, non-governmental organisations, civil society organisations and donors.

Health technology (or **health intervention**)**:** Any method used to promote health, prevent and treat disease, and improve rehabilitation and palliative care. Technologies in this context include but are not limited to: medicines, vaccines, medical equipment, diagnostic and treatment methods, surgery, psychosocial interventions, public health interventions, and so on.

Health Technology Assessment: a systematic, transparent and multidisciplinary process that summarises information about the medical, social, economic and ethical issues related to the use of a health intervention.

iDSI Reference Case: a guide to the planning, conduct and reporting of economic evaluations.

Incremental cost-effectiveness ratio: a summary measure of the cost-effectiveness of a health care intervention, obtained by the ratio of the difference in the mean costs of a technology compared with the next best alternative to the differences in the mean outcomes.

Industry (referring to '**healthcare industry**'): Private sector organisations, or groups of organisations, providing goods and services to prevent and treat disease. These include pharmaceutical companies, private health insurers, and private healthcare providers.

Institutionalisation: The embedding of certain rules and norms, and associated actions and processes, within a health system.

Methods and process guide: A core set of guiding principles and instructions to ensure uniform engagement in a given activity.

Modelling: The use of a single or set of mathematic equations to predict certain parameters or outcomes of interest.

Multiple-criteria decision analysis: a method for guiding decision-making by making explicit the criteria of relevance, the importance attached to each, and how to use such information in a framework for assessing the available alternatives.

Opportunity costs: the value of the *next* best alternative(s) forgone as a result of a given course of action. For example, the health benefits that could have been achieved had the money been spent on the next best alternative healthcare intervention.

Priority setting: The process of ensuring that limited health budgets are allocated to the uses that have the greatest value.

Proof of concept: evidence which establishes that an idea, invention, process or model is feasible.

Quality-adjusted life-year: a measure of the state of health of a person or group in which the benefits, in terms of length of life, are adjusted to reflect the quality of life. One QALY is equal to 1 year of life in perfect health.

Stakeholder: a person, group or organisation that has interest or concern in an organisation.

Systematic literature review (or **systematic review**)**:** research that summarises the evidence on a clearly formulated question according to a predefined protocol.

Building Block 1
Setting the Scene for HTA

i. Introduction

This building block will help you to:

- understand how HTA can be used to inform policy-making in your country
- identify relevant upcoming health decisions
- locate existing HTA activities and assess your country's capacity
- identify relevant stakeholders
- find regional support
- appreciate the benefits of having a co-ordinated and institutionalised framework for HTA.

ii. Having a plan

HTA can be used to assess a wide range of different health technologies. The *World **Health** Organization defines a health technology as the "application of organized knowledge and skills in the form of devices, medicines, vaccines, procedures and systems developed to solve a **health** problem and improve quality of lives"*[3].

Health technology does not only refer to devices, it covers a wide range of interventions like those listed in the table below.

Categories of health technology
Drugs: e.g., aspirin, beta-blockers, antibiotics, cancer chemotherapy
Biologics: e.g., vaccines, blood products, cellular and gene therapies
Devices, equipment and supplies: e.g., cardiac pacemakers, magnetic resonance imaging (MRI) scanners, surgical gloves, diagnostic test kits, mosquito netting
Medical and surgical procedures: e.g., acupuncture, psychotherapy, coronary angiography, gall bladder removal, bariatric surgery, caesarean section
Public health programs: e.g., water purification systems, immunization programs, smoking prevention programs
Support systems: e.g., clinical laboratories, blood banks, electronic health record systems, telemedicine systems, drug formularies
Organisational and managerial systems: e.g., medication adherence programs, prospective payments using diagnosis-related groups

Source: Goodman et al. (2014)[4]

[3] http://www.who.int/health-technology-assessment/about/healthtechnology/en/

[4] Goodman et al. (2014). HTA 101 Introduction to Health Technology Assessment https://www.nlm.nih.gov/nichsr/hta101/HTA_101_FINAL_7-23-14.pdf

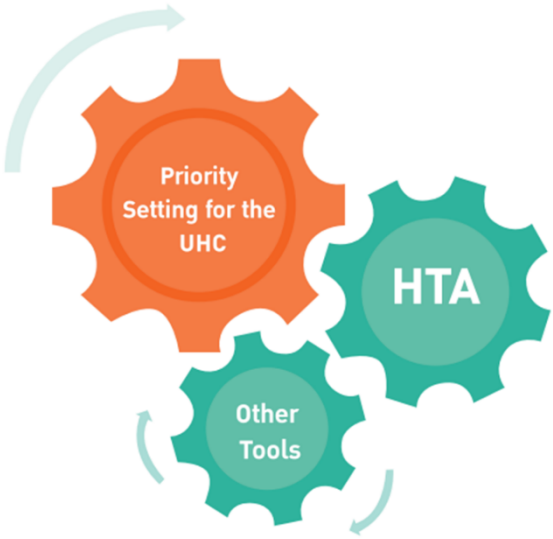
Linking HTA to policy-making is essential. For instance, HTA can be used as an input to come up with coverage decisions, health benefits package, standard treatment guidelines, quality standards, provider payment, essential medicines lists, decisions pertaining to investments in quality training or health community workers. This list is not exhaustive.

HTA is not suitable for addressing all health systems problems. HTA will not help with general health system problems involving financing issues (*e.g.* domestic resource mobilisation) or planning the health workforce. You will need to think about your health system first and move onto thinking about HTA when there are specific spending issues that need to be addressed.

A helpful place to start is to identify upcoming decision problems that HTA can inform. Think about:

- What are some of the biggest health problems currently affecting your country? (*e.g.* high maternal mortality, high out of pocket spending).
- What are the most pressing issues discussed in health and supported by the high levels of leadership (e.g. Minister of Health, Prime Minister or President)?
- What are the big health policy issues that the Ministry of Health has planned for the near future?
- Is there currently enough supporting evidence to inform these decisions?
- How are those decisions typically taken in other countries?

Answering these questions will help find the right 'fit' for HTA in your country. Big incoming health decisions (e.g. the development of a UHC program) can be windows of opportunity for initial work on HTA and a nudge towards evidence-based priority setting.



Source: Priority-setting for Universal Health Coverage

Starting small

Glassman et al. (2012) find that 'starting small with a vision of scaling up is the most practical mitigating strategy' for introducing HTA[5]. The demand for HTA might initially be for specific small and isolated decision problems. However, technical staff and policy-makers should use this 'pilot' approach to generate confidence in the legitimacy of the HTA approach and raise awareness about how HTA can be used to maximise value for money, with the final objective of scaling up capacity for many applications of HTA methods and gaining economies of scale and scope. It is important to keep this final objective in mind, otherwise the lessons, data collected, skills, and experience from conducting the pilot study might be lost and also to enable an optimal location and concentration of HTA skills at the earliest opportunity.

An initial demand might be expressed by technical staff from the Ministry of Health or by other players in the healthcare system. For instance, many LMICs depend on external funding and policy advice from donors and other partners to support their health systems. External partners might express interest in HTA as a mechanism to prioritise investments in the country. Moreover, as countries' GDP per capita increases, they are expected to transition from aid and increasingly take over external partners' activities. This creates a good opportunity to build an HTA process and increase strategic planning of investments to ensure that every dollar, rupee, or rand is spent in a way that buys the most health possible.

Country example: Ghana HTA pilot study

The Ghanaian Technical Working Group, supported by the International Decision Support Initiative (iDSI), carried out an HTA pilot study on the cost-effective management of hypertension (an example of a health topic characterised by high spending and a high disease burden).

It was seen as an opportunity to build on previous efforts to establish a Ghanaian HTA organisation, in order to inform the future decisions of the Ghanaian Ministry of Health and the National Health Insurance Authority.

It highlighted the importance of HTA as a way of supporting UHC and having more optimal resource allocation to be highlighted; discussions with stakeholders found that there was support and commitment to move ahead with HTA.

[5] Glassman et al. (2012). Priority-Setting Institutions in Health: Recommendations from a Center for Global Development Working Group. Global Heart Vol.7(1) https://www.sciencedirect.com/science/article/pii/S2211816012000105

Source: Chalkidou et al. (2017)[6]

iii. Situational analysis

A first step in laying foundations for institutionalising HTA is to carry out a situational analysis. A situational analysis will typically document the following: the HTA activities that already exist in your country; who is currently working on those activities; which stakeholders need to be involved; the existing capacity for economic evaluation; and finally, where you can find regional support.

Finding who is working on HTA in your country

It is likely that there are already existing HTA-related processes in your country (perhaps in a university). However, it might be scattered across different agencies, individuals in universities, sections of industry or departments within the Ministry of Health. For instance, in Hungary, htas were carried out in a health economics association, which a few years after its creation had already gathered over 50 specialists; and had gained sufficient visibility to engage with the government and support the creation of an HTA department[7].

You should be aware that HTA might not be explicitly labelled as such but take on other names such as 'cost-effectiveness analysis' or 'priority-setting'. For instance, the 2015 WHO HTA survey found that two thirds of countries reported having a national organization, department, unit or committee that produced HTA reports for the Ministry of Health – however, few countries actually referred to this process as "HTA"[8].

A good starting point is to conduct a situational analysis to make an inventory of the country's existing efforts. This situational analysis will seek to answer the following questions:

- Who is already working on HTA or similar types of evaluation?
- What type of data do they use?
- Are there examples where costing tools or economic evaluation (including cost-effectiveness analyses) have been used to inform policies?

[6] Chalkidou, K., Lord, J. and Gad, M. (2017). Improving the quality and efficiency of healthcare services in Ghana through HTA. https://f1000research.com/documents/6-1886

[7] Doherty, J. (2015). Effective capacity-building strategies for health technology assessment: a rapid review of international experience. http://www.idsihealth.org/wp-content/uploads/2016/03/Doherty-2016-Effective-CB-for-HTA_reviewFINAL-24-2-16.pdf

[8] WHO (2015). 2015 Global Survey on Health Technology Assessment by National Authorities http://www.who.int/health-technology-assessment/MD_HTA_oct2015_final_web2.pdf

- How were these activities funded?
- If relevant, what technical support did they receive from external partners or other academics?
- Are there any active health economics societies or networks in your country?
- Are there any examples of institutions that employ staff with the following skills: health economics, statistics, epidemiology, pharmacology, policy analysis, systematic review?

These questions can be answered by organising an HTA awareness-raising event and by interviews with key stakeholders (identified at that event or through other contacts within the Ministry of Health). There also may be HTA skills in the private sector, for example in the pharmaceutical industry. A review of previous and current health financing activities may also help identify areas where HTA has been or is currently used. Country-based health economists can be identified through international networks such as the International Society For Pharmacoeconomics and Outcomes Research (ISPOR) or HTAsiaLink or through discussions with external partners (if relevant – see list of regional support).

Stakeholder analysis

In many LMICs, decisions in the healthcare sector are typically made on the basis of considerations other than systematic consideration as in HTA. Common examples are decisions based on historical allocation patterns of funding, expert opinion from a particular clinical speciality, or advice from self-interested politically influential people. Consequently, using HTA to inform decisions is likely to challenge or interfere with existing practice and existing interest groups, creating 'winners' and 'losers' as well as in helping to identify those who those might be most obstructive.

Stakeholder analysis is the process of gathering information to determine whose interests should be taken into account when developing or implementing a new policy[9]. It should be carried out as part of laying the groundwork for introducing HTA, in order to identify who might support or block the process and develop strategies to mitigate the effects of opposition.

Examples of relevant questions to identify stakeholders

Politicians & politically appointed decision-makers:

- What and who dominates the discourse regarding UHC?
- What and who dominates discourse on health technologies?

Policy and professional decision-makers (civil service/bureaucracy)

[9] Schmeer, K. (2000). Stakeholder Analysis Guidelines. http://www.who.int/workforcealliance/knowledge/toolkit/33.pdf

- What are the procedures of the essential medicines committee?
- Who is responsible for the development of basic packages?
- Who is responsible for procurement?

Health service managers

- What are the most influential health facilities in the country and why?

Health professional groups

- Which are the most powerful and influential medical professional associations? Who are the key educationally influential people in such organisations?

Private sector – Industry

- What are the main means through which industry and government interact?
- In what ways and for whom might HTA be seen as an advantage?

Courts and the judiciary

- What is the role of the courts in health coverage decisions or health policy decisions?
- Are there relevant existing cases or lawsuits?

Patients/consumers and the public

- Are there particularly strong, visible NGOs?
- Are there patient organisations bringing together all NGOs for patient access?
- How might one avoid having particularly strong advocates dominate over smaller patient voices?
- What links do these NGOs' have to supply industries like the pharmaceutical and medical devices industries?

Academic institutions, researchers and research managers

- Who conducts health system and policy research or operational research in the country?
- Where does the funding for this kind of research come from?

Funders and development partners

- Which development partners operating in the country have interests aligned with priority-setting in particular or health system reform in general?
- And which might be opposed to an HTA approach or seek to 'capture'
- it?

Source: Stakeholder checklist

Ideally, stakeholders, such as patient groups, policy-makers, physicians, academics, the healthcare industry, external partners/donors and the public will be involved at several stages of HTA. Identifying relevant stakeholders at the start of the process

will help to identify any training needs some groups may have as well as building a truly inclusive process.

Capacity for economic evaluation

Having a well-trained local technical capacity with skills in economic evaluation and in producing and using htas is key to HTA institutionalisation. Lack of capacity is one of the constraints on the development of HTA in Europe[10]. The problem is likely to be more acute in LMICs. You will need to identify the capacity your country already has:

- What are the academic or governmental groups that can undertake and understand hta studies?
- What has the private sector to offer?
- What funding might be available for HTA?
- What training is available for HTA in your country or region?

iDSI has developed a capacity assessment questionnaire to support countries in the assessment of their existing local HTA technical capacity to undertake HTA. As a first step, you should seek to identify a list of potential institutions that might be of interest for future HTA development, i.e. institutions with technical expertise in health economics or related fields such as epidemiology, medical demography, statistical analyses, and/or heath policy research. This includes the following:

- Technical departments within the Ministry of Health or National Health Insurance Fund
- Academic departments in local universities or education institutions
- Other groups (including in the Industry) that work on economic evaluation or have expertise in a related field

The questionnaire seeks to assess technical capacity to conduct HTA; and identify potential skill gaps at each institution that require capacity-building support.

Finding regional support

Support for introducing HTA might be available from global or regional networks. This could take many forms, for example, technical assistance to support the development of economic evaluation, doing situational analyses or designing roadmaps for implementing HTA. You should consult their work portfolio or contact them directly with specific queries.

[10] Sorenson, C., Drummond, M., & Kanavos, P. (2008). Ensuring value for money in health care: the role of health technology assessment in the European Union (No. 11). WHO Regional Office Europe.

Regional HTA Networks

International

Disease Control Priorities Network (DCPN)– produces publications on cost-effectiveness of interventions at the global level, but also engages with countries (*e.g.* Ethiopia) - http://dcp-3.org/country-work/overview

Health Technology Assessment International (HTAi) – active members –in MoHs, academia, industry- across 65 countries www.htai.org

International Network of Agencies for Health Technology Assessment (INATHA) - network of 49 HTA agencies in 30 countries around the world with more than 2,100 staff. http://www.inahta.org/

International Decision Support Initiative (iDSI) – a global network of health, policy and economic expertise specialised in providing support to countries on priority setting and evaluation http://www.idsihealth.org/

International Health Economics Association (IHEA) – facilitates work and communication across a large network of health economists in the world. https://www.healtheconomics.org/

International Society for Pharmacoeconomics and Outcomes Research (ISPOR)– the largest global network working on health economics and outcomes research. It is also organised around regional initiatives, chapters and groups. https://www.ispor.org/

African Region

The **African Health Economics and Policy Association** (AfHEA) and **Collaborative Africa Budget Reform Initiative** (CABRI) are not HTA networks, but might be able to support countries through their network.

The Americas Region

Regional Network of Health Technology Assessments for the Americas (RedETSA) - http://redetsa.org/

South-East Asia Region

HTAsiaLink – comprised of 15 institutions, organises yearly meetings and collaborative projects among members: http://www.htasialink.org/

European Region

European Network for Health Technology Assessment (EUnetHTA) – network of 35 institutions in Europe, hosted by the Danish Centre for HTA (DACEHTA) in Copenhagen http://www.eunethta.eu/

Eastern Mediterranean Region

A group at the **WHO Eastern Mediterranean Regional Office (EMRO)** focuses on HTA (on Ezcollab): https://ezcollab.who.int/hmdem/hta

iv. Institutionalisation

Benefits of institutionalisation

Institutionalising HTA neither means nor requires the creation of a stand-alone HTA agency; it simply means establishing accepted processes, norms and rules of HTA, developing critical skills, experience and knowledge and building effective working relationships between relevant policy-makers and academic/research institutions to support the use of HTA[11]. You can encourage 'HTA thinking' without needing the institutional framework by supporting the use of good-quality evidence to inform healthcare decision-making.

Institutionalisation ensures that HTA becomes part of the decision-making process in the health system, even if it is initially just limited to a range of policies or a specific disease area (e.g. only for the introduction of new medicines). It ensures that decisions taken using HTA can be updated and revised and that HTA is not just a one-off exercise. It can also help with developing sustainable financing and training mechanisms for HTA.

What aspects of HTA need to be institutionalised?

- The nature and role of the HTA focal point (*e.g.* institution or department or team);
- Scope of activities envisaged by the HTA function (i.e. the services to be provided), and the extent to which these are coordinated by a single HTA focal point;
- Funding and staffing;
- The disposition of analytical capacity ('internal', i.e. within the HTA focal point, external, e.g. within academic centres, or hybrid models);
- The nature and scope of the appraisal function;
- Locus of decision-making and linkage to policy and priority setting
- Technical training

Source: adapted from Lopert et al. (2017)[12]

Institutional arrangements

HTA should be a dynamic and continuous process. The model of HTA institutions will differ between countries. Some countries have found it easier to create a clearly

[11] Lopert et al. (2017). Deliverable 1: Situational analysis of Romanian HTA

[12] Lopert et al. (2017). Deliverable 2: Designing an institutional framework for HTA in Romania

identifiable HTA organisation that is separate from the Ministry of Health and that provides independent assessments and guidance (and in some jurisdictions may actually make decisions). Others have chosen to rely on an institutionalised HTA framework that is composed of multiple organisations, with clearly defined roles and responsibilities.

You will need to identify different possible institutional arrangements and establish what will work best for your country, whether this involves one or more units within the MoH or an independent body. There are trade-offs between those options, mainly on cost, link with other health agencies, transparency and visibility. For instance, it might be cheaper to incorporate HTA within an existing department rather than setting up an entirely new department, but harder to ensure transparency of decision-making[13].

In Romania, institutionalisation of HTA is an on-going process. The table below sets out three models of HTA agency that were developed for Romania:

Three models of HTA institutions developed for Romania

In recent years, there has been interest in Romania to extend the scope of work around HTA. Romania currently has an HTA agency, the National Agency for Medicines & Medical Devices, that focuses on pharmaceuticals for reimbursement decisions. The NAMMD is the only agency in the Ministry of Health that possesses sufficient capacity to conduct HTA, although it only employs 6 full-time staff (the director, two physicians, one pharmacist, one statistician and one economist). A situational analysis conducted in 2016-2017 concluded that the main challenges with broadening of HTA activities in the context of Romania included (i) lack of technical capacity in the country, (ii) fragmentation in the system, (iii) need for improving the pharmaceutical evaluation framework and (iv) need for a framework on best practice principles and governance standards for HTA. Given those challenges, an assessment was conducted to understand what the best institutional framework for expanding the scope of HTA in the country. Three models were outlined:

Model 1 - Establishment of separate HTA agency at arm's length from the Ministry of Health

- **Small co-ordinating unit within the MoH** - responsible for

[13] Lopert et al. (2017). Deliverable 2: Designing an institutional framework for HTA in Romania

regulatory/legislative reforms
- **Standalone HTA 'agency'** – responsible for HTA for medicines, non-drug technologies and interventions, developing and updating methods, managing processes; engaging stakeholders; contracting with external academic groups to engage additional analytical expertise; managing appraisal committees and processes

Model 2 - Evaluation processes managed from within the existing NAMMD HTA unit

- **A Romanian HTA 'entry point'** - a coordinating unit within the MoH with responsibility for regulatory/legislative reforms/updates
- **An HTA unit at the NAMMD** - responsibility for HTA for medicines, non-drug technologies and interventions. All evaluation processes are managed from within the NAMMD HTA unit, although some key coordination activities remain within the MoH.

Model 3 - A network of HTA processes centred and supported from within the Ministry of Health

- A '**hub and spoke' structure** with a network of HTA processes centred and supported from within the Ministry of Health
- A **Romanian HTA 'entry point'** - a coordinating unit within the Ministry of Health with responsibility for regulatory/legislative reforms/updates
- The **NAMMD HTA unit** retaining key responsibility for HTA for medicines and vaccines
- A **second HTA unit within the MoH** with responsibility for HTA of non-drug interventions and other programmes

- **All three models** feature the need for contracted academic/external evaluation groups, an underlying regulatory framework and independent expert appraisal committees responsible for evidence appraisal.

Advantages and disadvantages

There are advantages and disadvantages of each of the three models presented. All the models recognise and utilise external HTA expertise, which is an advantage.

Model 1 appears to be more at 'arm's length' than Models 2 and 3, and it centralises processes within a single entity. However, there is significant administrative costs to establishing a new agency, which would require a massive scale-up of resources to be effective, which takes time.

Model 2 also centralises processes into a single entity, but appears less at 'arm's length' and therefore less independent and transparent.

Model 3's initial separation of drug and non-drug HTA processes promotes prioritisation and rapid introduction of rigorous HTA for medicines, while enabling external evaluation resources to focus on technologies in areas of specific interest or expertise. However, it may appear to stakeholders to be not adequately independent, meaning that legislative framework and governance arrangements are critical to ensure independence of expert

committees and transparency of operations.

Source: adapted from **Lopert et al. (2017)**[14]

[14] Lopert et al. (2017). Deliverable 2: Designing an institutional framework for HTA in Romania

Building Block 2
Compiling the best HTA evidence

i. Introduction

This building block covers:

- the type of evidence needed for HTA
- the use of literature reviews
- spotting gaps in the evidence relevant for your HTA
- developing or using a Reference Case for economic evaluation
- adapting existing research from similar countries in your region
- how to link up with universities to conduct primary research.

ii. The process

Wherever possible, one should seek to ensure that best-quality evidence is used to make decisions. For this, you need to be familiar with:

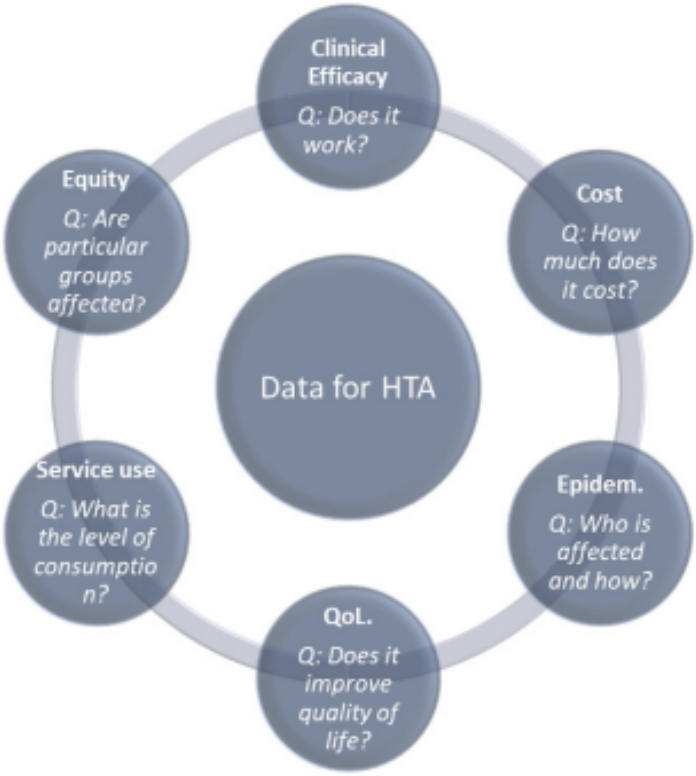
i) The type of evidence that is needed for the given topic;
ii) Evidence that has been generated by previous published and unpublished studies;
iii) How to identify data gaps;
iv) At a more advanced level, how to adapt studies or conduct primary data collection/research to produce the necessary data.

iii. Types of evidence

There are different types of evidence or evaluation criteria commonly used in htas. Evidence can be categorised into features relating to the disease under consideration (the 'burden of disease') or into characteristics relating to the technology being assessed[15].

In a hta, an individual technology can be evaluated using several different, but overlapping, criteria. The following figure depicts key areas of information needed for HTA.

[15] Angelis et al. (2017). Using health technology assessment to assess the value of new medicines: results of a systematic review and expert consultation across eight European countries. http://eprints.lse.ac.uk/69521/1/Angelis_Using%20health%20technology%20assessment%20to%20assess%20the%20value%20of%20new%20medicines_published_2017%20LSERO.pdf



Source: Downey et al. (2018)[16]

However, it is worth noting that economic evaluation often forms the 'backbone' of hta. The table below lists the type of economic evaluation frequently encountered in hta studies. CEA is most often used among the listed options.

Type of economic evaluation used in htas
Cost-of-illness analysis: a determination of the economic impact of an illness or condition (typically on a given population, region, or country) e.g., of smoking, arthritis, or diabetes, including associated treatment costs **Cost-effectiveness analysis (CEA)**: a comparison of costs in monetary units with outcomes in quantitative non-monetary units such as Quality Adjusted Life Years (QALYs) or averted Disability Adjusted Life Years (DALYs), reduced mortality or morbidity. This is often termed cost-utility analysis (CUA) and you should give thought to whether your preferred outcome measure should be some indicator of

[16] Downey, L., Rao, N., Guinness, L., Asaria, M., Prinja, S., Sinha, A., ... & Chalkidou, K. (2018). Identification of publicly available data sources to inform the conduct of Health Technology Assessment in India. *F1000Research, 7.*

health gain or loss or some indicator of the utility of such gains or losses. An advantage of the health gain/loss approach is that it is more readily understandable by clinicians and the public and easier to validate.

A **Budget-impact analysis (BIA)** can be conducted in addition to a CEA to determine the impact of implementing or adopting a particular technology or technology-related policy on a designated budget, e.g., for a drug formulary or health plan.

Cost-consequence analysis: a form of cost-effectiveness analysis that presents costs and outcomes in discrete categories, without aggregating or weighting them

Cost-benefit analysis (CBA): compares costs and benefits, both of which are quantified in common monetary units.

Source: based on **Goodman et al. (2014)**[17]

Other considerations may relate to ethical and equity aspects, including concerns over the distribution of the benefits or breadth of the effects (benefits not accruing to the health sector). Daniels and colleagues (2016) highlight the need for an expanded HTA process that accounts for equity, budget impact, ethical issues and financial protection[18]. The Reference Case for Economic Evaluation (discussed in this building block) indicates that all available evidence relevant to the decision problem should be included.

iv. Cost-effectiveness analysis

Cost-effectiveness analysis (CEA) is widely used in hta, and typically synthesizes evidence on the costs and health effects of specific interventions. The results of a CEA are usually presented in the form of an Incremental Cost-Effectiveness Ratio (ICER).

An ICER is calculated as follows:

$$ICER = \frac{C_1 - C_0}{H_1 - H_0}$$

[17] Goodman et al. (2014). HTA 101 Introduction to Health Technology Assessment. https://www.nlm.nih.gov/nichsr/hta101/HTA_101_FINAL_7-23-14.pdf

[18] Daniels, N., Porteny, T., & Urritia, J. (2016). Expanded HTA: enhancing fairness and legitimacy. *International journal of health policy and management*, 5(1), 1.

Or in other words, ICER is the difference in costs between two alternative interventions divided by the difference in health produced by the two. Health effects are usually expressed in terms of QALYs or DALYs. However, some studies use other types of health effects, *e.g.* number of vaccinated children or persons tested for HIV. General quality of life outcomes, such as QALYs and DALYs, are often used as they capture health effects on length and quality of life, allow for comparisons between disease states and allow you to check with those mainly affected whether the indicator is an adequate representation of the effect of the treatment (for example, whether some important aspect of the activities of daily living has been omitted).

What are QALYs and DALYs?

Quality Adjusted Life Years

QALYs have been used in the assessment of health interventions for over 30 years. A QALY is an indicator that combines information on the morbidity and mortality resulting from a treatment. As a result, QALYs incorporate information on utilities derived from different states of health, or health-related quality of life weights.

Disability Adjusted Life Years

DALYs are primarily a measure of disease burden and unlike the QALY, they incorporate an age-weighting function assigning different weights to life years lived at different ages. The origins of disability and quality of life weights differ significantly from QALYs.

DALYs are calculated using the sum of years of life lost (YLLs) and years of life lived with disability (YLDs). The impact of interventions on DALYs (i.e. the DALYs prevented by an intervention) is measured by calculating the DALYs in two scenarios: with and without the intervention[19]. One DALY represents one year of healthy life lost due to disease, either through death or disability.

Source: Sassi (2006)[20]

The health impact of interventions can be measured directly, although decision analytic modelling is most often used to extract the long-term impact from short-term

[19] Fox-Rushby J, Hanson K. 2001. Calculating and presenting disability adjusted life years (DALYs) in cost-effectiveness analysis. Health Policy and Planning 16: 326–31.

[20] Sassi, F. (2006). Calculating QALYs, comparing QALY and DALY calculations. *Health policy and planning*, *21*(5), 402-408.

clinical trial results. This typically involves modelling the effects (and sometimes the costs) of what would be expected to happen to patients after the clinical trial period is over[21]. Markov modelling is most often used for CEAs: those models are employed to represent 'stochastic' or random processes that evolve over time[22]. Those models are often used to model different disease states and transition probabilities.

ICERs are usually expressed in terms of $/QALYs gained or $/DALYs averted. These common measures allow you to compare a given intervention with a set of existing interventions reported in the literature, or with a fixed cost-effectiveness threshold that informs whether the intervention under consideration can be considered good value for money (see the building block 'Setting up a transparent and consistent process of HTA' for more information). ICERs are context dependent (especially with regard to your local health system's constraints and social values, some of which may be reflected in costs and others in benefits). ICERs for a given intervention are likely to vary widely between different contexts: it is therefore very important that policy-makers ensure that studies are conducted on the ground or, if they are taken from other settings, that they are relevant to the local health systems.

v. ix. Reference case

Studies considered in the HTA process might present differences in terms of methodological approaches and reporting. This is unavoidable, as different methods will be more appropriate to specific research questions (and their corresponding field of enquiry), available data, resources and time. This is a big challenge for any country wanting to develop a workable HTA system.

From the onset, you should think of developing a Reference Case (RC) and methods guidance to address such challenges[23]. A RC defines a set of core principles to ensure that the research used has been based on best practice and that findings are accurately interpreted. A RC provides grounding for standardising as much as possible of the research, or at least of the reporting of the data. It allows the reader to understand the trade-offs made by the researchers, and potential impact of such trade-offs on the interpretation of the results.

A RC can also guide the planning, conduct and reporting of research in more granular details. Developing a RC helps setting out the expectation for any economic

[21] Drummond, M. F., Sculpher, M. J., Claxton, K., Stoddart, G. L., & Torrance, G. W. (2015). *Methods for the economic evaluation of health care programmes*. Oxford university press.

[22] Briggs, A., & Sculpher, M. (1998). An introduction to Markov modelling for economic evaluation. *Pharmacoeconomics*, *13*(4), 397-409.

[23] Wilkinson, T. et al. (2016). The International Decision Support Initiative Reference Case for Economic Evaluation: An Aid to Thought. Value in Health 19

evaluation and local preferences (e.g. for DALYs/QALYs, discount rate, attitude to addressing/capturing equity impacts etc.).

The Bill and Melinda Gates Foundation commissioned the development of a RC for LMICs, which was put together by the iDSI[24]. The iDSI RC threefold structure comprises: principles outlining the characteristics of economic evaluations, methodological specifications, and reporting standards[25]. The iDSI RC can be contextualised according to a country's values and characteristics. For instance, Thailand, Egypt, Bhutan and Malaysia have developed or are currently developing their own Reference Case for Economic Evaluation[26].

iDSI Reference Case Principles

1. An economic evaluation should be communicated clearly and transparently to allow the decision maker(s) to interpret the methods and results
2. The comparators against which costs and effects are measured should accurately reflect the decision problem.
3. An economic evaluation should consider all available evidence relevant to the decision problem
4. The measure of health outcome should be appropriate to the decision problem, should capture positive and negative effects on length and quality of life, and be generalisable across disease states
5. All differences between the intervention and the comparator in expected resource use and costs of delivery to the target population(s) should be incorporated into the evaluation
6. The time horizon used in an economic evaluation should be of sufficient length to capture all costs and effects relevant to the decision problem; an appropriate discount rate should be used to discount cost and effects to present value
7. Non-health effects and costs associated with gaining or providing access to health interventions that don't accrue to the health budget should be identified where relevant to the decision problem. All costs and effects should be disaggregated, either by sector of the economy or to whom they accrue
8. The cost and effects of the intervention on sub-populations within the decision problem should be explored and the implications appropriately characterised

[24] ibid

[25] ibid

[26] see list of Reference Case for Economic Evaluation on the GEAR and IPSOR websites http://www.gear4health.com/gear/health-economic-evaluation-guidelines and https://www.ispor.org/PEguidelines/index.asp

9. The uncertainty associated with an economic evaluation should be appropriately characterised
10. The impact of implementing the intervention on the health budget and on other constraints should be identified clearly and separately
11. An economic evaluation should explore the equity implications of implementing the intervention

vi. Retrieving available evidence

The evidence used in HTA is often scattered across different sources or exists in different formats; this is particularly the case in LMICs. Evidence is best identified through systematic literature reviews and grey literature reviews.

Literature reviews

A literature search will help you collate information about a particular health technology. Below are some of the most commonly used databases for literature reviews:

- PubMed
- WebMD
- Google Scholar
- Web of Science
- Scopus
- WHO/UN websites
- Jstor

To conduct a literature review, you will need to apply predetermined *inclusion* and *exclusion* criteria to the literature search, critically appraising the relevant literature and the extraction and synthesis of data from evidence base to formulate answers to key questions[27]. The purpose of these methods is to minimise the possibility of biasing the results in favour of or against particular technologies.

[27] Ibid.

Literature search: inclusion and exclusion criteria

Exclusion criteria

To narrow your literature search, you will need to exclude some factors:

- Replace general search terms with more specific search terms (for example, search for “low back pain” instead of “back pain”).
- Add additional terms to your search.
- Use filters to restrict your results by publication date (for example “published after 2005”), by species, disease, article type, etc.

Inclusion criteria:

To broaden your search, you will need to include relevant factors for the literature you’re searching for:

- Remove unnecessary or overly specific terms from the search box.
- Try using alternative terms to describe the concepts you are searching.

Source: Adapted from PubMed Help[28]

A useful way of defining the key questions for use in a literature review and to inform the choice of inclusion criteria in the literature search, is the *PICO format* (sometimes *PICOTS*):

Population: e.g., condition, disease severity/stage, comorbidities, risk factors, demographics

Intervention: e.g., technology type, regimen/dosage/frequency, technique/method of administration

Comparator: e.g., placebo, usual/standard care, active control

Outcomes: e.g., morbidity, mortality, quality of life, adverse events

Example of a PICO in a literature search

You can convert your question to a search strategy by identifying terms that you would want to include in your search, like:

Population/Problem: Women over 40 with heart failure from dilated cardiomyopathy

[28] https://www.ncbi.nlm.nih.gov/books/NBK3827/#pubmedhelp.PubMed_Quick_Start

Intervention: Adding anticoagulation with warfarin to standard heart failure therapy

Comparator: Compared with standard therapy alone

Outcomes: QALY gained

A **systematic literature review** collects, critically evaluates and integrates the evidence presented in multiple research studies or papers for a given question; using search and analytical methods that are clearly defined from the beginning. Systematic reviews aim to minimize bias by using explicit and systematic methods.

The Cochrane Handbook for Systematic Reviews of Interventions can assist technical staff by describing the process of developing and maintaining a systematic literature review (for more information, see http://training.cochrane.org/handbook).

Grey literature research

The *grey literature* is a widespread but complex set of sources of information. It is defined as 'that which is produced at all levels of government, academics, business and industry in print and electronic formats, but which is not controlled by commercial publishers, *i.e.,* where publishing is not the primary activity of the producing body'[29].

Grey literature is not formally published in academic books or journals and includes reports, theses, conference proceedings, newspapers, fact sheets, websites, and policy documents[30]. Grey literature encompasses different types of information, of varying quality. Grey literature does not necessarily mean that the information hasn't been reviewed or fact-checked. However, the review process is typically not externally conducted. For some type of evidence (*i.e.* clinical studies, etc.), it is advisable to refer to peer reviewed literature. You may want to include some grey literature in evidence syntheses for at least three reasons: grey literature can reduce the impact of publication bias (when conducted alongside peer reviewed literature); it can provide useful contextual information on how, why, and for whom complex public health interventions are effective; and finally, to help identify what interventions exist, the full range of evaluations that have been conducted, and where further

[29] Godin et al., (2015). Applying systematic review search methods to the grey literature: a case study examining guidelines for school-based breakfast programs in Canada. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4619264/pdf/13643_2015_Article_125.pdf

[30] ibid

intervention development and evaluation is needed[31].Grey literature of possible relevance for HTA is found in sources such as[32]:

- Health and economic statistical reports
- Regulatory documents and government monographs
- Coverage policies of health authorities and insurance plans
- Drug and biologics compendia
- Health professional association reports and guidelines
- Industry (e.g., life sciences company) reports
- Market research reports for particular health care sectors/industries
- Policy and research institute studies
- Reports of special expert panels and commissions
- Conference proceedings, memoranda and working papers
- Technical specifications and standards

Real World Evidence

Increasingly, the term Real World Evidence (RWE) has been used to characterise evidence that is generated outside of clinical trials or research setting. RWE is a subset of grey literature as defined above. It makes use of electronic medical records, claims and billing data, product and disease registries and data gathered through personal services and health applications to gain information about patterns of use for specific interventions, and sometimes linking it to health outcomes.[33] The increase in RWE has been important in recent years, as routine data collection systems now generate large data sets on a number of issues.

RWE can be used as a sole source of information or be complementary to other type of scientific evidence produced. For instance, RWE can help integrate clinical research and more diverse data sources from implementation on the ground; and can shed light on how factors in the clinical setting, provider or patient behaviour can influence patient treatment outcomes. However, the use of RWE is still in its early days and the quality and provenance of data is not often well understood by researchers and end-users of this data (*e.g.* policy makers)[34]. Several groups are

[31] Adams et al. (2016). Searching and synthesising 'grey literature' and 'grey information' in public health: critical reflections on three case studies. https://systematicreviewsjournal.biomedcentral.com/articles/10.1186/s13643-016-0337-y

[32] Goodman et al. (2014). HTA 101 Introduction to Health Technology Assessment. https://www.nlm.nih.gov/nichsr/hta101/HTA_101_FINAL_7-23-14.pdf

[33] Sherman, R. E., Anderson, S. A., Dal Pan, G. J., Gray, G. W., Gross, T., Hunter, N. L., ... & Shuren, J. (2016). Real-world evidence—what is it and what can it tell us. N Engl J Med, 375(23), 2293-2297.

[34] ibid

working on developing appropriate methods for assessing the data provenance and quality, and perhaps in the future even analytical approaches to draw causal interference. Caution should apply when using this data.

vii. Identifying gaps in the evidence

Conducting a systematic literature review or grey literature review makes it easier to identify gaps in existing evidence[35]. There are likely to be studies in your country that have not been comprehensively reviewed.

Once gaps in evidence have been identified, it may be possible to:

Conduct primary research in order to fill them (even if only in part)

Adapt evidence from existing resources (for example from similar research done in neighbouring countries)

Use the evidence in its entirety from another source

Assessing data gaps

Regardless of the chosen approach, in a first instance, it is important for you to assess whether the existing data at your disposal can be used for conducting primary research or adapting results from other countries.

Interviews with key stakeholders, a review of the health information systems, and literature review can help locate where the information might be in your country. A data gap analysis can then be conducted to plan for future data collection to meet those requirements.

An analysis of data for HTA in India identified many sources of information of all kinds: the health management information system, national family health survey, clinical trials, national sample survey office, national disease control programs. Further details are available here.

Conducting primary research

Primary research is research that generates or uses original data, as distinct from secondary research, which summarises or adapts other people's research. You will need to assess your own needs in terms of primary research, perhaps, with the support of partner universities. Ideally, primary research should be conducted to generate locally relevant data that accounts for local peculiarities with up to date

[35] Ibid.

information. However, this research is typically costly and might not generate timely results.

University collaboration can bring research skills you may not have to conduct primary research to fill gaps you have identified. Through such collaboration you may also be able to tap literature search skills, get access to skills in adapting existing research, or just get advice on methods. Using local capacity for research, besides its direct usefulness, is also a way of building local research capacity and demonstrating a demand for applied research skills.

One useful online tool is the Guide to Economic Analysis and Research (GEAR), which informs researchers on methods of data collection and analysis in economic evaluations. Most of this tool is devoted to answering commonly encountered problems for researchers in LMICs, such as lack of costing or clinical data. A section in the online tool also allows researchers to ask questions to GEAR experts and discuss their problem on an open forum.

Guide to Economic Analysis and Research (GEAR) Online Resource

The Guide to Economic Analysis and Research (GEAR) online tool is a useful resource for technical staff and researchers. GEAR provides useful definitions and mind-maps for researchers facing questions, such as:

- What type of modelling should I do?
- What health outcome should I use?
- How may I overcome data limitations in conducting economic evaluation for my country?
- What is the best way of presenting my research results?

GEAR provides ways of solving methodological difficulties in the conduct and use of economic evaluations.

Source: GEAR[36]

Adapting existing studies

In many LMICs, evidence is not available, relevant, or it might be of poor quality, or incomplete. Studies that have been done in the past may have become outdated or may have never been quality assessed or reviewed professionally as, for example, when they are published in a reputable journal.

[36] GEAR http://www.gear4health.com/about

Technical staff in ministries of health can try to keep abreast of the evidence available in other settings, ideally from a neighbouring country of similar income level and presenting common health system challenges, or elsewhere, often in high income countries, where they have less in common with your country, or international evidence in global studies that claim to be more or less generalisable in all settings. It may sometimes be possible to use results from other research settings directly, if the background is sufficiently similar to that in your country and it is not going to be possible to do any primary research.

Transferring economic evaluations through adaptation has been proposed as an alternative to the time-consuming and expensive new primary studies; it can perhaps save resources in LMICs while encouraging the use of evidence-informed decision-making[37]. If you are considering adapting the results from foreign hta studies, two resources are available to help:

- Goeree et al. (2011) reviews several transferability tools developed for hta. They include summaries of the types of checklists and assessment tools, including the Welte's decision chart and the Boulenger tool.
- EUNetHTA has also developed a short guide[38] for countries to assess whether existing hta studies can be adapted and transferred to different contexts. Their Toolkit aims to help HTA agencies assess:

(1) **The relevance of the report**: is the policy and/or research question posed sufficiently similar to warrant adaptation of this report?

(2) **Reliability**: is the quality of the report adequate?

(3) **Transferability**: what are the main issues to consider when using research done in settings other than your own?

The table below shows examples of questions to ask when considering adapting results from economic evaluations.

Example: Considering the adaptation of evidence on economic evaluation
• How generalisable and relevant are the results, and validity of the data and model to the relevant jurisdictions and populations? • Are there any differences in the following factors? *Perspective, preferences, relative costs, indirect costs, discount rate,*

[37] Goeree, R., et al., Transferability of health technology assessments and economic evaluations: a systematic review of approaches for assessment and application. ClinicoEconomics and Outcomes Research, 2011. 3: p. 89–104.

[38] EUNetHTA HTA Adaptation Toolkit & Glossary. See https://www.eunethta.eu/eunethta-hta-adaptation-toolkit/

technological context, personnel characteristics, epidemiological context (including genetic variants), factors which influence incidence and prevalence, demographic context, life expectancy, reproduction, pre- and post-intervention care, integration of technology in health care system, incentives

a. If differences exist, how likely is it that each factor would impact on the results? In which direction? Of what magnitude?

b. Taken together, how would they impact on the results and what is the magnitude of the effect?

c. Given the differences, are the conclusions likely to be sensitive to a change in the target setting? Are you able to quantify this to any degree?

- Does the economic evaluation violate your national/regional guidelines for health economic evaluation?

Source: EUNetHTA[39]

If the differences between countries are known and measurable, there might be scope for adapting the results from one context to another using specific methods. A review conducted by Pichon et al. (2012) found that information regarding the technology, safety, efficacy and effectiveness were often directly transferable from one setting to another but that results in terms of budget impact, costs and organisational issues usually require adaptation[40].

Use of foreign research results of any kind usually requires changing the currency in which ICERs and other monetary variables are calibrated (*e.g.* use of Purchasing Power Parities (PPPs).

Transfer evidence from other context

A last option is to directly apply evidence from other settings to your own country. This approach often involves transforming the results using exchange rates or PPPs[41].

[39] EUNetHTA HTA Adaptation Toolkit & Glossary

[40] Pichon-Riviere, A., Augustovski, F., García Martí, S., et al. Transferability of health technology assessment reports in Latin America: an exploratory survey of researchers and decision makers. International Journal of Technology Assessment in Health Care 2012; 28(2):180-6.

[41] Goeree, R., et al., Transferability of health technology assessments and economic evaluations: a systematic review of approaches for assessment and application. ClinicoEconomics and Outcomes Research, 2011. 3: p. 89–104.

The suitability of this approach can be appraised from the list of questions listed above. However, it is unlikely that results from a hta study from another country are generalisable and will apply directly to your country.

A review conducted in Vietnam, India and Bangladesh indicated that policy-makers in these three countries judged it inappropriate to use information from other settings without adaptation. According to the technical staff who were interviewed, direct information from other contexts was not suitable mainly because of differences in costs and clinical practice[42]. Merely converting unit costs in PPPs will not adjust appropriately for differences in costs between countries, as PPPs are generalised ways of equalising the purchasing power of currencies. They enable one to compare service cost differentials only internationally.

If you feel nonetheless that there is no alternative to un-adapted transfers of results, the Disease Control Priorities (DCP)[43] might help to contextualise and understand what the global evidence suggests for particular interventions or health technologies with its caveats. The purpose of DCP is to provide a comprehensive review of cost-effective interventions in a variety of settings. A third edition of DCP was published in December 2017. It comes in nine volumes. The first eight cover packages of related interventions while the ninth provides an overview with main findings and conclusions about health priorities. The main eight volumes cover surgery, reproductive health (including maternal and child health), cancer, mental and neurological disease, cardiovascular and respiratory disease, infectious disease, injury and environmental health, childhood and adolescent diseases. Information on DCP can be found on the DCP website.

[42] Teerawattananon, Y., Tantivess, S., Yamabhai, I., Tritasavit, N., Walker, D. G., Cohen, J. T., & Neumann, P. J. (2016). The influence of cost-per-DALY information in health prioritisation and desirable features for a registry: a survey of health policy experts in Vietnam, India and Bangladesh. *Health research policy and systems*, 14(1), 86.

[43] Jamison, D. T., Alwan, A., Mock, C. N., Nugent, R., Watkins, D., Adeyi, O., ... & Binagwaho, A. (2017). Universal health coverage and intersectoral action for health: key messages from Disease Control Priorities. *The Lancet.* 391(10125):1108-1120

Building Block 3
A transparent and consistent process of HTA

i. Introduction

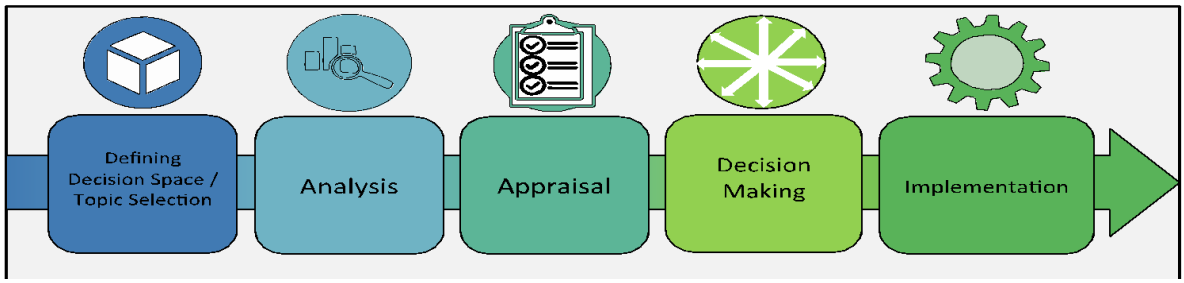
This block introduces:

- Description of the various stages of the HTA process from topic selection to analysis and appraisal of evidence
- Need for a process and methods guide
- Making recommendations
- The benefits and requirements of monitoring and evaluation

ii. The steps of HTA

There is no single 'correct' approach to designing and operating an HTA framework. Decision-makers must design priority-setting processes that suit local settings, political contexts and decision problems. However, a 'five-step' process developed by PRICELESS allows policy-makers to plan for a typical cycle of priority setting.

Figure: A 'five-step process' of priority-setting



Source: Siegfried, Wilkinson & Hofman (2017)[44]

Transparent HTA arrangements are always desirable because transparency creates trust and acceptance among stakeholders, such as patients and the medical industry[45]. A published guide to the decision-making process is helpful. A methods guide, containing detailed principles and guidelines for the conduct of economic evaluations (covering steps 1-4 from the figure above), defines the information needs of decision makers and guides manufacturers and others into ways of presenting their technologies to meet those needs. Some countries include timelines to the

[44] Siegfried, N., Wilkinson, T., & Hofman, K. (2017). Where from and where to for health technology assessment in South Africa? A legal and policy landscape analysis. *South African Health Review*, 2017(1), 42-48.

[45] Wild et al. (2017). Guidance for the development of a National HTA-strategy. Health Policy and Technology, Vol. 6(3). https://www.sciencedirect.com/science/article/pii/S2211883717300461

process to avoid creating undue delays in bringing technologies to market. Transparency also helps manufacturers, policy-makers, the medical profession and the general public to understand the process and the expected time frame over which decisions are made.

Making both the process and the methods guides available on-line is good practice. As an example, NICE provides a defined set of steps with timelines (in terms of weeks). The entire process from topic definition to the end of the appraisal is 43 weeks for NICE. This timeline can be found online.

iii. Topic selection for HTA

The number of existing or new technologies to assess in the health sector is overwhelming, and HTA agencies can struggle to keep up with all new technologies[46], so we do not advise evaluating all existing technologies, The PRICELESS step one, 'Topic selection', is plainly critically important.

At the beginning, it is unlikely that you will be able to look at newly approved drugs or technologies in a systematic way. Topic choices may be motivated by specific upcoming policy decisions or particular health problems, or they could be identified through consultations with key stakeholders like politicians, leading clinicians and senior health service managers in the public and private sectors.

For example, a country with scarce resources for HTA may start with a major, under-addressed burden of disease and examine prevention and treatment alternatives; or with a costly device that has powerful political support but which, if funded, is likely to divert public funding from higher value uses[47]. In the early days, it is also useful to seek out 'low-hanging fruit' to demonstrate the usefulness of HTA and to get some results quickly. In such cases, it is key to select are topics for which there is already credible evidence and the necessary analysis is mainly of the literature. Following this, a routine can be established to sustain further work.

[46] Sorenson et al. (2008). Ensuring Value for Money in Health Care: The role of health technology assessment in the European Union.
http://www.euro.who.int/__data/assets/pdf_file/0011/98291/E91271.pdf

[47] Glassman and Chalkidou (2012). Priority-Setting in Health Building institutions for smarter public spending.
https://www.cgdev.org/sites/default/files/1426240_file_priority_setting_global_health_FINAL_0.pdf

Country example: Topic selection in Thailand

The process begins with an opportunity for stakeholders of the UHC scheme to propose topics for assessment to a Working Group; this happens twice a year in January and July.

Stakeholders include policymakers, physicians, academics, civil groups, patient groups, the healthcare industry and the general public and each group can propose up to three topics at a time.

The Working Group (comprised of physicians, academics, civil groups, and patient groups), will select the assessment topics based on:

1) The number of people affected by the disease or problem;
2) The severity of the disease or problem;
3) The effectiveness of health technologies;
4) Differences in practice;
5) Economic impact on households;
6) Fairness, and social and ethical issues.

Source: HiTAP (2016)[48]

There are various mechanisms for selecting topics and setting priorities. In some countries, the topic agendas of review bodies are set by national authorities - usually the health minister or department of health[49]. Other countries, like Germany and the UK, have established processes for topics to be submitted by a wide range of stakeholders including manufacturers.

The range of assessment topics varies between countries, with some HTA agencies prioritising health technologies while others focusing on specific disease areas.

iv. Analysis

The main step after selecting a topic is the systematic evaluation of the relevant evidence, which is further broken down in two different stages:

- A literature review of the intervention's effectiveness

[48] HiTAP (2016). Priority-setting for Universal Health Coverage, HITAP & iDSI http://www.idsihealth.org/wp-content/uploads/2016/02/Priority-Setting-for-UHC.pdf

[49] Sorenson et al. (2008). Ensuring Value for Money in Health Care: The role of health technology assessment in the European Union. http://www.euro.who.int/__data/assets/pdf_file/0011/98291/E91271.pdf

- An economic evaluation summarising the relationship between costs and effects. This can include a budget impact assessment of the likely costs of implementing the intervention.

This step also involves reviewing and assessing the quality of the evidence submitted (usually the strengths, weaknesses, uncertainty and gaps of the evidence). The evidence can be submitted from the manufacturer or be collected as a result of a study conducted by the HTA unit or other organisations. In other words, you will seek to understand the validity of the evidence collected. *Validity* refers to how well a study measures what it is intended to measure[50].

Tools such as Grading of Recommendations, Assessment, Development and Evaluations (GRADE) or the Critical Appraisal Skills Program (CASP) can help ensure that the evidence collected is of an adequate quality and relevance. CASP specifically developed an approach to assess the risk of bias and study quality for a range of evidence, including systematic reviews, as well as individual studies (randomised-control trials, cohort studies etc.) User-friendly checklists have also been developed to support application of those tools.

At this stage, the process and methods guide should provide details on the type of evidence that is acceptable, methods for retrieving this evidence (*e.g.* Cochrane handbook[51]), methods for assessing the quality of the studies, and methods for determining who will be involved in this step (see building block 'making HTA inclusive').

At the end of the analysis, a report synthesising evidence is produced and used in the appraisal phase.

v. Appraisal

Appraisal is the structured consideration of the evidence, in order to inform recommendations such as whether to include or exclude a particular drug from public funding.

The appraisal process is often led by a committee that represents the views of a wide range of stakeholders. The committee appraising the evidence should be independent, so that the decisions made are impartial and serve the general public interest. Any conflict of interest (personal, financial or professional) should be declared (see the building block 'making HTA inclusive'). A review of HTA analysis

[50] Goodman et al. (2014). HTA 101 Introduction to Health Technology Assessment. https://www.nlm.nih.gov/nichsr/hta101/HTA_101_FINAL_7-23-14.pdf

[51] Higgins, J. and Green, S. (2011). Cochrane Handbook for Systematic Reviews of Interventions. The Cochrane Collaboration http://handbook-5-1.cochrane.org/

and appraisal in 9 countries found that appraisal committees were varied in size (between 9-39 members) and composition. In the Netherlands, the appraisal committee is composed of 9 members from the medical sector (experts in medical ethics, HTA, practitioners) and one representative of patients. This is a more restrictive representation compared to other bodies, such as NICE in the UK, where, for instance, representatives of pharmaceutical and medical device industries, academia and patient and carer organisations are represented in the Technology Appraisal Committee.[52]

A methods guide will describe the composition of the committee (*e.g.* which categories of stakeholder should be involved and how individuals will be selected) and contain a policy on statement on conflicts of interest. Information on the style of chairing and the mode of deliberation should also be detailed in the process guide.

A draft appraisal report for consideration is usually produced once the appraisal process is over.

vi. Decision-making

Recommendations are usually drafted by a technical secretariat before being submitted to the relevant decision-making bodies. Different decision-makers might set up parallel mechanisms: for example, health insurers may have parallel, independent decision-making processes on coverage. This is common in LMICs, where several coverage mechanisms (with separate funding streams) might co-exist in the same space. Who is involved at this stage depends on the characteristics of your HTA system, and of the objective of the HTA recommendation. It is worth noting that in the UK, the recommendations in go to the NICE Board, who is the decision-maker, and whose decisions are legally binding.

The recommendations should reflect local values and principles. Each will be based on the appraisal reports, but can include other 'non-technical' considerations. Individual and collective beliefs, values, needs and aspirations might influence the recommendation. Methods such as Multiple-criteria decision analysis can be used to account for multiple and sometimes conflicting concerns[53]. Whether and how much such considerations should affect the final recommendation are decisions that need to be made by local stakeholders and are factors that lie outside HTA.

[52] http://eprints.hta.lbg.ac.at/1036/1/DSD_72.pdf

[53] See Thokala, P., Devlin, N., Marsh, K., Baltussen, R., Boysen, M., Kalo, Z., ... & Ijzerman, M. (2016). Multiple criteria decision analysis for health care decision making—an introduction: report 1 of the ISPOR MCDA Emerging Good Practices Task Force. *Value in health*, *19*(1), 1-13.

Country example: Poland HTA Process

- Poland has an independent HTA agency known as the Agenja Oceny Technologii Medycznych i Taryfikacji (the Agency for Health Technology Assessment and Tariffs or AOTMiT). It has a wide scope of activity, including drug and non-drug economic evaluations and the assessment of all public health programs.
- Assessment of the evidence is done using an HTA methodological guideline (last updated in 2016).
- Appraisal of evidence is undertaken by the Transparency Council. The Council is an advisory committee of 20 members appointed by Minister of Health. It is described as 'advisory and independent'. The TC gives advice on a technology in the form of a 'position'.
- From the appraisal, a statement and recommendation is issued by the President of the AOTMiT, which contains: information on the financing; rationale for the recommendation; objective of the recommendation (*e.g.* its intended use); a brief note on the health problem; a description of the technology characteristics; a budget impact analysis; and recommendations for foreign HTA institutions.

Source: Lipska et al. (2017)[54]

Cost-Effectiveness Thresholds

In some countries, making the HTA recommendation might involve the use of a Cost-Effectiveness Threshold (CET), usually expressed in the form of X$[55] per QALY gained (or DALY averted). A CET is used to inform the decision to introduce or exclude a drug, intervention or medical technology from coverage. In essence, interventions across disease states can be ranked according to their cost-effectiveness, and if their Incremental Cost-Effectiveness Ratio (see the building

[54] Lipska, I. et al. (2017). A Decade of Health Technology Assessment in Poland. International Journal of Technology Assessment in Health Care, Vol. 33(3) https://www.cambridge.org/core/journals/international-journal-of-technology-assessment-in-health-care/article/decade-of-health-technology-assessment-in-poland/3274C7B577DAE6C88ABEF62AFECEA728

[55] Or local currency

block on *HTA evidence*) is below the set CET, they are considered 'good value for money'[56].

There is no international consensus over what a CET should represent, how it should be calculated, how equity concerns can be embedded, and what sort of evidence is needed for its calculation CETs[57]. CETs are sometimes based on aspirational values (*i.e.* set independently of affordability), budget constraints or GDP. The WHO-CHOICE models used a GDP based threshold (1-3x GDP), but this method has recently been discarded by technical staff working at the WHO. One of the concerns about this approach is that GDP-based CETs are set 'too high', and as a result, interventions that are not affordable are covered and will exhaust the available funding. On the other hand, setting a threshold too low would mean that cost-effective interventions are not covered, resulting in unnecessary loss of life and quality of life[58]. If you are involved in designing or modifying a CET, a useful rule of thumb for judging whether your CET is set at roughly the right level is to consult with colleagues about the current pressures on the system. If you judge that more technologies are being introduced for ever more subgroups of patients, then your CET is probably too high.

The general principle to keep in mind is known as 'opportunity costs'. This states that you ought not to recommend further technologies at the expense of others whenever their cost per QALY (or averted DALY) is higher – unless there are powerful reasons for wanting to sacrifice some health for some people.

The following list of studies might help you understand the challenges associated with the development and use of a CET:

Bertram, M. Y., Lauer, J. A., De Joncheere, K., Edejer, T., Hutubessy, R., Kieny, M. P., & Hill, S. R. (2016). Cost–effectiveness thresholds: pros and cons. Bulletin of the World Health Organization, 94(12), 925.

Bilinski, A., Neumann, P., Cohen, J., Thorat, T., McDaniel, K., & Salomon, J. A. (2017). When cost-effective interventions are unaffordable: Integrating cost-

[56] Culyer, A. J. (2016). Cost-effectiveness thresholds in health care: a bookshelf guide to their meaning and use. Health Economics, Policy and Law, 11(4), 415-432.

[57] Ochalek, J., Lomas, J. and Claxton, K. (2015).Cost per DALY averted thresholds for low- and middle-income countries: evidence from cross country data. Centre for Health Economics. https://www.york.ac.uk/media/che/documents/papers/researchpapers/CHERP122_cost_DALY_LMIC_threshold.pdf

[58] Culyer, A. J. (2016). Cost-effectiveness thresholds in health care: a bookshelf guide to their meaning and use. Health Economics, Policy and Law, 11(4), 415-432.

effectiveness and budget impact in priority setting for global health programs. PLoS medicine, 14(10), e1002397.

Culyer, A. J. (2016). Cost-effectiveness thresholds in health care: a bookshelf guide to their meaning and use. Health Economics, Policy and Law, 11(4), 415-432.

Ochalek, J., Claxton, K., Revill, P., Sculpher, M., & Rollinger, A. (2016). Supporting the development of an essential health package: principles and initial assessment for Malawi. CHE Research Paper, 136.

Revill, P., Walker, S., Madan, J., Ciaranello, A., Mwase, T., Gibb, D. M., ... & Sculpher, M. J. (2014). Using cost-effectiveness thresholds to determine value for money in low-and middle-income country health care systems: Are current international norms fit for purpose? (No. 098cherp).

Revill, P., Ochalek, J., Lomas, J., Nakamura, R., Woods, B., Rollinger, A., ... & Claxton, K. (2015). Cost effectiveness thresholds: guiding health care spending for population health improvement.

Country example: Ireland's Cost-effectiveness Thresholds

- Ireland uses an explicit CET that is broadly based on historical estimates and judgement.
- The cost-effectiveness of all new medicines is evaluated by the National Centre for Pharmacoeconomics in collaboration with the Health Service Executive, the public body responsible for delivering state-funded healthcare in Ireland.
- The Irish Pharmaceutical Healthcare Association and the Executive have an agreement that explicitly states that the **CET to be used in the HTA process is €45,000/QALY.**
- This value is also confirmed on the National Centre's website. However, its recommendations are not mandatory and can be overruled by the health minister or the Executive.

Source: Thokala, P. et al. (2018)[59]

[59] Thokala, P., Ochalek, J., Leech, A.A. et al. (2018). Cost-Effectiveness Thresholds: the Past, the Present and the Future. PharmacoEconomics. https://link.springer.com/article/10.1007%2Fs40273-017-0606-1

vii. Monitoring and Evaluation

Finally, depending on your resources and plans, it is good practice to monitor the impact of HTA decisions. Monitoring and Evaluation can help provide evidence on the value of HTA and inform policy-makers and other stakeholders on the value of HTA in decision-making. Monitoring and Evaluation can also inform changes in the medium term (2-3 years), for instance if new competing and better technologies have appeared in the meantime.

At the most simple level, monitoring seeks to address the following questions:

- How do the observed outcomes align with your initial hypotheses/predicted impacts?
- Do we observe changes in health technology utilisation after the decision?
- Which patients receive it? And in what setting?

Those questions will need to be addressed by 'real life' data and information. This information can be gained from administrative data, procurement data, registries and electronic medical records (depending on the detail available in your health information infrastructure). Surveys and clinical audits can also be used to investigate the impact of the HTA decision at the level of provision of care, but those require specific data collection and are more costly[60].

Very few countries engage thoroughly in monitoring the uptake of HTA decisions, although this activity can be included in the methods and process guide. In the UK, uptake of new medicines are monitored using the innovation scorecard, a tool that currently covers 104 medicines for acute coronary syndrome, diabetes, multiple sclerosis and stroke.

In a first instance, you should survey the availability of such data in your country and try to estimate your needs in terms of data collection.

Challenges to creating monitoring mechanisms

- Monitoring requires observational data that can be provided by any stakeholder, but must be critically appraised.
- When monitoring involves partnership between stakeholders (including patients and providers), a clear governance structure needs to be in place with documents agreeing the purpose, conduct, reporting,

[60] Frønsdal, K. et al. (2010). Health technology assessment to optimize health technology utilization: Using implementation initiatives and monitoring processes. International Journal of Technology Assessment in Health Care, Vol. 26(3)

intended actions from the monitoring activity and the sharing of risks.

- Barriers can include lack of routine data collection systems and health information systems, a lack of patient participation, competing demands on clinicians, alteration of patient pathways, quality, and costs of monitoring activities.

- You will need to consider who will pay for good-quality monitoring studies as health organisations usually have limited budgets for this type of study.

Source: Frønsdal, K. et al. (2010)[61]

More comprehensive impact evaluations can also be conducted, often by independent academic institutions. Guthrie et al. (2015) worked on a review of the impact of the studies from the National Institute for Health Research (NIHR) Health Technology Assessment (HTA) program in the United-Kingdom[62]. Impacts in the following area were recorded: National Health Service and patients, UK policy, academic and research system, industry and the economic, and international. The review shows impact on patient outcomes, mainly through the implementation of guidelines.

[61] Frønsdal, K. et al. (2010). Health technology assessment to optimize health technology utilization: Using implementation initiatives and monitoring processes. International Journal of Technology Assessment in Health Care, Vol. 26(3) https://www.cambridge.org/core/services/aop-cambridge-core/content/view/80E6482BE29E809A2BB3E4FDCCF1A31E/S0266462310000309a.pdf/health_technology_assessment_to_optimize_health_technology_utilization_using_implementation_initiatives_and_monitoring_processes.pdf

[62] Guthrie, S., Bienkowska-Gibbs, T., Manville, C., Pollitt, A., Kirtley, A., & Wooding, S. (2015). The impact of the National Institute for Health Research Health Technology Assessment program, 2003–13: a multimethod evaluation.

Building Block 4
Building capacity to support HTA

i. Introduction

This building block focuses on:

- The types of capacity and skills that are essential in HTA
- How to plan to build the capacity that is needed
- Getting the right mix of expert individuals working on HTA
- How to find help for training, funding and capacity building at the regional and global level.

ii. Building capacity

Capacity building is not only about providing people with the technical skills for conducting economic evaluation. On HTA specifically, you should be thinking about the following types of capacity:

- People and organisations that ***generate*** HTA evidence (i.e. supply side; usually researchers)
- People that ***use*** HTA evidence to make or inform high-level decisions (i.e. demand side; e.g. policymakers; e.g. technical officers working for them to commission/interpret/appraise evidence).
- Professionals, who need to understand the reasons why resources are available for some purposes but not others, and whose own professional practice should be informed by the best clinical evidence
- Knowledge brokers, who are a special category of actors facilitating the transfer of knowledge and engagement between the producers of HTA evidence and the end-users (*e.g.* the media who facilitate understanding of priority setting agencies such as HITAP by the public and health professionals, and educationally influential members of the medical and managerial professions, who can lead by example).

All capacity-building activities ultimately involve empowering individuals[63]. To some extent, building technical capacity is straightforward; it involves the development of essential skills and knowledge through the training of individual researchers[64]. However, infrastructure and resources, such as data availability and management, expertise in related fields, a set of procedural guidelines will be required to ensure

[63] Li, R. et al. (2017). Evidence-informed capacity building for setting health priorities in low- and middle-income countries: A framework and recommendations for further research. https://www.ncbi.nlm.nih.gov/pubmed/28721199

[64] Tantivess, S. et al. (2017). Health Technology Assessment capacity development in low and middle-income countries: Experiences from the international units of HITAP and NICE.

quality of the capacity building process[65]. Moreover, capacity building is not only about training individuals with the right skills (*i.e.* technical capacity); how this capacity will work within institutions and how it is connected to other parts of the healthcare system (including decision-making) is as important.

The United Nations Development Program *Individual, Node, Network and Enabling Environment* (INNE) Model is one way in which thinking about capacity can be organised[66]. This model emphasizes the need to build local relevant technical capacity for specific skills (as discussed below), as well as building the nodes, networks and enabling environment to ensure that those skills are best put to use. The table below outlines the distinct characteristics and approaches to capacity building for those four elements:

Individual, Node, Network and Enabling Environment (INNE) Model

Enabling Environment - Requires institutionalising priority-setting agencies at local, national and regional levels, ensuring that appropriate structures, processes and incentives are in place.

Stakeholders: Healthcare system, media, civil society, industry, judicial system, political environment, economic environment, global health and development community

Network – Global funders and development partners help shape priority-setting either directly through their purchasing or provision of specific interventions, delivery platforms, research investment and technical assistance; or indirectly through their role as setters of global standards and norms, for example with the iDSI Reference Case.

Stakeholders: funders and development partners like the WHO and World Bank, global and regional networks and associations for priority-setting including the iDSI, academic networks

Node and Individual – There needs to be political commitment among policy leaders to move towards UHC, using HTA to help achieve that aim. There also need to be continuing engagement of patients and the public, whose understanding of the process and decisions of HTA are important for the

[65] Tantivess, S. et al. (2017). Health Technology Assessment capacity development in low and middle-income countries: Experiences from the international units of HITAP and NICE.

[66] Li, R. et al. (2017). Evidence-informed capacity building for setting health priorities in low- and middle-income countries: A framework and recommendations for further research.

success of the strategy.

Stakeholders: consumers of evidence such as government, healthcare professionals, health service managers, payers/insurers, courts and the judiciary, patients and the public. Knowledge brokers such as priority-setting institutions, media and journals. Producers of evidence such as academia institutions, researchers and research managers. Influencers such as industry organisations, patient organisations and NGOs.

Source: Li et al. (2017)[67]

There is a wide range of stakeholder groups to be targeted at country, regional and global levels for capacity building. Some of these groups operate across INNE levels. For example, NICE and HITAP can be considered as 'Nodes' that have significant functions across the 'Network' of academic, clinical and policy institutions; they can be thought of as knowledge brokers whose core function is to support the translation of evidence into policy in priority-setting, through linking researchers and decision-makers.

iii. Human resources

Human resources are one of the most important aspects of capacity-building. Due to the multidisciplinary nature of HTA, you will need to ensure your HTA organisation has the right mix of expert skills.

Developing skills in the following fields is nearly always needed[68]:

- Clinical epidemiology
- Evidence-based medicine
- Clinical trials
- Health services research
- Literature review and meta-analysis
- Cost-effectiveness analysis and other economic evaluation methods
- Consensus conferences
- Technology management
- Decision-making
- Policy making and analysis
- Priority-setting
- Analysis of legal, social and ethical aspects

[67] Li, R. et al. (2017). Evidence-informed capacity building for setting health priorities in low- and middle-income countries: A framework and recommendations for further research.

[68] EUnetHTA Work Package 8 (2008). EUnetHTA Handbook on Health Technology Assessment Capacity Building. http://www.inahta.org/wp-content/themes/inahta/img/eunethta_wp8_hb_hta_capacity_building1.pdf

Capacity building can be delivered through interactive short workshops and training sessions. Some of its non-clinical elements can be introduced in undergraduate and graduate teaching for the health professions.

These skills will be carried out by a range of different people. An international survey on HTA with results from Europe (73.1%), North America (19.5%), South America (2.4%), Asia (2.4%) and Australasia (2.4%) found that the majority of HTA organisations had "Clinical specialists" (71.1%) in their organisations, followed by "Economists" (68.4%) and "Information specialists" in third place (65.8%)[69]. Information specialists are a significant part of the HTA team, as they can assist the entire HTA process, especially when planning searches on various databases or systematic literature reviews.

HTA organisations also employed dentists, pharmacists, physiotherapists, lawyers, chemists, nutritionists and engineers (mainly biomedical engineers) [70]. In addition, support from administrative staff (*e.g.* human resources and communications managers) will be needed.

The amount of human resources you will need is dependent on the legal mandate and budget given to the HTA program and the size of planned HTA activities. The Center for Drug Evaluation/Health Technology Assessment, the Malaysian Health Technology Assessment Section and HITAP respectively have 25, 31 and 55 full time employees (research and admin)[71].

iv. Training and recruitment

Currently, there are relatively few experts working in HTA compared to the number of new and existing technologies to be evaluated[72]. You can conduct a capacity gap analysis to understand the lack of current human capacity, the gaps in training and recruitment that exist, to define a strategy for filling the gaps, and to assess the investments and resources necessary to fill this gap (see building block 'setting the

[69] EUnetHTA Work Package 8 (2008). EUnetHTA Handbook on Health Technology Assessment Capacity Building. http://www.inahta.org/wp-content/themes/inahta/img/eunethta_wp8_hb_hta_capacity_building1.pdf

[70] Ibid

[71] HITAP (2016). Policy Brief and Working Paper: Conducive Factors to the Development of Health Technology Assessment in Asia. http://www.idsihealth.org/wp-content/uploads/2016/02/CONDUCIVE-FACTORS-TO-THE-DEVELOPMENT_resize.pdf

[72] EUnetHTA Work Package 8 (2008). EUnetHTA Handbook on Health Technology Assessment Capacity Building. http://www.inahta.org/wp-content/themes/inahta/img/eunethta_wp8_hb_hta_capacity_building1.pdf

scene'). A capacity gap analysis could also help identify other potential constraints (*e.g.* on hiring) that can be best addressed from the beginning[73].

The 2015 WHO survey of HTA found that fewer than half the participating countries had an HTA academic or training program. However, half stated they had staff training sessions or external courses, seminars or workshops[74]. It is best to link up with universities in your country to identify the types of training and curriculum they offer in the specialties listed above, as well as identify number of undergraduate and graduate students in training.

You do not need to rely solely on individuals trained specifically in HTA. Short training courses in HTA methods for health economists and clinical epidemiologists are early candidates for 'low hanging fruit'. Specialised online training (for professionals already working on health policy but with no experience of HTA) are available if short courses are not available in your country. There are several Masters degree programmes specialised on HTA in the world. It will not normally be necessary to start training HTA experts at the doctoral level until the HTA program is fully established.

If no training is available in your country and initially it is not possible to introduce any, it might be possible to send staff to attend HTA courses in other countries. The table below shows a list of regional/global training programs.

[73] Li, R. et al. (2017). Evidence-informed capacity building for setting health priorities in low- and middle-income countries: A framework and recommendations for further research.

[74] WHO (2015). 2015 Global Survey on Health Technology Assessment by National Authorities http://www.who.int/health-technology-assessment/MD_HTA_oct2015_final_web2.pdf

Examples of regional and Global Training Programs specialised in HTA

Short courses

- ISPOR HTA short training (4 days) – 2 or 3 trainings are organised each year ($600 for students)
- Health Technology Assessment: choosing which treatments get funded by the University of Sheffield (4 weeks, 3 hours per week, free – upgrade possible)
- Adelaide HTA short course – online and on-campus short covering HTA methods and how to link HTA to policy (online + 4 day on-campus training, $969-$1,800 AUD for members of LMICs).

Degrees

- Master Of Science Program In Health Technology Assessment by Mahidol University with funding available from iDSI.
- Masters of Science in Economic Evaluation For Health Technology Assessment by the University of York (2 years)
- Post-graduate taught HTA course at the University of Glasgow – several options (MSc/PgDip/PgCert) covering different aspects of HTA including methods, health economics, decision-analytic modelling, global health and HTA (online distance learning + optional training on campus).

NB: those courses are known to our staff members. However, this is not an exhaustive list and in no way constitutes a recommendation list from iDSI

An alternative to attendance of formal training is to find support from regional and international networks to conduct case study projects for economic evaluation. Case study projects will help individuals gain experience with the production or use of HTA evidence. For instance, iDSI works closely with academic groups and technical staff at the Ministries of Health or other health agencies on completing 'proof of concept projects'.

Finding support

You can identify regional support for capacity building by identifying big players who can help with funding, HTA advice or short training courses. Some HTA organisations, such as HITAP and the iDSI have a specific international branch for helping develop HTA internationally. iDSI is conducting training programs focused on specific skills or type of methods; and has run such training in many countries, including India, Vietnam, Indonesia or South Africa.

You can connect with regional and global initiatives, or even other countries for peer support and learning. For example, South Africa and China both have organisations that can support neighbouring countries in evidence-based decision making; Priority Cost Effective Lessons for System Strengthening (PRICELESSA) in SA and the China National Health and Development Research Center have become focal points for academic institutions and government-aligned think tanks[75].

iDSI

iDSI is a partnership between government institutes, universities and think tanks. The initiative was launched in November 2013 by the Global Health and Development Group at Imperial College London, Health Intervention and Technology Assessment Program (HITAP), the Center for Global Development (CGD), Priority Cost Effective Lessons for Systems Strengthening South Africa (PRICELESS SA), and the China National Development and Reform Commission (CHNDRC).

iDSI offers a unique combination of skills and expertise on priority setting in health, ranging from the production of cutting edge research and cost-effectiveness tools to policy support and technical assistance. iDSI relies on national institutions and staff, and strongly invests in building local capacity to conduct priority setting exercises (for instance, cost effectiveness analyses) and develop appropriate policies; creating building blocks in countries for future priority setting functions. It currently works in a number of countries in the Asia Pacific region, as well as in Sub-Saharan Africa. For instance, through Imperial College London, iDSI has worked with the Ministry of Health of Ghana to find cost-effective ways to manage hypertension. Through HITAP, iDSI has also worked with the Government of Bhutan on an economic evaluation of Pneumococcal vaccine or looking at the social costs of tobacco and alcohol in Sri Lanka.

More information on iDSI's work portfolio can be found here.

[75] Li, R. et al. (2017). Evidence-informed capacity building for setting health priorities in low- and middle-income countries: A framework and recommendations for further research.

Building Block 5
Ensuring political commitment for HTA

i. Introduction

This building block will:

- Provide information on why you need political support
- Suggest how to get this support
- Give ideas about how to promote HTA through conferences and awareness-raising workshops
- Help you to formalise support through legislation
- Understand the long-term financial commitments to support HTA
- Discuss the timeframe over which HTA processes are established

ii. Who should support HTA?

There are several political stakeholders who should support HTA, including policy-makers, high-level bureaucrats/administrators, senior clinicians and external partners. Political will (in its broadest sense), leadership and legislation are all needed to drive the development of HTA[76].

HTA can contribute to a wide range of decisions, some of them outside the health sector. This means that formalised support from high-level civil servants and administrators can help mitigate opposition, even from within the MoH or other arms of the government (e.g. Ministry of Finance).

If higher levels of bureaucracy are committed to using HTA, a top-down approach can be used, whereby high-level bureaucrats implement adequate provisions (*e.g.* political initiatives and resources) to include HTA. Formalised support could take the form of a policy document stating support for HTA. A bottom-up approach is also possible, by preparing technical staff in Ministries of Health to establish HTA, first focusing on a well-defined decision space and then expanding to new areas of decision-making. The demand for HTA could also arise from clinicians and other medical professionals as their clinical curriculum might help raise awareness on evidence-based medicine and HTA.

[76] HITAP (2016). Policy Brief and Working Paper: Conducive Factors to the Development of Health Technology Assessment in Asia. http://www.idsihealth.org/wp-content/uploads/2016/02/CONDUCIVE-FACTORS-TO-THE-DEVELOPMENT_resize.pdf

External support accounts for a high level of healthcare expenditure in many LMICs[77]. Partners providing this support can exert a great deal of influence on spending decisions for their own programs; and can also support technical staff in ministries in setting up HTA. In addition, there might be initiatives to support HTA at the global level. In 2014, a resolution at the World Health Organisation (WHO) urged member states to develop capacities to support HTA[78]. The resolution acknowledges that HTA can inform policies to reduce waste from inappropriate investments in health technologies. Several analytical documents have been produced as a result of this resolution (*e.g.* global mapping survey)[79].

iii. Raising awareness

Initially, it is important to raise awareness of the benefits and value of the use of HTA, compared to alternative decision-making frames. Events and meetings with key technical staff or high level policy-makers within the Ministry of Health can be organised to raise the profile of HTA. International conferences and workshops such as those organised by HTAsiaLink, HTAi or the Priorities Conference are examples of such events. Participation to such events can be costly (due to high registration fees), although some conferences waive fees for young researchers from LMICs (*e.g.* HTAsiaLink).

The timing of these events and meetings is important. The situational analysis conducted to 'set the scene' (see the building block 'setting the scene') will help you identify windows of opportunities (*e.g.* development of a new health benefits package, large budget deficits).

Using HTA in a pilot or 'proof of concept' decision can also help raise awareness. A flagship project could demonstrate the feasibility of producing locally relevant evidence (with local data), and the value of using HTA within a small and self-contained decision-space.

[77] Hernandez-Villafuerte, K. et al. (). International Decision Support Initiative: Mapping of Priority-Setting in Health for 17 Low and Middle Countries Across Asia, Latin America and Africa.

[78] Resolution WHA60.29

[79] World Health Organization. (2015). Global Survey on Health Technology Assessment by National Authorities. Main findings.

iv. Legislative framework

Once the HTA process is set up and operational, establishing a legislative framework can help ensure that HTA decisions are taken into account by relevant authorities. Although it is not essential to legislate for HTA - Thailand has an effective HTA process without legislation – it can help sustain the long-term and successful use of HTA[80]. Novaes and Soárez (2016) argue that the extent to which an HTA organization will be able to cause change within healthcare systems depends on the policy and regulatory characteristics within which it operates – if regulatory or professional bodies do not use the products from the agencies or do not accept/implement the conclusions of HTA reports, the overall impact of HTA will be limited[81].

Legislation help strengthen legitimacy of HTA principles such as participation, transparency and the systematic application of the HTA process[82]. Legislation can also cover several aspects of the HTA process, including the broad objectives, scope and principles for conducting HTA.

[80] HITAP (2016). Policy Brief and Working Paper: Conducive Factors to the Development of Health Technology Assessment in Asia. http://www.idsihealth.org/wp-content/uploads/2016/02/CONDUCIVE-FACTORS-TO-THE-DEVELOPMENT_resize.pdf

[81] Novaes and Soárez (2016). Health technology assessment (HTA) organizations: dimensions of the institutional and political framework. http://www.scielo.br/pdf/csp/v32s2/1678-4464-csp-32-s2-e0002231pdf

[82] HITAP (2016). Policy Brief and Working Paper: Conducive Factors to the Development of Health Technology Assessment in Asia. http://www.idsihealth.org/wp-content/uploads/2016/02/CONDUCIVE-FACTORS-TO-THE-DEVELOPMENT_resize.pdf

Lessons from the legislative process to support HTA in Lithuania

To ensure commitment to HTA, decisions can be supported by regulatory or legislative provisions. The first stage in establishing a political framework to legislate for HTA includes one or more of the following conditions:

- The Ministry of Health expresses a political wish to introduce HTA; or
- Regulations for mandatory HTA have already been passed ahead of major healthcare investment decisions but HTA has not yet begun; or
- Initiatives have already set up HTA structures, like an HTA committee, for the introduction of HTA.

Steps necessary to reach the objective:

- Minister of health approves the HTA strategy as a priority;
- A list of upcoming choices by decision-makers on intervention programs or technologies is collected as basis for prioritisation. Major stakeholders are involved in the topic list, and in decisions on the HTA work program;
- This prioritisation tool is used for deciding an annual HTA work program: criteria such as technologies with high cost/ high volume/ high uncertainty or low-cost interventions with the potential for the improvement of health of many citizens are applied;
- Rules of governance to secure independence and transparency of HTA are defined and agreed.

Source: Wild et al. (2017)[83]

Legislation can be useful by providing a clear mandate to HTA institutions and in some cases, sufficient authority to enforce decisions. For example, Taiwan, Indonesia and South Korea have used legislation to appoint their HTA body and define the scope of the work. As a result, in those countries, HTA is recognised in the decision-making process, supported by high-level policy and directly linked with public health resource allocation. This, in turn, promotes the need for more and better HTA[84]. In 2013, a revision to the National Health Insurance Act Implementing Rules and regulations in the Philippines stipulated that only services deemed cost-effective through HTA would be covered[85]. In addition, in 2017, the lower house

[83] Wild et al. (2017). Guidance for the development of a National HTA-strategy. Health Policy and Technology Vol 6(3). https://www.sciencedirect.com/science/article/pii/S2211883717300461

[84] HITAP (2016). Policy Brief and Working Paper: Conducive Factors to the Development of Health Technology Assessment in Asia. http://www.idsihealth.org/wp-content/uploads/2016/02/CONDUCIVE-FACTORS-TO-THE-DEVELOPMENT_resize.pdf

[85] PhilHealth (2013). Implementing Rules and Regulations of Republic Act 7875 as Amended Otherwise Known as the National Health Insurance Act of 2013. https://www.philhealth.gov.ph/about_us/irr_nhia2013.pdf

approved a bill granting the *right to health* to its citizens, which emphasizes the value of HTA and has led to the creation of the Health Technology Assessment Council[86]. In the UK, legislation has been adopted with regards to decisions taken by NICE: once a health technology has been approved, the NHS must make it available within three months, unless specified.

On the other hand, it is worth noting that some aspects of the legislative and regulatory environment can hinder the implementation of HTA decisions. In some countries in Latin America and in South Africa, HTA decisions are often challenged with the right to health by patients requiring access to health technologies that have been ruled out in the HTA process[87]. Political commitment is essential to support HTA decisions, in courts or in the media.

v. Committing resources

The long-term and sustainable commitment of resources is important for the institutionalisation of HTA. This includes financial and human resources (the development of human resources for HTA is discussed further in the building block 'Building capacity to support HTA').

A 2015 WHO survey on HTA found 77 countries cited lack of funding for the HTA process as a major barrier to HTA, along with a lack of information (59 countries) and a lack of knowledge of HTA methods (58 countries)[88].

A stable long-term commitment to funding HTA activities, and ensuring mechanisms against political interference, are essential for the continuing development and implementation of HTA[89]. In some countries, applications of health technology are subject to a fee (either review or registration fee). However, we advise that HTA systems do not rely too heavily on such fees to sustain their activities; and that separate funding streams are made available from public sources in order to maintain the independence and quality of the HTA process. This is done by The National Evidence-based Healthcare Collaborating Agency in South Korea, the Center for Drug Evaluation/ Health Technology Assessment, and the Malaysian

[86] https://www.idsihealth.org/blog/towards-hta-in-the-philippines-idsi-welcomes-passage-of-new-congress-uhc-bill/

[87] Dittrich, R., Cubillos, L., Gostin, L., Chalkidou, K., & Li, R. (2016). The international right to health: what does it mean in legal practice and how can it affect priority setting for universal health coverage?. *Health Systems & Reform*, *2*(1), 23-31.

[88] WHO (2015). 2015 Global Survey on Health Technology Assessment by National Authorities http://www.who.int/health-technology-assessment/MD_HTA_oct2015_final_web2.pdf

[89] Wild et al. (2017). Guidance for the development of a National HTA-strategy. Health Policy and Technology Vol 6(3). https://www.sciencedirect.com/science/article/pii/S2211883717300461

Health Technology Assessment Section, all of which receive annual budgets to support their research activities from the government.[90]

In South Africa, budget to support HTA work was inscribed in the National Budget in 2018 and in the Mid-Term Expenditure Framework for the three financial years spanning from 2018-2021.

Process for funding HTA

Objective: ***To establish structures for timely, efficient and good-quality provision of HTA through financing and organisation***

Strategic activities necessary to reach the objective:

- An earmarked budget for HTA activities is ensured and funding for existing trained HTA staff (e.g. in international projects) is safeguarded;
- A task force or HTA coordinator is appointed to enforce and monitor HTA activities. These tasks are clearly defined (e.g. criteria for prioritisation, governance principles securing independence, co-ordination of methodology standards, set-up of internet platform for public access to HTA reports, policies to include stakeholders, conflict of interest management etc.)
- For promoting the concept of HTA and for increasing visibility of HTA, pilot projects are conducted.
- Eventually external funding (for example research grants) is applied for, to foster independence.

Source: Wild et al. (2017)[91]

We provide examples of costing of HTA institutions below. However, it is not possible to give indications as to what the resource requirement would be in your country. The level of resources depends on a wide range of considerations, including the scope of the activities. However, from the examples below, the cost estimates of HTA processes show that they are 'marginal' compared to the overall amount of funding in the healthcare sector.

It is worth noting that Guthrie et al. (2015) have shown that in the case of NICE and the National Health Research Institute, those costs are largely offset by gains in the health system from implementation of HTA decisions.

[90] HITAP (2016). Policy Brief and Working Paper: Conducive Factors to the Development of Health Technology Assessment in Asia. http://www.idsihealth.org/wp-content/uploads/2016/02/CONDUCIVE-FACTORS-TO-THE-DEVELOPMENT_resize.pdf

[91] Wild et al. (2017). Guidance for the development of a National HTA-strategy. Health Policy and Technology Vol 6(3). https://www.sciencedirect.com/science/article/pii/S2211883717300461

Looking at a sample of 10 hta studies, they find that if 12% of the potential net benefit were realised in one year, it would then cover the costs of the entire HTA programme from 1993 to 2012[92].

[92] Guthrie, S., Bienkowska-Gibbs, T., Manville, C., Pollitt, A., Kirtley, A., & Wooding, S. (2015). The impact of the National Institute for Health Research Health Technology Assessment program, 2003–13: a multimethod evaluation. *Health Technology Assessment.* 19(67):1-291.

Review of funding sources and budgets of HTA agencies across several countries

Country	Entity	Funding sources	Budget (as % of total health budget)
Germany	IQWIG	Fees for each ambulatory visit and hospitalizations	US$19 million (0.01 percent of SHI expenditure)
Australia	PBAC	Mainly application fees to be paid when requesting an evaluation, complemented by DoHA program funding	US$15 million (0.01% of total health budget)
	MSAC	DoHA program funding, cost recovery	Not defined[a]
	PLAC	Application fee US$600	
Netherlands	CVZ/CFH	Public, mainly from social insurance premiums	Not defined[a]
United Kingdom	NICE	Public resources of the general budget	Approximately US$90 million (0.06% of the NHS annual budget)
Brazil	ANVISA	Public resources of the general budget	
	CITEC and DECIT	Public resources of the general budget	No stable budget allocation (less than 1% of SUS budget)
Chile	n.a.	Public resources of the general budget	Not defined
Uruguay	FNR	Public resources of the general budget	Not defined as immersed in general budget of FNR, which also finances high-cost technologies
Colombia	CRES	Public resources of the general budget	Not defined as immersed in general budget of CRES, which carries out many other tasks besides evaluating and deciding on coverage of the benefits package
Poland[b]	AHTAPol	70% of support from the general budget. The rest comes from other sources, including statutory fees paid by pharmaceutical companies, which submit reimbursement applications, fees for training, grants, and interest	The 2011 AHTAPol's budget is about PLN 10,500,000 (0.018% of the completely separate NHF budget)
Thailand[b]	HITAP	HITAP receives its main funding support from four public institutions: the Thai Health Promotion Foundation; the Health Systems Research Institute; the Health Insurance System Research Office; and the Bureau of Policy and Strategy, Ministry of Public Health	About 30 million baht (about US$1 million) have been allocated to HITAP annually for all its health technology assessment activities, including capacity building and health technology assessment dissemination

AHTAPol is Agency for Health Technology Assessment in Poland; AVISA is National Health Surveillance Agency; CFH is Commission for Pharmaceutical Aid; CITEC is Commission on Health Technology Incorporation; CRES is La Comisión de Regulación en Salud; CVZ is Insurance Board; DECIT is Department of Science and Technology; FNR is Fondo Nacional de Recursos; HITAP is Health Intervention and Technology Assessment Program; IQWIG is Institute for Quality and Efficiency in Health Care; MSAC is Medical Services Advisory Committee; n.a. is not applicable; NHF is National Health Fund; NHS is National Health Service; NICE is National Institute for Health and Clinical Excellence; PBAC is Pharmaceutical Benefits Advisory Committee; PLAC is Prostheses List Advisory Committee.

a. Endoscopic thoracic sympathectomy is not these entities' only activity. It is thus not possible to establish the percentage of the MSAC assessment with respect to total expenditure on health.

b. Poland and Thailand are included in the context of the Center for Global Development Working Group using the templates developed by the Inter-American Development Bank, information provided by Tomasz Bochenek (Poland) and Yot Teerawattananon (Thailand).

Note: Gray rows indicate countries reviewed by Giedion, Munoz, and Avila (2012). Poland and Thailand added by Working Group.

Source: AHTAPol, AVISA, CFH, CITEC, CRES, CVZ, DECIT, FNR, HITAP, IQWIG, MSAC, NHF, NHS, NICE, PBAC, PLAC.

Source: Glassman, A., & Chalkidou, K. (2012)[93]

[93] Glassman, A., & Chalkidou, K. (2012). Priority-setting in health: building institutions for smarter public spending. Washington, DC: Center for Global Development.

vi. Be patient

Sustainable HTA processes for priority setting are typically not built overnight. However, there is no 'typical' or reference timeframe for HTA institutionalisation. While some countries have managed to set up institutions quickly, links into implementation, decision- and policy-making are more challenging. In many cases, several attempts are necessary. For instance, HITAP was only established after three attempts: the Technological Assessment and Social Security in Thailand (or TASSIT), the Institute of Medical Research and Technology Assessment (IMRTA) and the Setting Priorities using Information on Cost-Effectiveness (SPICE). Those attempts were unsuccessful for different reasons; including lack of capacity and expertise, limited support and long-time commitment, as well as poor integration to decision-making and implementation[94].

In China, the Vice Minister of Health advocated for the use of HTA in policy making in a speech in 1999. This was the first public political commitment in the country and the first important milestone in the HTA institutionalisation process[95]. However, an HTA division was set up at the China National Health and Development Research Center only years later in 2008, and the scope of its work was limited in its initial mandate. In the last decade, the number of htas have significantly increased. However, integration of HTA into policy-making is relatively recent. In 2016, the National Health and Family Planning Commission issued policies to strengthen the use of HTA for policy-making. HTA evidence is now also used to decide on inclusion of drugs into the national drug reimbursement policy in the national health insurance schemes. All in all, it took 20 years between the Vice Minister of Health's speech and a more coherent and systematic inclusion of HTA in decision-making processes. A timeline of main milestones can be found on **iDSI's evolution of HTA in China timeline**. On the other hand, in 2011, the National Committee for Health Technology Incorporation, or CONITEC, was set up in Brazil through a decree. The link between CONITEC's work and policy-making was relatively well defined and CONITEC's decisions were quickly implemented under the National Health System (SUS). A review showed that between 2011 and 2014, more than 100 technologies were incorporated in the SUS based on CONITEC recommendations.

Contextual elements (out of the scope of the institutionalisation process) can also have significant consequences on the success or timeframe; *e.g.*, political

[94] Culyer, A., Podhisita, C., & Santatiwongchai, B. (2017). A star in the east: History of HITAP. *F1000Research*, 6.

[95] Chen, Y., He, Y., Chi, X., Wei, Y., & Shi, L. (2018). Development of health technology assessment in China: New challenges. *Bioscience trends,* 12(2), 102-108.

commitment, capacity for investment, degree of maturity of the decision-making processes, structure of the national health insurance or system[96].

[96] Kuchenbecker, R., & Polanczyk, C. A. (2012). Institutionalizing health technology assessment in Brazil: challenges ahead. *Value in health regional issues*, 1(2), 257-261.

Building Block 6
Making HTA an inclusive process

i. Introduction

This block covers:

- The importance of inclusivity in your HTA procedures
- Identifying and including relevant stakeholders, such as patient groups and industry
- The need for and role of public consultation or participation
- Communications internally and externally to stakeholders of all kinds
- The design and establishment of an appeal process.

HTA is more than a technical exercise; it should be a deliberative process involving relevant stakeholders. This poses important questions: who should participate? Do all participants get equal representation and influence in the process? At which stage should they participate? And how do they participate? You should think through these questions carefully when defining a mode of engagement with other stakeholders.

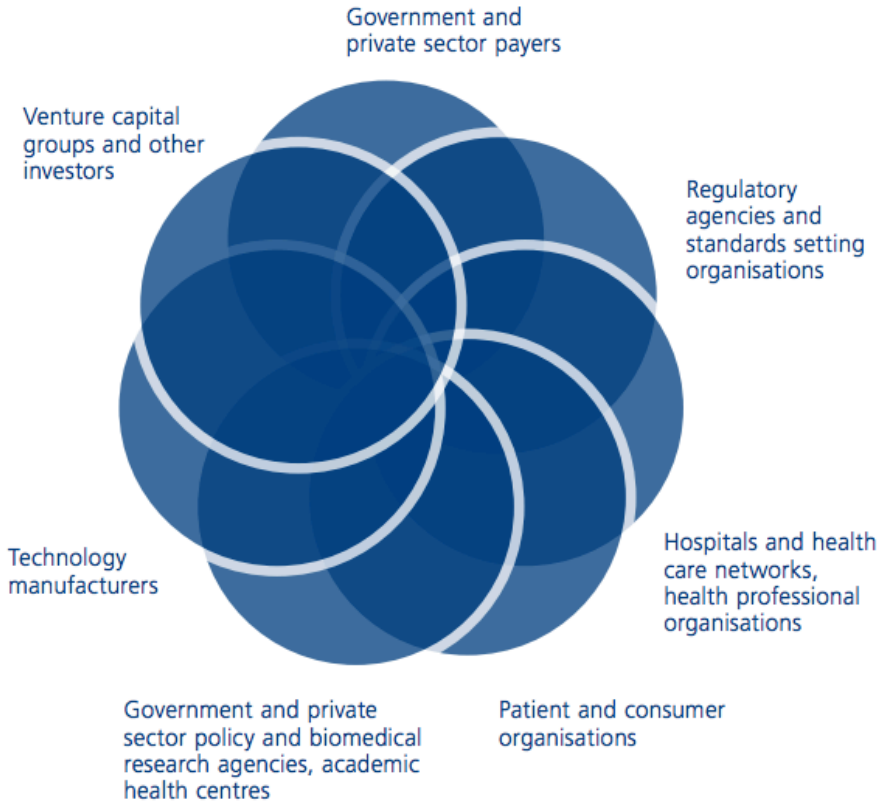
The answers to these questions will often be specific to your country, the scope of your HTA process, and the challenges you perceive. However, failure to consider those points can be detrimental to the quality of the HTA process and undermine its legitimacy.

ii. Identifying relevant stakeholders

In the building block ‘setting the scene’, we discussed how it is necessary to identify the relevant stakeholders to include in the HTA process through a stakeholder analysis. It is also possible to identify stakeholders through an open registration. For instance, in India, the Medical Technology Assessment Board has an open online registration system on which stakeholders can register their interest.

Stakeholders might represent one or several interests/parties (see illustration from Singapore), and have immediate goals that might differ from long-term ones.

HTA stakeholder groups *(representation for Singapore)*



Source: NIHA (2013)[97]

Patient/interest groups

HTA can run into challenging or conflicting social and ethical values to be weighed alongside technical information and evidence. HTA decisions also frequently apply across a wide population[98]. The general public therefore needs to understand the implications of policy and the decision-making process: how specific decisions are made and whether they are an efficient and ethical use of public money[99].

Taking into account the perspective of patients and care-givers can provide a unique insight into the experience of a particular disease or condition, such as explaining the advantages and disadvantages of a therapy that may not be presented in published

[97] NIHA (2013). Engaging Stakeholders in Health Technology Assessment for Health Policy. http://www.gai.nus.edu.sg/niha/wp-content/uploads/2013/07/NIHA_Forum_2013_White_Paper.pdf

[98] Whitty (2013). An International Survey of the Public Engagement Practices of Health Technology Assessment Organizations. https://www.sciencedirect.com/science/article/pii/S1098301512041411

[99] Li et al. (2017). Evidence-informed capacity building for setting health priorities in low- and middle-income countries: A framework and recommendations for further research.

literature[100]. In Taiwan, a process for patient and caregiver testimony is put in place for each technology appraisal (albeit limited to 300 characters), which is then considered by the appraisal committee[101].

Moreover, involvement of patient groups could help strengthen the trust and legitimacy of the process. Some studies have highlighted other positive impacts of patient engagement, such as improving the responsiveness of decisions to patient needs, patient education and health literacy, and managing patient expectations[102]. However, this should be carefully managed. Creating a formal mechanism for appointing representatives of patient groups can help ensuring the representation of different patient subgroups.

CONITEC's public consultation process

Patient and public consultations play an important role at the Brazilian HTA body, CONITEC. Each technology appraisal's initial conclusions are submitted to a 20-day public consultation period over which individuals (from all groups) are invited to comment on the decisions using two forms:

- Technical and scientific (for professionals, industry and citizens)
- Opinion or experience (for patients, caregivers and professionals)

Upcoming public consultations are now announced through social networks, website and e-mail list. Lay and summary versions of the initial recommendations are provided for the purpose of enhancing the public's knowledge on the process and recommendation.

Since 2012, 220 public consultations have taken place, over which more than 30 thousand contributions were received from stakeholders across the board: ranging from patients, caregivers to health professionals. In 2015 alone, 13,619 feedback was received. A review of the process showed that the contributions from the public have influenced/swayed the decision[103].

In addition, stakeholders are asked to put forward information on their

[100] Haslam (2016). The NICE Citizens Council and the role of social value judgements. http://www.idsihealth.org/wp-content/uploads/2016/05/Citizens-Council-and-Board.pdf

[101] Facey, K. M., Hansen, H. P., & Single, A. N. (Eds.). (2017). Patient involvement in health technology assessment. Springer: Singapore.

[102] Souliotis, K. (2016). Public and patient involvement in health policy: a continuously growing field. Health Expectations, 19(6), 1171-1172.

[103] http://press.ispor.org/LatinAmerica/2017/09/involving-public-and-patients-in-the-process-of-evaluation-of-health-technologies-in-brazil/

experience in some specific cases where the information is judged incomplete (*e.g.* fingolimod for treatment of multiple sclerosis and budesonide 200 µg/formoterol 6 µg in aerosol suspension for the treatment of asthma).

Source: adapted from Silva (2017)[104]

Medical Professionals

Medical professionals are the end users of many of the applications of HTA in policy-making. For instance, the practice of care is directly influenced by coverage decisions or standard treatment guidelines. Without this link to the practice of care, the HTA process would add little value, if any. Medical professionals can also bring in new perspectives on patient care that might be considered in the HTA process (for instance at the evidence submission phase).

As a result, the role of medical professionals varies between countries; they can be supportive of HTA efforts, or equally impede or ignore HTA recommendations. Opposition from medical professionals or associations can be very powerful. For instance, in the United-States, influential segments of the medical community were opposed to the research findings from the Agency for Health-care Policy and Research, the predecessor to the Agency for Healthcare Research and Quality. This led to serious impairments in the activities of the agencies and eventually to its dismissal[105]. Some authors have highlighted the need to incorporate training to raise clinicians' awareness around the value of health economics and HTA, financial responsibility, guidelines and evidence-based medicine[106].

Industry

Industry - such as pharmaceutical companies and medical device manufacturers - also needs to be engaged in HTA. This can be done in a number of ways. For example, in South Korea, there is an opportunity for industry to participate in the HTA process through preliminary consultations, an open period for industry and other professional organisations to respond and comment during deliberation and a post-deliberation appeal process[107].

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[104] https://htai.org/wp-content/uploads/2018/02/Patient_involvement_in_Brazil.pdf

[105] O'Donnell, J. C., Pham, S. V., Pashos, C. L., Miller, D. W., & Smith, M. D. (2009). Health technology assessment: lessons learned from around the world—an overview. *Value in health,* 12(s2).

[106] Jain, V. (2016). Time to take health economics seriously—medical education in the United Kingdom. *Perspectives on medical education,* 5(1), 45-47.

[107] NIHA (2013). Engaging Stakeholders in Health Technology Assessment for Health Policy. http://www.gai.nus.edu.sg/niha/wp-content/uploads/2013/07/NIHA_Forum_2013_White_Paper.pdf

Industry can also be engaged by having representatives as part of committees. For example in the UK, NICE has a Technology Appraisal Committee which is made up of clinicians, lay members, statisticians, commissioners, health economists and representatives from industry. This committee then interacts with four main stakeholder groups: invited experts, manufacturers, independent academic groups and NICE itself[108].

Media organisations and journalists

Incorporating media organisations and journalists in the HTA discussion can be a way of informing public understanding, encouraging positive public debate and improving policymaking through holding decision-makers accountable to the general public[109]. The media are a powerful tool for directing the public's attention towards specific problems and issues in the health care sector. Issues not mentioned in the media are on average more likely to be ignored or receive very little attention, even from policy makers[110].

Journalists should be encouraged to report on stories linked to health priority-setting and to government decision-making institutions in an objective and impartial manner[111]. However, media coverage needs to be appropriately managed and can sometimes be detrimental to public health objectives. While scientific journals publish press releases for the media, those are often misunderstood and tend to overstate the findings[112]. The coverage, misunderstanding and uncritical acceptance of the Wakefield's 1990 Lancet paper on the link between autism and combined vaccination for measles, mumps, and rubella shows that media coverage might fail to report health stories, with aggravated consequences on population health[113]. An important role for any agency thus becomes ensuring that well-written briefing notes are available, especially on controversial recommendations or decisions.

[108] Ibid.

[109] Li et al. (2017). Evidence-informed capacity building for setting health priorities in low- and middle-income countries: A framework and recommendations for further research.

[110] Institute of Medicine (US). Committee on Assuring the Health of the Public in the 21st Century. (2003). *The Future of the Public's Health in the 21st Century*. National Academy Press.

[111] Ibid.

[112] Institute of Medicine (US). Committee on Assuring the Health of the Public in the 21st Century. (2003). *The Future of the Public's Health in the 21st Century*. National Academy Press.

[113] Coombes, R. (2009). Health journalism: two clicks away from Britney Spears?. *BMJ*.338.

iii. Modalities of engagement of stakeholders

Once stakeholders have been identified, they can be involved in the HTA process. Participation of stakeholders in public policy is still emerging in most LMICs and there are no guidelines as to who should be engaged in the HTA process, when and for what purpose[114].

There are different levels and methods of stakeholder engagement[115]:

1. **Information-gathering**: collecting information about attitudes, opinions and preferences that will improve understanding of the decision problem and lead to more informed decision making.
2. **Consultation**: obtaining feedback from stakeholders about specific documents or findings that have been made available to them.
3. **Participation**: involving stakeholders actively at all stages to ensure their concerns are understood and considered, and to give them influence over decisions

Information-gathering represents a low level of engagement; it is a one-way movement of information from stakeholder to assessor and the stakeholder has no option of affecting the way HTA is carried out[116]. This can include evidence submissions, which often comes from industry but sometimes comes from patient representative groups - for example, to gather patient experiences of a medicine under consideration[117].

Consultation and participation also result in information-gathering and represent a higher level of stakeholder engagement.

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[114] Alderman, K. B., Hipgrave, D., & Jimenez-Soto, E. (2013). Public engagement in health priority setting in low-and middle-income countries: current trends and considerations for policy. PLoS medicine, 10(8), e1001495.

[115] Health Information and Quality Authority (2014). Guidelines for Stakeholder Engagement in Health Technology Assessment in Ireland. https://www.hiqa.ie/system/files/HTA-Guidelines-Stakeholder-Engagement.pdf

[116] Health Information and Quality Authority (2014). Guidelines for Stakeholder Engagement in Health Technology Assessment in Ireland. https://www.hiqa.ie/system/files/HTA-Guidelines-Stakeholder-Engagement.pdf

[117] HTAi (2014). Completing a Patient Group Submission Template: Guidance for Patient Organisations. https://www.htai.org/fileadmin/HTAi_Files/ISG/PatientInvolvement/v2_files/Resource/PCISG-Resource-GuidanceandChecklist-Dec14.pdf

Stakeholder engagement
consultation vs participation

Consultation

- A form of open-engagement.
- Formal and structured process in which stakeholders can comment on and contribute to decisions that may directly affect them.
- Commonly seen in the form of a public consultation, in which a draft document is made available and the general public/specific stakeholders are invited to provide feedback within a given time period.
- Benefits:
    - It is possible to include a large number of stakeholders, including the general public.
- Limitations:
    - In a consultative-only process, stakeholders can only input when allowed and are not involved at each stage of the process. This can lead to a lack of transparency and less understanding of the goals/objectives of an HTA.
    - Limited scope for stakeholder input.
    - If the collection of feedback is at a late stage in the project there is a potential for delay in the identification of mistakes or shortcomings in the project scope and methodology. This could have consequences for the timely and efficient delivery of the HTA.
    - If the consultation period is too short, stakeholders may have limited opportunity to give useful feedback, defeating the purpose of the exercise.
- Public consultation:
    - Public involvement is defined as “the involvement of lay people in strategy decision about health services and policy at the local and national level”[118]. Public involvement can help improve the quality of the decisions taken during the HTA process, by ensuring that the decisions account for the views and preferences of the end-users (patients and front-line providers) and can also lead to better accountability of decisions.

Participation

- A form of closed engagement.
- It is a process in which stakeholders can have input into how the HTA is

[118] Souliotis, K. (2016). Public and patient involvement in health policy: a continuously growing field. Health Expectations, 19(6), 1171-1172.

carried out in terms of the process, the agenda, and the main considerations.

- Gives stakeholders an opportunity to actively assist in the development of information and advice that informs a decision, rather than being part of a committee that actually makes a decision.
- Commonly seen in the form of expert panels.
- Benefits:
  - Involves stakeholders more deeply.
  - Results are more transparent for participants.
  - It can facilitate a more nuanced and in-depth analysis; and may lead to a better understanding of complex issues.
- Limitations:
  - Resource-intensive for both the assessor and the stakeholders.
  - Usually requires stakeholder commitment for the duration of the project and providing substantial input when necessary.
  - Ensuring that the mix of stakeholders is sufficiently broad to represent multiple perspectives can be challenging.

Source: Health Information and Quality Authority (2014)[119]

You will need to choose whether to use consultation or participation. Your choice will likely depend on the type and the topic of a specific HTA. Consider the following factors[120]:

- What is the purpose of the HTA?
- What is the need for input from specific stakeholders?
- How much ownership of the process do the stakeholders need?
- How sensitive is the topic?
- How complex is the HTA?
- What is the timeframe of the HTA?

Modalities of engagement can be arranged depending on those characteristics, in other words, topic by topic. However, you may also want to define one modality of engagement that applies across all HTA activities for the entire program.

[119] Health Information and Quality Authority (2014). Guidelines for Stakeholder Engagement in Health Technology Assessment in Ireland. https://www.hiqa.ie/system/files/HTA-Guidelines-Stakeholder-Engagement.pdf

[120] Ibid

The way in which stakeholders are involved in the HTA process will be different for different groups and different countries. You do not need to involve all identified stakeholders; and should exercise caution when choosing the form of stakeholder engagement. It is possible to engage stakeholders throughout the entire HTA process, from evidence generation to decision-making (see building block 'A transparent and consistent process of HTA' for details on the steps).

iv. Challenges of stakeholder engagement

Successful application of HTA decisions can challenge different stakeholders, from technical staff at the Ministry of Health to front-line health providers. Having a top-down approach to HTA decisions can generate disruptions and jeopardise the implementation process. Having a clear, transparent and inclusive HTA process creates trust and acceptance among stakeholders[121], but also presents its own challenges. For instance, in a study conducted in Uganda, participation to meetings relating to the health strategy was highly correlated to poverty, age and wealth level[122]. More concerning, evidence from Latin America has shown that the Industry, in particular pharmaceutical companies, might play an indirect role by lobbying against HTA through patient groups[123]. This represents an important challenge for ensuring the independence of the decisions.

Challenges in stakeholder engagement

Stakeholder engagement takes time and resources

- Recruiting and coordinating stakeholders for committees and meetings and soliciting comments/response can significantly add to the timeline of the HTA process.
- Stakeholders will need to be sensitised to the benefits and challenges of an approach using HTA and trained on methods.

Even when the value of HTA is acknowledged, other background

[121] Wild et al. (2017). Guidance for the development of a National HTA-strategy.

[122] Kapiriri L, Norheim OF, Heggenhougen K (2003) Public participation in health planning and priority setting at the district level in Uganda. Health Policy Plan 18: 205–213.

[123] Dittrich, R., Cubillos, L., Gostin, L., Chalkidou, K., & Li, R. (2016). The international right to health: what does it mean in legal practice and how can it affect priority setting for universal health coverage?. *Health Systems & Reform*, 2(1), 23-31.

factors may impede the willingness of stakeholders to engage

- In Thailand, key barriers among policy actors included distrust, conflicting philosophies, pre-existing loyalties to other organisations and concerns about political pressure and acceptability[124].

Stakeholders' views are likely to clash

- Incorporating the perspectives of various groups can be difficult in the face of different interests, perceptions and expectations. In healthcare, perspectives are often in conflict, and decisions often involve making difficult choices that will cause opposition from some groups. For instance, coverage decisions for drugs - a common application of HTA decisions - will be a matter of life and death for some patient groups. Medical providers or the industry are also equally likely to oppose such decisions. A very important challenge is to ensure the representation of those views, while ensuring that decisions are impartial and objective.

Engagement can increase the risk of controversy

- An open and consultative process introduces risks such as popular outcry and coordination of efforts across powerful lobbies and special interest groups. Media coverage can be extremely powerful in influencing the public opinion on a decision. For example in 2009, NICE in the UK rejected the use of Sorafenib (Nexavar®) a liver cancer drug, in the National Health Service and this decision provoked a strong negative reaction from parliamentarians, patient organisations and the popular press[125].

Managing conflicts of interest

Involving a range of stakeholders can create significant Conflicts of interest (COI), which are impossible to avoid completely.

COI arise when the judgement of someone involved in the HTA process is potentially compromised by financial or other concerns and can be managed in different ways. For instance, a significant share of the evidence is produced by Industry. On the other hand, the industry has its own objectives: to expand the sale of its products and to foster the interests (financial and non-financial) of its constituencies (*e.g.* shareholders, employees etc.). It is clear that those objectives can conflict with a fundamental principle of any HTA system: the supremacy of public interest.

[124] NIHA (2013). Engaging Stakeholders in Health Technology Assessment for Health Policy. http://www.gai.nus.edu.sg/niha/wp-content/uploads/2013/07/NIHA_Forum_2013_White_Paper.pdf

[125] See http://news.bbc.co.uk/1/hi/health/8367614.stm

Instead of trying to avoid conflicts altogether, you should seek to manage them. COIs should be clearly stated in any reports, specifying the principles underlying the prevention of conflict of interest: impartiality, integrity, transparency and the supremacy of public interest. Without the management of COIs, professionals and the public would lose confidence in HTA[126].

Country example: NICE policy on COIs

The Code of Practice applies to all those who work at NICE or who are involved in the development of its guidance, to avoid public concern that COI might prejudice the integrity or impartiality of NICE.

An example of the steps NICE takes to ensure transparency in regard to COI:

- NICE committee members are advised to consider if they have an interest in the subject under review that might influence their judgement and objectivity in decision-making;
- Interaction with the commercial sector doesn't automatically disqualify an individual's membership of a NICE committee, but should be declared;
- However, committee chairs are recognised as being in a special position, so should not have any financial, personal, non-personal or family interests that could affect their judgement.

v. Communication

The results of HTA decisions need to be communicated to stakeholders and the general public. Dissemination materials include publishing reports, policy briefs, newsletters, articles, press releases, fact sheets and infographics. For medical providers, dissemination of HTA decisions can be done through prescription guidelines. In Sweden, publication of full technical reports is accompanied by the publication of fact sheets, PowerPoint presentation and FAQ sheets covering information not only on the technical aspects of the health technology, but also on the process (analysis, appraisal and recommendation)[127].

[126] NICE Policy on Conflict of Interest. https://www.nice.org.uk/Media/Default/About/Who-we-are/Policies-and-procedures/Code-of-practice-for-declaring-and-managing-conflicts-of-interest.pdf

[127] Angelis, A., Lange, A., & Kanavos, P. (2018). Using health technology assessment to assess the value of new medicines: results of a systematic review and expert consultation across eight European countries. *The European Journal of Health Economics*, 19(1), 123-152.

The dissemination strategy should be adapted to the intended audience. At a minimum, HTA decisions should be published online and freely accessible and should include online registers and user-friendly versions for patients. In some countries, a quarterly report (containing information on current, planned and completed htas) can be published.

Effective communication may also require adapting the language of publications to meet the needs of individuals with learning disabilities and/or non-native speakers[128].

[128] NIHA (2013). Engaging Stakeholders in Health Technology Assessment for Health Policy. http://www.gai.nus.edu.sg/niha/wp-content/uploads/2013/07/NIHA_Forum_2013_White_Paper.pdf

Example: HITAP's Communication Strategy

Thailand's Health Intervention and Technology Assessment Program (HITAP) was created in 2007.

The goal of HITAP was to provide policymakers, health professionals, health providers and the public with robust scientific evidence about the costs and benefits of introducing of health products, procedures and programs.

HITAP has a dedicated communications teams working on presenting information to suit each stakeholder group. The primary output from HITAP's projects is a research report with policy briefs for policymakers and others. The policy briefs are short four-page briefings designed to inform policymakers and non-technical readerships.

The communication team also publishes HITAP newsletters, which include updates on HITAP work every three to four months. Hard copies of newsletters and policy briefs are circulated to subscribers, and electronic versions are uploaded to the website. The full range of communication products and target audiences also includes press releases, fact sheets, infographics and, of course, articles in technical and academic journals.

The communications strategy aims to have:

- Sincere dialogue with all parties, including general public, to pursue understanding and collaboration
- Tailor-made information and messages to suit particular target groups
- A two-way stream of communication

Source: Culyer et al. (2016)[129]

vi. Appeal process

An important part of the HTA process is to have a means of appealing decisions as a way of managing potential opposition of decisions. Giving the possibility to appeal an HTA decisions can also reduce the risk of litigation or court cases against HTA decisions.

Appeals usually occur after a decision has been made. It is important to allow any stakeholder to file an appeal. Appeals are usually filed for the following reasons:

[129] Culyer, A.J, Podhisita, C. and Santatiwongchai, B. (2016). A Star in the East: A Short History of HITAP. https://f1000research.com/documents/6-487

- Formal errors in the evidence submitted
- Suspicions that the evidence has not been interpreted correctly
- If the health technology under consideration does not fall in the agreed scope of the HTA process

An appeal is usually reviewed by an independent panel of experts, which then issues a recommendation to the relevant institution. Following the review of the appeal, a response should be published in the public domain, whether positive or negative. In addition, renewal of registration also offers a possibility for individuals (manufacturers, research groups, etc.) to resubmit evidence.

Citing the HTA Toolkit as a source

When citing the HTA Toolkit please quote: *HTA Toolkit v1, the International Decision Support Initiative (iDSI): www.idsihealth.org/HTATOOLKIT*