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Topic identification, selection and prioritisation for health technology assessment (HTA)

- A report to support capacity building for HTA in low- and middle-income countries

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Executive summary

Aim
The aim of this project was to provide insight into the range of options for topic identification, selection and prioritisation (TISP) for health technology assessment (HTA) in low- and middle-income countries (LMICs).

Background
HTA is an internationally accepted multidisciplinary approach to analysing and assessing evidence to inform health policy. HTA is recommended by the World Health Organization (WHO) to support universal health coverage (UHC). According to WHO, HTA should ideally be implemented in a formalised decision-support process or system. Deciding what topic(s) to assess represents the first step of this process. In the **TISP** approach, **Topic Identification** describes the step where topics potentially suitable for HTA are identified. **Selection** describes the step where details on the topics are collected and the identified topics are checked for conformity with the aims of the HTA process. **Prioritisation** describes the step where a decision is made to either initiate, reject or postpone the commencement of an assessment, taking into account the best use of limited resources and context-dependent values. This first step in the HTA process is very important as it has implications for subsequent steps. If TISP fails to work efficiently, this may jeopardise the value of the entire HTA process.

In engaging in capacity building for strengthening HTA in LMICs, we (i.e. the Norwegian Institute of Public Health) emphasize approaches to TISP based on experiences from our own country. However, the concept of HTA is relatively new to most LMICs and, with limited institutional mechanisms, adapting complex TISP approaches may be difficult to operationalise. By describing a range of options to choose from, and by providing examples of TISP approaches adopted by countries with a formalised HTA process in Africa, Asia, Latin America and Eastern Europe, our aim in this report is to provide grounds for informed decisions on how best to proceed when planning to implement TISP.

Methods
This report uses a systematic scoping review, a country survey and a stakeholder webinar as its methods. The systematic scoping review was guided by established scoping review methodology. A protocol of this review is published on our website. Articles from 2015 onwards were included, and the predefined elements analysed were: the TISP processes, criteria, methods or tools, collaborative networks or initiatives, governance and evaluation. In addition, we conducted a country survey to identify details of TISP approaches in selected African, Asian, Latin-American and Eastern European countries. We anticipated that survey results would supplement (or confirm) findings from the literature. Survey results would also be valuable, considering the paucity of research on LMICs in this field. Finally, we hosted a webinar to present preliminary findings of the scoping search and survey and to gather stakeholder

feedback. Take-home messages from the webinar were noted. This report has been subject to internal and external peer review.

Results

In presenting the results, we do not structure the narrative in accordance with our methodological chronology (i.e., scoping review, survey, and webinar feedback) but rather use the information from these sources to discuss i) the existing recommendations for TISP implementation guidance, ii) Topic Identification, Selection and Prioritisation, and lastly iii) selected country examples and other aspects of TISP.

i) We identified and included five recent (2015 and later) guides on HTA implementation that included information on TISP. Findings suggest that TISP practices could not be translated to a set of common recommendations. In low resourced settings, the TISP process may be pragmatic at the beginning, as suggested by the International Decision Support Initiative, but it should be transparent and explicit. When adopting or adapting approaches and topics from other countries, it is important to take account of experiences from third countries.

ii) Our research identified a gradient of TISP options from simpler to more complex processes. In a formalized HTA system, TISP includes a mix of reactive and proactive **Topic Identification** methods, whereas the more complex approaches (i.e., horizon scanning systems, and disinvestment strategies) are only used in a few HTA systems. Typically, HTA process stakeholders, including policy makers, clinical experts, health care workers, industry, donors and patient/users, are involved in the identification step to propose or nominate topics. Different TISP approaches may be used for different technologies. While experienced European HTA systems rely exclusively on industry submissions or industry solicitations to identify topics, countries new to HTA often rely on commissions from the Ministry of Health, and proposals or nominations made by stakeholders. For LMICs, it has been proposed that it would be beneficial to start with relatively simple, proactive approaches such as stakeholder involvement, adoption of topics from other HTA systems and identifying topics from essential technology lists, before moving to more complex approaches. **Selection** (also called filtration) is not clearly distinguished from prioritisation. During selection, details regarding the topic may need to be collected, and in some cases explicit yes/no selection criteria can be established. Selection is commonly informed by stakeholders, including clinical experts, industry, and the public or patients/users. Outputs of identification and selection such as lists of topics, short written vignettes or briefs, or even pragmatic assessments, are commonly used to inform HTA **Prioritisation**. The depth of information will depend on who is involved in prioritisation and how transparent the process is. Information included in the output can be categorised as: technology related; patient and setting related; policy related; evidence related; impact predictions; information on knowledge gaps. If all eligible topics are identified and all selected topics can be assessed (e.g., all new childhood vaccines, or all new medicines to be reimbursed), prioritisation at the level of the HTA process is not needed. In such cases, outputs of identification and selection can directly inform initiation of HTA. However, in most cases, prioritisation is needed, at least to ensure timeliness of the most important topics. Explicit criteria for prioritisation typically reflect: (unmet) needs, potential impact (on patient health,

public health, costs, health service, and/or society), and alignment with national priorities. Scoring or ranking to prioritise identified topics is most commonly done by clinical experts, but may also involve other stakeholders, including policy makers, end users of the HTA and patient/user representatives. Ranking may be implicit or explicit. Tools to assist in prioritisation include the use of a Delphi panel, multi criteria decision analysis (MCDA), and on-line ranking tools. Involvement of industry stakeholders and donors in prioritisation is often avoided. Final decisions on prioritisation are commonly performed at governmental level or by a relevant government authority.

iii) Our research identified three other aspects related to the TISP process: 1) governance and coordination, 2) evaluation and development, and 3) initiatives and networks for TISP. What is commonly understood as governance for TISP are the aims of the HTA process and funds for its conduct. Governance and coordination of TISP are typically defined politically by the HTA system owner (e.g. regional health authorities) or government-appointed institutions. Recommended evaluation methods include external and internal audits, surveys, interviews and focus groups.
Survey respondents reported steps taken to improve the TISP process including: revising criteria and/or weighting, publication of tasks assigned by government authorities on websites, meetings with stakeholders and international partners, and support from external partners through training and capacity building. Collaboration and participation in scientific networks and bilateral capacity-building projects are good for the development of practices in HTA and TISP. We identified one scientific network (*International Health TechScan (IHTS))* and one global initiative (*The International Horizon Scanning Initiative (IHSI))* that engage specifically in TISP. Influential factors for the choice of TISP approach are contextual and similar to factors influencing other aspects of HTA. These include political support, the aims of the HTA process, experiences with TISP and HTA, national priorities, legislation, human resources and economic resource availability and values. Partnerships for capacity building and scientific networks are valuable, and also influential in choosing TISP approaches. As with the HTA process, the TISP approach can be evaluated and systematically improved to become more efficient and transparent. However, we found no evidence of comparative TISP evaluations.

Discussion

This report is based on a systematic scoping review of TISP approaches, a country survey on TISP used in selected African, Asian, Latin America and Eastern European countries with a formalised HTA system, and feedback gathered during a webinar. This report aims to point to the range of TISP options, present examples and look critically at evidence, but makes no claims to be exhaustive. Rather, the results represent our understanding of how different approaches towards prioritising topics for HTA can be categorised by applying TISP. The results are intended to provide additional facts about TISP to supplement existing guidance on HTA implementation. Further work may include more detailed analysis of context-specific needs, comparisons of different approaches and structural limitations.

Conclusions

Our findings suggest that:

- As with the HTA process, it is important to ensure that TISP is transparent with regard to criteria, procedures and involvement of stakeholders.
- The TISP approach should be carefully selected to acknowledge the relationship with the health system context (i.e. politics, needs, resources and values) to which it is applied.
- For resourced limited settings, a simple TISP approach may be a starting point, but partnerships with more experienced countries, scientific networks and initiatives should be explored for solidification and comprehensiveness.

Preface

This report is a deliverable of the Comprehensive Approach towards Universal Health Coverage (CA-UHC) project carried out by the Norwegian Institute of Public Health (NIPH). The CA-UHC project was funded by the Norwegian Agency for Development Cooperation (NORAD) from June 2018 to June 2021.

We acknowledge the following for their valuable input: Elisabet Hafstad at NIPH for literature searches, Lumbwe Chola, Lieke Fleur Heupink and Katrine Frønsdal at NIPH for input to the protocol and internal review of the draft report, Eia Skjønsberg at NIPH for assisting in developing and conducting the survey, Saudamini Dabak, Aparna Ananthakrishnan, and Pritaporn Kingkaew from the Health Intervention and Technology Assessment Program (HITAP), Thailand, for input in developing the survey, Thomas Wilkinson, World Bank, and Francis Ruiz, Imperial College London, for participating in the panel discussion of the webinar and for providing input to a draft of the report, Wija Oortwijn, Radboud University, and Andres Pichon-Riviere at the Institute for Clinical Effectiveness and Health Policy (IECS) for providing input to a draft of the report. Finally, we also thank all survey respondents for their input and contributions.

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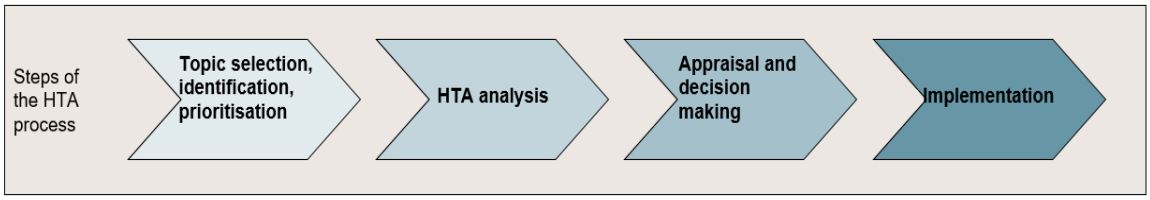
Introduction

Health technology assessment (HTA) is an internationally accepted multidisciplinary approach to analysing and assessing evidence to inform health policy (1, 2). HTA is highly encouraged by the World Health Organization (WHO) as a means of supporting Universal Health Coverage (UHC) (3, 4). At the Norwegian Institute of Public Health (NIPH), our Global HTA programme collaborates with partners in low- and middle-income countries (LMICs) to support UHC. We consider HTA as an important decision-support aid for UHC as it enables a systematic, transparent, and evidence-based approach towards comparing alternative interventions using predefined criteria of interest for decision-makers. While engaging with LMICs, our goal is to facilitate access to evidence, as well as to collaboratively develop the skills and expertise needed to apply HTA to decisions regarding the use of finite resources to build resilient health systems (5).

The HTA process can be described in generic steps as shown in Figure 1; these are areas in which NIPH provides HTA-related support. The HTA process may be referred to by different names such as an HTA informed deliberate decision process (6), an HTA system or an HTA framework (7, 8). The number of steps in any given HTA process may vary somewhat. We have chosen four steps as presented in Figure 1, but others may choose a different division, for instance, by separating out appraisal (i.e. confirming analysis is appropriate and of good quality) from decision making (8).



Briefly, the first step (TISP) in the NIPH area of support involves how the topic identification-selection-prioritisation are organized and implemented, and what principles, initiatives and networks are used in the process. The second step (HTA analysis) includes areas such as assessment plans, collecting evidence, analysing and synthesising results, technical collaborations, and discussing report recommendations. Appraisal and decision making refers to the types of decisions to be taken and by whom, and the use of guidelines or checklists for appraisal. Lastly, Implementation concerns the modes of dissemination, monitoring and evaluation.

In our experience, prioritising topics for HTA is relevant at two levels: firstly, when defining the overall aims or scope of the HTA process, and, secondly when topics for assessment are prioritised. The suitability of topics for HTA is highly contextual, complex and defined by politics, needs, resources and values of health care systems as well as external push and influence from stakeholders. Having a clear aim of defining HTA priorities is regarded by most members of the

HTA community as one of the fundamental principles of good HTA practice (9-11). In this report, we understand prioritisation of topics as an integral part of an HTA process, acknowledging that this is highly dependent on the overall aim or scope of the process. We have chosen to describe this using the TISP approach (see Figure 2), which we have adapted from the European network for HTA (EUnetHTA) (12). The TISP approach is also referred to as "framing the decision space" (8), nomination of topics (3), or simply selection or prioritisation of topics.

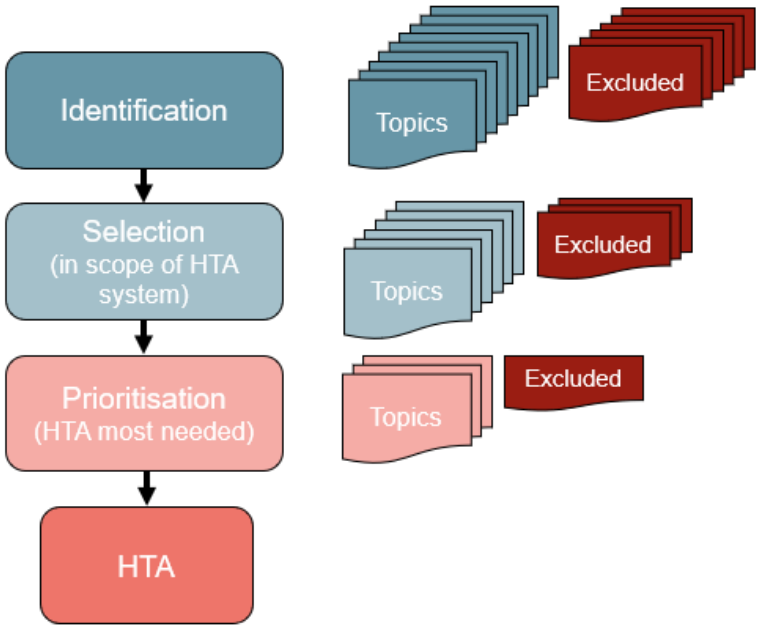


Figure 2 TISP approach adapted from EUnetHTA

In this report, we focus on TISP as part of a formalised process set up to support UHC. In the TISP approach, **Topic Identification** describes the step where topics that are potentially suitable for evaluation by the HTA process are identified. Typically, these could be topics that are publicly financed or covered by compulsory health insurance or included in health benefits packages. A country may have different HTA processes for different health technologies and patient groups (e.g. one process for prescription medicines, another one for medical devices or childhood vaccines). **Selection** describes the step where identified topics are checked or filtered for conformity with the aims of the HTA process. For example, if the HTA system is set up with a narrow scope, such as childhood vaccination, any vaccines identified as not suitable for children will be excluded. **Prioritisation** describes the step where a decision is made to either initiate, reject or postpone the assessment. The distinction between selection and prioritisation is a matter of definition, and interpretation, rather than a clear-cut linguistic difference.

In other words, TISP is the step leading to a decision on which topic to assess, taking into account the best use of limited resources and the context-dependent aims of HTA. TISP is a very important step to deal with, as it will impact all subsequent HTA processes. If this initial step fails to work efficiently, the value of HTA implementation as a means of supporting UHC might be jeopardised. That is, a country's HTA process may have good mechanisms for assessment,

decision and implementation, but if the initial TISP step does not ensure that the most relevant topics are identified and prioritised, then the legitimacy of the HTA may come into question, as other mechanisms not involving HTA are more likely to influence decisions.

Prioritisation of topics for HTA was described by the EUR-ASSESS project in 1997 (13), which focused on the theoretical and practical aspects of priority setting for HTA. This work has been highly influential for the HTA community (including HTA agencies and HTA analysts like clinical reviewers and health economists). The EUR-ASSESS project describes priority setting for HTA as:

> "*Identifying problems of concern or relevance to decision makers; Identifying possible assessments that could help decision makers achieve their goals; Judging the potential benefits and costs of these assessments to set priorities between them; Communicating priorities to those responsible for undertaking assessments and for the use of associated technologies; Monitoring and reviewing assessments and priorities for assessments*."

As highlighted by the EUR-ASSESS project, priority setting for HTA should not be confused with priority setting in health. Setting priorities for HTA aims to identify those assessments that offer the greatest benefits in relation to their cost, and thus maximize the benefit derived from investments in HTA. On the other hand, priority setting in health involves a process of choice among alternative health care programmes and services for implementation and coverage. These topics for assessment in the two processes will not (or not always) coincide.

A well-known approach for TISP is horizon scanning[1] or early awareness system. The TISP approach (12) is influenced by the steps in horizon scanning described in the EuroScan Toolkit (14). The definitions of both HTA (1) and horizon scanning acknowledge the lifecycle of health technologies, starting with an idea being developed through phases of research, context-dependent regulation, implementation, established use, additional evidence generation and finally replacement by new technologies. However, the lifecycle of health technologies is highly context dependent. Technologies considered established by high-income countries or by private insurance companies may take years to become available in LMICs, or may not be covered by public benefits packages or compulsory health insurance. Therefore, simply adopting topics from horizon scanning systems of a (high-income) country may not be the most relevant TISP approach for LMICs. Furthermore, as the concept of HTA is relatively new to most LMICs, and as many institutional mechanisms and resources are lacking in LMICs, adapting complex TISP approaches such as horizon scanning may prove difficult to operationalise. It should also be noted that LMICs with years of experience in HTA such as Thailand (15), and most countries in Europe, rely on less sophisticated approaches for identification of topics to inform prioritisation in HTA (16).

In this report, we aim to describe a wide range of TISP options and provide examples of TISP approaches adopted by countries with formalised HTA processes in Africa, Asia, Latin America

[1] In the context of HTA, Horizon Scanning is the systematic identification of health technologies that are new, emerging or becoming obsolete and that have the potential to affect health, health services and/or society (www.HTAglossary.net)

and Eastern Europe, which may provide grounds for informed decisions on how to best proceed with TISP for those countries planning to implement a formal HTA process.

Methods used to produce this report

The methods utilized for this report are described in detail in the project plan (17), Appendices 1-3, and described very briefly below. We used:

a) a scoping review to summarize evidence on TISP in LMICs; we followed international standards for the conduct of scoping reviews. An information specialist identified relevant studies by searching two biomedical databases from 2015 to Oct 2020 (updates to April 2021), and inspecting several intranational HTA bodies (e.g. HTAi, INAHTA,). Independent reviewers selected and extracted data from the studies using a priori selection criteria. Using an online file-sharing platform, one reviewer extracted data and a second reviewer verified its accuracy, with disagreements resolved by consensus. Results were collated using tables; we present the results in this report narratively. Appendix 1 presents further details from the scoping review.

b) a country survey; we developed and piloted a questionnaire with partners from HITAP, Thailand. The structure of the survey included four sections (i.e. the HTA System, how TISP is performed, factors influencing the selection of TISP, and future needs). We included informants from selected African, Asian, Latin American and Eastern European countries with a formalised HTA system[2]; the final wording of the questions was influenced by the findings of the scoping search and by feedback from the pilot test. Invitations were sent out to 48 individuals in 29 countries. The main findings were summarized narratively and in charts in the report. Details of this step are presented in Appendix 2.

c) a webinar; all survey respondents were invited to participate in an online event organized upon completion of the scoping review and survey. Survey informants received a copy of the presentations and were invited to provide comments in written form. The agenda included results from the scoping review, results from the country survey, and a panel discussion with a question and answer period. We invited attendees to give us feedback on preliminary results and panel discussions. We recorded the webinar and made note of key take-home messages from the panel section; we incorporated these notes in the results of this report and present them separately in Appendix 3.

In addition, the report was subjected to internal and external review, by experts working in the HTA field. The areas the scoping review and country survey focused on were:

- Overall TISP process description;

[2] By formalised HTA system we mean: a system where HTA is set up at national or regional level to work in a predefined manner, with defined process steps, and with a clear mandate to support decisions applicable to Universal Health Coverage.

- Topic identification;
- Topic selection including description of criteria;
- Topic prioritisation including description of criteria;
- Methods or tools used for the TISP process (name and description of method or tool);
- Collaborative networks or initiatives (names, contact addresses and purpose);
- Other relevant information including information on evaluations.

Amendment to the Protocol:
Survey: we diverged slightly from the original inclusion of countries. We originally planned to include only LMICs in our survey, but as the number of LMICs with a formalised HTA system is low, we included all identified African, Asian, Latin American and Eastern European countries with a formalised HTA system.

Results

In presenting the results, we do not structure the narrative in accordance with our methodological chronology (i.e., scoping review, survey, and webinar feedback) but rather use the information from these sources to discuss i) the existing recommendations for TISP implementation guidance, ii) Topic Identification, Selection and Prioritisation, and lastly iii) selected country examples and other aspects of TISP.

In our scoping review, a total of 72 records were included in full-text (see PRISMA flow chart Figure A1.1). 34 records contained general information or covered more than one country (Table A1.2) and the rest provided information on individual countries. We found no systematic review or scoping review on TISP processes. Lists of literature included in the scoping review and for which question data was extracted are provided in Appendix A1, tables A1.1 and A1.2.

Survey response: invitations were sent out to 48 individuals in the 29 countries. We received 23 responses covering 21 countries. Only one (1/23) respondent responded 'no' to the question about having experience and understanding of the HTA system in the country. Three (3/22) respondents were unsure if they had a formalised HTA system; their responses were still included in the findings.

The webinar: a total of 16 participants attended the webinar. The webinar was recorded and key take-home messages from the panel section are presented in Appendix 3. Written input from one participant was received and has been used to inform this report.

Existing recommendations for TISP in HTA implementation guidance

Based on the scoping search (Appendix 1), we identified and included five recent guides on HTA implementation, which included information on TISP. The data from these records confirmed that the TISP step is contextual and no single approach is recommended for fitting all contexts. Findings suggest that the guidance could not be translated to a set of common recommendations. However, it is worth stating that the importance of clarity, as expressed in the WHO guidance for HTA (3), also applies to TISP. The TISP process may be pragmatic at the beginning, as suggested by the International Decision Support Initiative (8), but it should be transparent and explicit. When adopting or adapting approaches and topics from other countries, it is important to take account of experiences from third countries (18). We report the main findings from each included HTA-implementation guidance document in Table 1.

Table 1 Summary of findings regarding the TISP step in guidance for HTA implementation

Source	Main finding
WHO 2020 (3)	The World Health Organization (WHO), in its updated guidance on implementation of HTA for reimbursement decisions, provides examples of nominations and prioritisation criteria and how nomination is organised in selected countries. No recommendations are given regarding particular criteria or approaches for TISP. The document refers to a publication of the European Public Health Alliance (EPHA, 2018), which states the need for clarity of the HTA process in general referring to seven areas of clarity (the 7Cs): The 7Cs will of course also apply to TISP. Clarity of process and selection criteria Clarity of principles and values Clarity of mandate Clarity of responsibility Clarity of law and regulations in the field of HTA Clarity as regards to the interaction between stakeholders Clarification of financial consequences of decisions
iDSI 2020 (8)	The International Decision Support Initiative (iDSI) toolkit for HTA recommends that LMICs start by setting up new HTA systems with topics that can be considered "low hanging fruit", that means those that are nominated or proposed by the government or stakeholders to demonstrate usefulness.
Radboud University 2020 (19)	The Radboud University, in its guidance for HTA agencies, points out that strategies for identification of important topics to assess should focus on both new technologies and obsolete technologies using both horizon scanning and disinvestment strategies. As an alternative to horizon scanning and disinvestment strategies, topics may be nominated by stakeholders. Importance should be interpreted as the impact that a health technology has on society using criteria that reflect potential population health benefits, potential budget impact, and potential impact on health policy.
MSH 2020 (18)	The Management of Science for Health (MSH) foundation, in its roadmap for HTA implementation, provides a response to the question: "When do we do HTA?". The authors emphasize that HTA practice is contextual. They state that approaches for identifying or nominating topics may be reactive or proactive and include horizon scanning as well as early HTA. By early HTA, the authors mean analysis to identify areas of need for innovations conducted early in the lifecycle of technologies. The authors emphasize that decisions on when to conduct HTA will be driven by the stakeholders engaged in the process. The MSH guidance further emphasizes that horizon scanning and early HTA provide an opportunity to engage with health technology developers and manufacturers, to influence their product development priorities in line with a country´s needs. To ensure timeliness of HTA, the authors recommend LMICs to adopt HTAs and HTA results from high-income countries in a pragmatic way.
Wild 2017 (20)	Based on experiences from Lithuania, the authors recommend using a prioritisation tool to decide on an annual HTA work programme using 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.

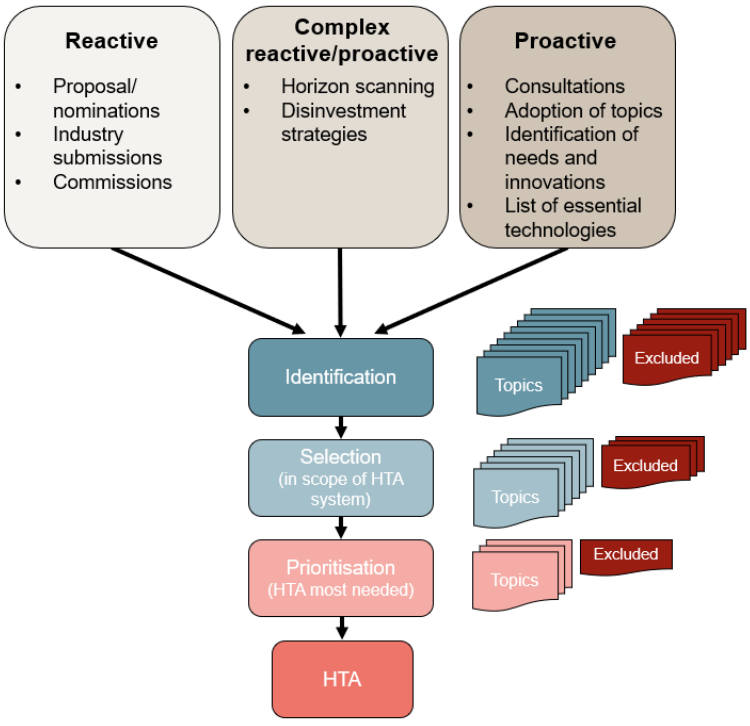
Topic identification

The key question in topic identification is: *What are the most important topics to be assessed?* Our scoping review found options on how to proceed, who to involve and what to produce. Table 2 presents a summary of main findings.

We divided the identification approaches in three overarching categories:

- **reactive** (awaiting input from someone),
- **proactive** (actively searching for topics as part of the HTA system's mandate or work programme), or
- **complex -** combination of proactive and reactive approaches (e.g. horizon scanning and disinvestment strategies).

Under these overarching categories (i.e. reactive, proactive, complex), we identified ways in which the identification can be carried out as shown in Figure 3 (e.g. proposal or nomination, horizon scanning, consultations). We found that, in practice, a mix of reactive and proactive approaches is used. Only a minority of systems use horizon scanning and disinvestment strategies, as reported in surveys performed by EUnetHTA (16), a survey on HTA in Asia (21) and a recent report prepared by the Latin American HTA Policy Forum (22).



Identification Question: what are the most important topics to be assessed?
Figure 3 Topic identification approaches

In general, identification can be performed either by internal or external institutions involved in the HTA process. Usually, there is a secretariat (or impartial group) responsible for coordinating the identification process, and typically, HTA stakeholders are involved to ensure that relevant topics are identified in a timely manner relative to the goals of the HTA process. Different

approaches may be chosen for different technologies, as is the case for Poland (see country example below). The more complex systems are set up with committees of stakeholders and per fee contract services based on tender processes (2, 23), as is the case for horizon scanning approaches applied in England (see table A1.3).

Outputs of the identification step are generally a list or a database of topics with contextual information. The comprehensiveness of the information is variable and may depend on the scope of the HTA process as well as the selection and prioritisation criteria (explained below). The main domains included are technology related information, patient and setting related information, policy related information¸ evidence related information, impact predictions, and information on knowledge gaps. Based on categorisation of extracted data, sub-domains of outputs of identification (and selection) are provided in table 3.

Table 2. Summary of findings for topic identification

Topic Identification	How to proceed: Identified approaches, (identified methods or tools)	Whom to involve	What to produce (outputs)
Aim: To identify the most important topics applicable to the HTA system	**Reactive:** Commissions; Proposals (templates); Nominations (templates); Industry submissions (templates)	Involvement of stakeholders to propose topics (industry, experts including clinical experts, health care workers, patients and the public, policy makers, and donors); A coordinating secretariat or secretariat function	**A list of identified topics or a database** with information to allow selection: Technology related information; Patient and setting related information; Policy related information¸ Evidence related information; Impact predictions; Information on knowledge gaps
	Proactive: Consultations (Panels/Delphi processes); Adoption of topics from other HTA systems or SRs (HTA Adaptation tools); Externally produced technology lists (the WHO lists of essential technologies)	An external service or an internal part of the HTA system; Stakeholders (as in the cell above) A coordinating secretariat or secretariat function	
	Complex mixed proactive and reactive: Horizon Scanning/Early awareness; Disinvestment strategies (A plenitude of methods)	An external service or an internal part of the HTA system; Stakeholders (as above); A coordinating secretariat or secretariat function	

Table 3 Domains of information in Identification outputs (may also apply to Selection)

Main domain	Sub domains
Technology related information	Names, description, mode of administration, dose range, company or developer, stage of development (clinical trial), availability, type of technology (i.e. drug, device etc.), intended use (i.e. therapeutic, diagnostic etc.), availability (including licensing/reimbursement status, plans and schemes).
Patient and setting related information	Indications, clinical specialty, patient numbers, setting for technology use, current management, alternative or complementary treatment options.
Policy related information	Level of decision and implementation (e.g. ministry of health, regional, primary care).
Evidence related information	Clinical evidence and safety, ongoing research, ongoing or planned HTA, relevant systematic reviews.
Impact predictions	Health benefits, harms, unit costs, infrastructure and economic consequences, ethical, social, legal, political and cultural impact, predicted diffusion.
Information on knowledge gaps	[typically clinical evidence, cost or indication related, but no concrete sub-domains found].

Reactive approaches to topic identification

- *Commissions*

Some HTA systems can be considered exclusively reactive to commissions in the sense that only the system owner (e.g. the Ministry of Health (MoH)) or another party (e.g. an insurance institution) has the mandate to instruct the HTA system on a topic to assess. Commissions may follow an explicit pathway, as is the case for Germany (24), but our findings indicate that transparency on how the topics are identified is a concern when a HTA system is solely instructed by commissions from the MoH, as is case for some countries in Asia (21) and Latin America (22) as well as Eastern Europe (7, 25).

- *Proposals or nominations*

Our findings suggest that most HTA systems allow topic proposals or nominations from stakeholders. Usually, topics can be proposed using an online form that is then subjected to selection and prioritisation (see below). In some countries, such as South Africa, this type of proposal is referred to as motivations (input from external reviewer). In some countries, only selected stakeholders are invited to propose topics, while in others the HTA system is open to proposals from anybody.

- *Industry submissions or solicitations*

We found that, in European countries with a strong legal connection between HTA and reimbursement, HTA on new pharmaceuticals might primarily be initiated by industry submitting dossiers of evidence and/or economic analysis (16). This can be regarded as a form of stakeholder proposal, but in some cases, such as for pharmaceuticals in Poland (25), when industry has submitted a dossier of evidence, there are procedures or regulations in place obliging the HTA system to perform an assessment. In such cases, one could call the

approach 'enforced proposals' (input from external reviewer). Commonly, industry is expected to use standardised submission templates which may be adopted or adapted from experienced systems and networks such as EUnetHTA.

Proactive approaches to topic identification

- *Consultations*
  Proactively inviting stakeholders to identify topics is a very common approach to identification, which can be referred to as consultations. Consultations can be distinguished from reactive proposals or nominations in that the HTA system (or HTA system owner) invites specific stakeholders to participate in the nomination process. Medical experts are commonly involved, but there are several examples of inviting specific stakeholders to obtain different perspectives. Consultation methods identified include Delphi processes and multi criteria decision analysis (MCDA), as described in a survey of members of the EuroScan network (26).

- *Adoption or adaption of topics from other systems*
  Most HTA systems, particularly in small countries and countries with very constrained financial situations, adopt topics from existing horizon scanning systems or adapt HTAs and/or HTA results from other countries. Systematically, this may be done through active participation and seeking topics in networks or (active) scanning of available HTA resources, as reported by many EuroScan network members (26). It should be noted that adopting or adapting topics should not be considered as bypassing prioritisation, but rather one of several means of identification of relevant topics to assess. In such cases, the HTA or evidence from an existing HTA may be adopted or adapted in a pragmatic way, paying attention to local context, as recently suggested by the Latin American HTA Policy forum (22).

- *Identification from existing lists of health technologies*
  Similar to adoption or adapting topics from other countries, topics with evidence may be identified from other sources, such as compiled lists of technologies. Lists of technologies are produced by various networks and organisations including WHO. WHO recommends the use of its lists to inform the development of national lists of essential technologies (27). Anecdotally, countries have mentioned utilizing the WHO list at conferences or meetings, e.g. a workshop on HTA held in the Balkan region (7). Our scoping review did not find examples of the use of such lists as an explicit or systematic approach, but this does not mean that they are not used.

- *Needs assessment followed by identification of innovations*
  Proactive needs assessment followed by identification of innovations as a form of topic identification has been advocated as relevant for LMICs by the members of the Latin American HTA Policy Forum (22, 28). Needs identification followed by early assessments to identify relevant health technology innovations that meet the needs is also one of the proposed methods described in the HTA implementation guidance (18). Furthermore, horizon scanning systems and disinvestment strategies (see below) provide reports on specific areas of interest for their commissioners, reflecting the fact that specific areas may

have been selected based on some kind of needs assessment. However, we did not find examples of the use of needs assessment in the literature. Nonetheless, it is known that commissions (see above) may be based on needs assessment.

Complex mix of approaches to topic identification

- *Horizon scanning and early awareness*
  As stated above, in the context of HTA, horizon scanning is the systematic identification of health technologies that are new, emerging or becoming obsolete, and that have the potential to affect health, health services and/or society (29). Horizon scanning is considered to be the most comprehensive tool for identification processes and has received substantial attention from the HTA community. Indeed, horizon scanning was the focus of the Global HTA International Policy forum meeting in 2018 (2) and the regional HTAi International Asia meeting 2019 (30), and was also discussed in the Latin America HTA Policy Forum Meeting in 2020 (22). More importantly, horizon scanning provides a means of identifying in a timely manner technologies that may tend to change existing health care in surprising ways (also called disruptive or transformative technologies) so as to allow planning for their implementation. In many countries, horizon scanning activity not only informs prioritization of technologies to be assessed, but also decisions related to local innovations, clinical research, disinvestment, procurement, pricing and reimbursement more directly (2) (see Figure 4).

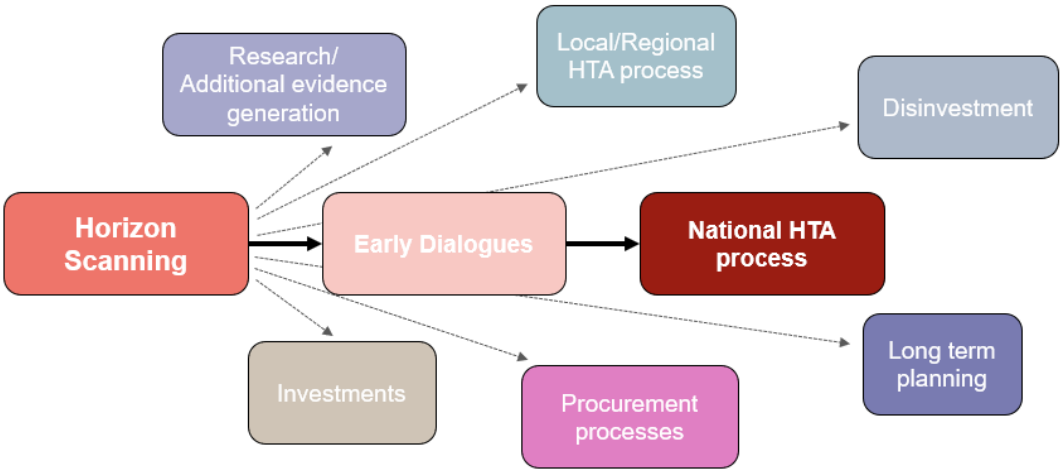


Figure 4 Potential use of horizon scanning information

Commonly used sources of information in horizon scanning systems include (14):

- Individuals, committees and expert groups
- Industry and industry associations
- Government and regulatory bodies
- For-profit intelligence services
- Scientific biomedical literature review
- Other HTA and horizon scanning systems
- International institutions and forums, meetings and conferences

- Information on patents
- Media
- Surveys
- Grey literature

A list of countries with horizon scanning systems used to inform prioritization of HTA can be found in Appendix 1, Table A1.3

- *Disinvestment strategies*

The term disinvestment in health care has various meanings depending on the context. Most refer to the processes of withdrawing (partially or completely) health resources from existing health care practices, procedures and technologies deemed to deliver little or no health gain for their cost, and which are thus not efficient health resource allocations. Disinvestment strategies are proposed as important approaches to identifying topics for reassessment, and have therefore been of interest to the HTA community (31). Approaches to identifying disinvestment candidates typically include:

- Horizon scanning
- Adoption of topics from other systems or systematic reviews
- Systematic analysis of practice variations
- System triggers and "DO NOT DO" lists
- Nominations and consultations
- Routine use of local data

Our survey found that the most common means of topic identification were proposals by government department or officials (n=16), health care workers (n=13), HTA systems decision makers or manufacturers (n=12), and patients or the public (n=9). Note that respondents could select more than one option and that no distinction was made between proposal, nomination and commission. Eleven respondents reported having a formalised procedure in place for topic identification, but only five respondents responded that topics may be identified through a formalised horizon scanning/early warning process.

Topic Selection

We report findings about options on how to proceed with topic selection, who to involve and what is produced (see Table 4).

During topic selection (or filtration), the identified topics are checked for applicability to the HTA system. The main point is to acquire information so as to be able to exclude topics that are not within the scope of the HTA process. In some cases, explicit selection criteria or questions are formulated that reflect the aims of the process. In cases where the criteria allow yes or no answers, the selection process may be relatively technical, performed by a secretariat and informed by stakeholders. Typically, such selection criteria are technology related (e.g. pharmaceuticals, or medical devices), clinical indication related (e.g. cancer therapies), timeline related (e.g. new technologies) and/or evidence related (e.g. the availability of clinical evidence to assess).

However, topic selection is not always straightforward and, as mentioned earlier, is not always easily distinguishable from identification and prioritisation. This is particularly true for HTA systems where substantial judgment is needed to assure the identified topics are within the system's scope (e.g. the scope is defined as innovative, high impact, medical devices or a potentially disruptive technology). In such cases, ranking needs to be performed in a manner similar to prioritisation.

The main output from topic selection is used to inform the prioritisation step. Following selection, an output is typically produced with the same domains of information as for the output of identification (see Table 3). Contextual data and data from stakeholders on (potential) impact and availability of the technology, as well as evidence (clinical trials, research) and similar technologies (competing interventions), may be retrieved in more detail than during identification. Issues related to sensitivity of data, such as data provided by stakeholders (in confidence), need to be addressed during the selection process. The complexity and necessary detail of the information depends on the aims of the HTA system, criteria of the prioritisation process and whom to involve in this process. Typically, more details are needed when the aim is to inform prioritisation that involves complicated criteria and a broad range of stakeholders. The final product/output is either a table, a one/two-page vignette or alert with short text, as exemplified by the Brazilian horizon scanning system (32), or a slightly longer brief that describes the topic in greater detail. In some cases, particularly when complex identification approaches are used, a rapid assessment or early assessments of more substantial length and depth are produced, as exemplified by the outputs of the Austrian (33), Swedish (34), Italian (35) and Canadian horizon scanning systems (36). This may cover a single technology or a whole area of interest (e.g. new childhood vaccines). The aim will often be to provide information about expected impact or added value of a HTA, before additional analyses, such as cost-effectiveness analysis, are prioritised.

Table 4 Summary of findings for topic selection

Selection	Options on how to proceed	Options on whom to involve	Options on what to produce (outputs)
Aim: to verify that topics are within the scope of the HTA system	**Implicit** (unsystematic and influenced by individual experiences reflecting the scope of the HTA system) **Explicit by criteria:** Typically: The technology (e.g. pharmaceuticals); Clinical indication (e.g. cancer therapies); Timeline related (e.g. new technologies, expected to be available for implementation); Evidence related (availability of clinical trial data). **Methods:** Selection may involve several steps. Sometimes purely technical scoring (yes or no). Sometimes not defined beyond being part of prioritisation.	An external service, organisation or the HTA agency/institutions; Involvement of stakeholders mainly to resolve lack of clarity; Commonly a coordinating secretariat.	**Outputs:** Lists of topics; A database of topics; Briefs/Alerts; Rapid assessments Same information domains as for identification, but sometimes in more depth.

We identified one randomised trial from England comparing the use of structured tables to written text for informing clinical experts (37). The authors did not find any significant difference in how the experts valued the output. In our survey, for simplicity, we did not distinguish between topic selection and prioritisation. Results are therefore summarized below under Topic Prioritisation.

Topic Prioritisation

It is well known that no HTA system has the capacity to assess all health technologies and therefore prioritisation is needed. For decision makers, some assessments are more urgent than others. However, if all selected technologies (technologies in the scope of the system) can be assessed within a given timeframe, there might not be a need for prioritisation criteria. For example, some countries such as Poland (25) and others in Europe (16) claim to assess all technologies within a predefined scope (e.g. all new pharmaceuticals to be added to the beneficial package, or all vaccines in a childhood vaccination programme, or all commissioned topics), although criteria related to timeliness and importance may also apply. We report findings from the scoping review on how to proceed with topic prioritisation, who to involve and what is produced.

Topic prioritisation is a task typically given to specialised committees of clinical experts and stakeholders; these committees use implicit judgement (e.g., influenced by individual experiences, ranking according to assumptions) or explicit judgement, such as scoring system

criteria, to rank the topics. In explicit priority setting processes, formal priority setting tools, such as Delphi panels, multi criteria decision analysis (MCDA), and on-line ranking tools, are used (26, 38).

Studies from the scoping review report that explicit criteria for prioritisation typically reflect: (unmet) needs, potential impact (on patient health, public health, costs, health service, and/or society), and alignment with national priorities, as described in a systematic review from 2015 (11) as well as a recent report from the Latin American HTA Policy Forum (22). A summary of identified criteria, categorised according to domains identified across all extracted data, is shown in Table 5.

Table 5 Domains of information in topic prioritisation criteria

Main domains	Sub-domains
Needs	Lack of available alternatives; Individual technology or disease relevance; Health system priorities (burden of disease, unmet needs, type of disease)
Technology related	Variability in use; Degree of innovation; Pharmaceuticals; MDs/IVDs; Vaccines; In line with the scope of the HTA system; Multiple alternatives expected
Indication related	Orphan (rare) disease; Severity of disease/symptoms; Target population size; Burden of disease; Potential cures; Oncology; Exclusion (no HTA) criteria: rare diseases and use only in children; Multiple indications expected
Timeline related	Phase II (orphan drugs) or III data; Maximum 3 months after EMA approval; CE mark (MD or IVDs) or expected to obtain one within 12 months; Regulatory approval; Availability or plans to be made available; New technology; Innovative modification of an existing technology; Anticipated sub-optimal market uptake; Allow timely advice to facilitate appropriate implementation; Inappropriate diffusion
Evidence related	Evidence quality; Uncertainty of the evidence; Availability of clinical evidence (e.g. phase II or III studies); Sufficient evidence to support an assessment
Potential patient health related impact	Potential clinical benefit (compared to alternatives); Safety/tolerability; Benefits perceived by patients; Psycho-social; Impact on treatment guidelines
Potential public health related impact	Preventative/population benefits
Potential cost related impact	Cost of the intervention (unit price); Costs for the patient and their family; Potential cost-effectiveness; Potential budget impact; High volume
Potential impact on health service	Importance to health care innovativeness; Process and infrastructure
Impact on Society	Opportunity cost; Non-medical costs and those in other sectors of society (e.g., productivity); Local innovations (support of local health technology innovation and industry)
Other (values)	Political, historical or cultural aspects; Degree of innovation; Environmental impact; The benefits perceived by caregivers; Multiple proposers; Potential value added by conducting an HTA; Potential impact on equity in general; Variability in access/accessibility; Level of interest from media and patient organizations

Although prioritising topics for HTA should ideally include criteria reflecting the value of information relative to costs of performing an assessment, we found that this aspect is rarely explicitly formulated as a criterion. Notably, involvement of industry stakeholders and donors in prioritisation is avoided. Table 6 presents a summary of our main findings on topic prioritisation.

Table 6 Summary of findings on topic prioritisation

Prioritisation	Options on how to proceed	Who should be involved?	Options on what to produce (outputs)
Aim: to ensure HTA is applied to the most important topics	**Implicit** impact judgment (unsystematic and influenced by individual experiences) **Explicit by criteria:** Needs; Potential impact (on patient health, public health, costs, health service, and/or society); Alignment with national priorities and legislation; Local values **Methods:** Ranking; Scoring; Delphi processes; Prioritisation tools (e.g. PriTec tool)	Specialised committees/forums to implicitly or explicitly rank the topics; The involvement of industry and donors in prioritisation committees is usually avoided, but involvement of stakeholders such as clinical experts and patients in specialist committees is common; Policy makers to take the final decision on which topic to prioritise; A coordinating secretariat	A decision on whether to initiate, reject or postpone the initiation of an assessment; Also: A decision on depth of assessment; A list of prioritised topics, rejected topics; Other products depending on the scope of the HTA system and additional aims of the TISP approach

In the survey (see Appendix 2), 55% (n=11) of respondents answered "Yes" to the question on whether prioritisation was performed using explicit criteria and/or ranking system(s), 45% (n=9) responded "no", and two respondents skipped the question. One respondent mentioned use of the PriTec online tool (39), which was also identified by the scoping review. Survey respondents indicated that medical experts appointed by the Government (76.5%, n=13), employees of an institution responsible for TISP (government, non-governmental) (64%, n=11) and also manufacturers (15.8%, n=3) were involved in the prioritisation process. The final decisions (based on ranking or scores) are commonly performed by the HTA system owner, typically at governmental level or at a level with responsibility provided by the MoH or by legislation. The number of times topics are annually prioritised for assessment varies, ranging from once or twice a year to more than six times a year. Also, the number of topics prioritised for assessment is highly variable. Survey responses indicated that topics were commonly prioritised for HTA one or two times per year for both pharmaceuticals (55.6%, N=10/18) and non-pharmaceutical interventions (66.7%, n=10/15). The number of topics prioritised ranged from one to ten a year (5 respondents each for both pharmaceuticals and non-pharmaceuticals) to 51-99 a year for non-pharmaceuticals (one respondent) to more than 100 a year for pharmaceuticals (one respondent).

TISP: Country Examples

For our survey, we identified a total of 29 countries in Asia, Africa, and Latin-America as potentially having a formalised HTA system (Appendix 2). We were careful to ascertain that these countries actually have a formalized HTA system as the literature on the area is limited. Although several other countries are mentioned in the literature as having experiences with HTA, we considered these 29 countries to potentially have a formalised HTA system as defined in the background section. In most cases, the TISP information reported for these 29 countries was very limited (see Appendix A1.2 and A1.3). We present country examples based on the availability of TISP descriptions from the scoping review or availability of information both from the survey and scoping review. Only ten country examples are provided in table 7.

It should be noted that it was not always clear if a proposal or nomination process was reactive or proactive. Information on the TISP process in other countries can be found in Appendix 2 table A1.2 and A1.3.

Health systems and TISP processes are in continuous development and the way a particular country deals with the TISP process may have changed by the time this report is published. For more detailed and up-to-date information, we recommend contacting informants from relevant countries.

Table 7 TISP: Country examples

Africa and Middle East:
South Africa – Proactive stakeholder proposal (motivations) of topics
South Africa was the only sub-Saharan African country identified as having a formalised HTA system. We found little information on TISP. The formal use of HTA is restricted to pharmaceuticals (prescription medicines and medicines for primary secondary and tertiary state care) entering the National Essential Medicines List with committees appointed by the MoH. In addition, implementation of medicines at the provincial, district and facility level is through the Pharmaceutical and Therapeutics Committees. The annual number of HTAs performed is between 21 and 50. A broad range of stakeholders, including governmental employees, health care workers and the public, may propose topics. Formalising the topic prioritisation process is in the pilot phase and a draft guidance document (HTA Methods Guide available at: https://www.knowledgehub.org.za/elibrary/notice-request-comment-updating-health-technology-assessment-methods-guide-inform) is currently under development that will provide a framework for topic prioritisation. Currently, those involved in prioritisation are appointed by the government. The current output is a list of topics used in the scoping of HTA. According to the survey, a list of topics that are not prioritised for HTA is publicly available (not identified).
Iran – Commissions, with an expressed aim to implement horizon scanning
The available literature suggests that Iran has a formalised HTA system - and is developing a horizon scanning system (40). However, according to the survey, a formalised TISP process is not yet in place. In Iran, HTA is used by the High Council for Health Insurance (HCHI) when it makes decisions to implement a new service in the Health Insurance Benefits Package. This HTA entity is under the authority of the Ministry of Health and Medical Education, and the number of HTAs produced annually for pharmaceuticals is between 51 and 100 and for non-pharmaceuticals is between 11 and 20. Topics may be proposed by a broad range stakeholders (applicants) including manufacturers and patients/the public through a web site. Currently only the HCHI may commission topics.
Tunisia – Stakeholder proposals and the use of an online tool for prioritisation

Survey informants reported that, in Tunisia, HTA can be used to inform decisions on implementing both pharmaceuticals (1-10 HTAs annually) and non-pharmaceuticals (1-10 HTAs annually). Topics may be proposed by public payers or governmental officials as well as those producing the evidence (the Tunisian HTA agency). There are formalised selection and prioritisation criteria. National governmental employees involved in identification and assessment, as well as national payers, use the PriTec tool (39, 41) to rank the proposed candidates. According to a survey respondent, Tunisia was assisted in setting up the TISP process by the Spanish regional Basque HTA agency Osteba. The output of the process is a list of topics prioritised by public payers who are the formal decision makers of the HTA process. Currently this list of prioritised topics is not publicly available, and the process is under development.

Country examples – Asia Pacific

Thailand – Stakeholder proposals and the use of MCDA for prioritisation

In Thailand, HTA has been formally integrated into coverage decisions, including in the development of the National List of Essential Medicines and the Universal Health Coverage Scheme benefits package (42, 43) which includes a wide range of technologies, both pharmaceuticals and non-pharmaceuticals. The nomination and prioritisation process involves multi criteria decision analysis and was established based on a broad literature review of priority setting in HTA. The process was evaluated following its introduction in 2009-2010. Prioritisation criteria include 1) size of population affected by the disease, 2) severity of disease, 3) effectiveness of health intervention, 4) variation in practice, 5) economic impact on household expenditure, and 6) equity/ethical and social implications, with equal weighting (15). According to the survey, a separate HTA program for vaccines has also been implemented and 11-20 pharmaceutical topics and 11-20 non-pharmaceutical topics are prioritised for HTA 1-2 times a year. Selection and prioritisation are performed through a participatory process involving a committee of stakeholders, including employees of the HTA institution, clinical experts and patient/public representatives. The output of prioritisation is a list of topics for which: 1) a study may be conducted or 2) the topic may be passed to other working groups or subcommittee (as advised by the topic selection working groups) for follow-up. Currently, the list is not published, but a website is being planned.

Malaysia – Horizon scanning

According to the literature, Malaysia has a long history in HTA with a system that has gradually evolved since its first introduction in 1995 (44). Malaysia does not have an explicit benefits package (unlike other countries with formalized health insurance systems). HTA was developed to inform publicly funded clinical practice including evidence-based clinical practice guidelines. The development of the HTA system includes establishment of a formal horizon scanning unit at the Malaysian HTA agency and INAHTA member MAHTAS. The process is influenced by the EuroScan toolkit and procedures are available on a website. In Malaysia, HTA covers a wide range of technologies including pharmaceuticals, vaccines and non-pharmaceuticals. Annually 1-10 pharmaceuticals and 21-50 non-pharmaceuticals topics are prioritised for HTA. Priority is given to technologies for management of diseases with high burden in Malaysia and local innovations. Other priorities include availability of other treatment, cost, clinical impact, other impact (organisational, ethical or social). The aim of horizon scanning is to provide timely advice to allow appropriate implementation and/or adoption of health technologies, and to facilitate budgetary planning (44).

Country examples –Latin America

Argentina – Reactive – Stakeholder nomination

According to our survey, a broad range of topics may be subject to a HTA. A non-profit autonomous academic institution affiliated with the University of Buenos Aires (IECS, Institute for Clinical Effectiveness

and Health Policy) devoted to research, education and technical cooperation in health care has an HTA unit which may be commissioned to perform HTAs by different Latin American countries. According to our survey, the formal decision maker of the HTA system in Argentina is the MoH, prioritising on an annual basis 11-20 pharmaceutical and 11-20 non-pharmaceutical topics for HTA. A broad range of stakeholders including employees of governmental institutions, clinical experts, industry, and the public, may nominate or propose topics to be assessed. Prioritisation is performed by those involved in HTA and medical experts appointed by the MoH. According to our survey, there is a formal priority setting pathway. The output of prioritisation is a published list of prioritised topics, as well as non-prioritised topics.

Brazil – Horizon scanning

The information below is adapted from an overview on horizon scanning systems produced for the global HTAi Policy Forum in 2018 (2) supplemented with additional information from country specific literature (32, 45, 46). According to the literature, the Brazilian National Committee for Health Technology Incorporation (CONITEC) is involved in horizon scanning. CONITEC is both a member of INAHTA as well as of the EuroScan International Network. Members of EuroScan supported CONITEC in the set-up of their horizon scanning programme, making use of the EuroScan Toolkit. The horizon scanning team of CONITEC undertakes the identification of new technologies. The sources for the identification of new technologies include databases, both clinical trial databases as well as commercial pharmaceutical databases, websites (registrations and licensing), scientific and grey literature. The nature and depth of the assessment is dependent on the needs of the stakeholders and the time available, but priority is given to health technologies that can be introduced at affordable cost for the health system, but also have a favourable impact on clinical practice, on service organization and on social and ethical aspects. Information from the horizon scanning can provide input to support the decision-making process for the reimbursement of new technologies, for defining which pharmaceuticals would be entitled for further development using public-private partnerships, and to support the Ministry of Health in court cases regarding the right to health. Furthermore, the information can be useful for the public. CONITEC produces so-called Alerts (concise information on a single technology in 6-8 pages) and briefs (deeper analysis of a theme, consisting of 20-40 pages). Although a horizon scanning system has been introduced in Brazil, a survey from 2020, published as part of the HTAi-Latin America Policy forum discussion on priority setting in the region, suggests that there is no formal priority setting for HTA in Brazil as such. Several stakeholders including CONITEC, governmental organisations, industry and patients may propose topics for HTA (22).

Country examples – Eastern Europe and Central Asia

Hungary – Reactive TISP process

According to survey respondents, in Hungary, the Ministry of Human Resources commissions topics, and institutions commissioned to perform the HTA react accordingly. There are no official criteria connected to the commissions, and the HTA process is said to not be transparent (47).

Kazakhstan – Proactive stakeholder consultations

Kazakhstan is an example of a relatively new HTA system. According to the literature, criteria for the prioritization of topics consist of a process initiated by the MoH through consultations and a workshop using selection of criteria from those specified in a literature review. A scoring system is established in later discussions. The process was applied in a pilot performed in 2014 to a selection of topics, and three health technologies were chosen for full assessments (48). According to the survey, topics may be proposed by governmental authorities, manufacturers and the end-users of HTA. 21 to 50 pharmaceutical and 21 to 50 non-pharmaceutical topics are prioritised for HTA each year. Employees of the institution (government, non-governmental) responsible for topic identification, and appointed stakeholders including experts and representatives of industry, as well as patients, according to the survey, may propose topics. The survey respondent considered prioritisation to be fragmented as no specific procedure is currently used for

pharmaceuticals, and there are still some issues concerning transparency. Lists of prioritised topics are publicly available.

Poland – Different approaches for different technologies

According to the survey, HTA has been implemented in Poland for pharmaceuticals, vaccines and non-pharmaceuticals. More than 100 assessments of pharmaceuticals and between 51-100 assessments of non-pharmaceuticals are performed annually. The MoH is the main decision maker and there are formalized processes for TISP including the use of horizon scanning and industry submissions. The outputs of the TISP process in Poland are short vignettes or alerts; outputs of identified and selected topics not prioritised for HTA are made publicly available. According to available literature, priority matters (except for new pharmaceuticals) specified by the MoH (the so-called orders) are sent to the Polish HTA agency AOTMiT and published (e.g. https://bipold.aotm.gov.pl/index.php/zlecenia-mz-2020). HTA priorities arise indirectly from these.

In contrast, the process of prioritisation of new pharmaceuticals to be reimbursed in Poland is reactive (25) based on industry submissions of applications to the MoH though a "pragmatic" single technology assessment process, influenced by similar processes in Scotland, France and England and regulated by law closely linking the HTA process to European pharmaceutical regulations and reimbursement. It involves a different HTA agency (AHTAPol) which receives submission files (referred to as HTA reports) prepared by contract services (private consultant firms) paid by the industry and reviewed by experts. The HTA agency's main role in this process seems to be to coordinate the process and publish the HTA report. Consistent reliance on this model of HTA in Poland has created conditions for the emergence of consultancy firms assisting manufacturers in preparing country-specific HTA reports based on the AHTAPol's guidelines. This example from the literature illustrates a TISP process for new pharmaceuticals similarly used by several other European countries (16).

Other aspects of TISP

The scoping review and survey identified three aspects related to other aspects of TISP processes: 1) governance and coordination, 2) evaluation and development and 3) initiatives and networks for TISP.

Governance and coordination

What is commonly understood as governance for TISP are the aims of the HTA process and funds for its conduct (see Table 8). Governance and coordination of TISP is typically defined politically by the HTA system owner (MoH or regional health authorities) or government-appointed institutions. The recommendation of the European collaboration (12) is that governance and coordination should be conducted by a coordinating group or a secretariat. This can also apply to TISP in general.

Table 8 Summary of findings for TISP governance and coordination

Aspect to consider	Approaches	Who may be involved	What is produced (output)
Governance and coordination	Priority setting	The HTA-process institutions and politically appointed decision makers are typically responsible for	Decisions on the aims of the HTA system, the involvement of stakeholders,

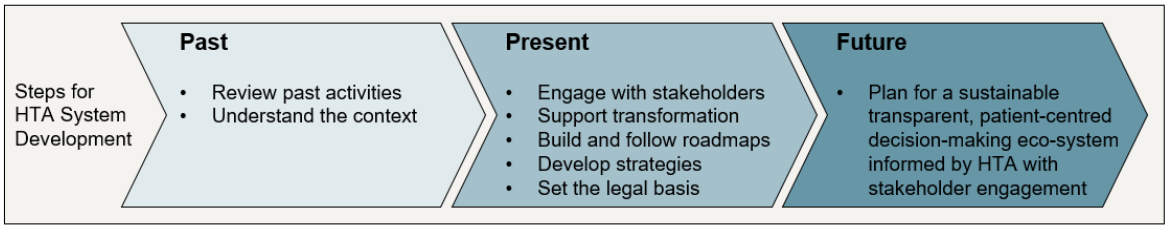
		governance and coordination of TISP; A coordinating group and/or a secretariat or similar is commonly involved; Stakeholders involved in the process may act, at least, as informants concerning needs.	transparency, timelines and budgets

Evaluation and development of TISP

Examples of development and improvement of TISP are provided in the included literature by, amongst others, the English medical device assessment process (49), the Swedish (34), Brazilian (32) and Malaysian (50) horizon scanning systems and the TISP process in Kazakhstan (48). Furthermore, the EuroScan Toolkit (14) and the EURASSESS project (13) provide recommendations for evaluating horizon scanning and early awareness systems. Recommended evaluation methods include external and internal audits, surveys, interviews and focus groups. We considered that most of these recommendations could be adapted to any TISP approach, with the exception of the English comparison of information provided for prioritisation (37) (see output of selection above). We found no 'head-to-head' evaluations (i.e. comparisons of one approach to another) and only a few examples where suggested methods are reported to be used.

Survey respondents from 11 countries reported steps taken to improve the TISP process, including: revising criteria and/or weighting, publication of tasks assigned by government authorities on websites, meetings with stakeholders and international partners, and support from external partners with training and capacity building (Appendix 2).

Furthermore, recommendations for implementing and developing HTA systems in general also apply to TISP, as illustrated in figure 7.



Networks, collaborative initiatives, and capacity building

Collaboration and participation in scientific networks and bilateral capacity-building projects are good for the development of practices in HTA and TISP. There are several references to collaborations and partnerships in the included literature. Our findings indicate that most HTA agencies and organisations involved in HTA welcome collaborative partnerships, and may also

assist in capacity building dependent on project funds. We identified one scientific network (*International Health TechScan (IHTS) (51))* and one global initiative (*The International Horizon Scanning Initiative (IHSI)(52))* that engage specifically in TISP; we describe these briefly below. In addition, there are several other relevant scientific networks and organisations concerned with HTA and evidence-based medicine that are also relevant for TISP-related capacity building. A tabulated list of some of these networks and organisations is given in Appendix 1, Table A1.4.

International Health TechScan (IHTS)
International Health TechScan (formerly known as the EuroScan International network and recently renamed) is a scientific network for horizon scanning which has existed for more than two decades. The network aims to share knowledge and brings together people involved in technology scanning for health services and HTA. The network is organised into regional groups for Africa (AfroScan), Asia (AsiaScan), Europe (EuroScan) and America (ScanAmerica) (51).

The International Horizon Scanning Initiative (IHSI)
The International Horizon Scanning Initiative was established at the Ministry level by a number of European countries. The initiative aims to make a joint horizon scanning database available to members. The first focus is on pharmaceuticals; the database is planned to support pharmaceutical price savings, mitigate the impact of disruptive interventions, support effective budgetary policy, and support HTA and regulatory preparation. The database is planned to be available to members in 2021. In June 2021 IHSI signed a four-year contract with ECRI, a USA-based non-profit research organisation, to provide a database, conduct horizon scanning and provide horizon scanning outputs. Current members are from the Netherlands, Denmark, Belgium, Portugal, Switzerland, Norway, Ireland and Sweden. Full membership can be obtained through a national authority. According to the website, access to data as an affiliated member can be given to health care organisations in a country in which another organisation is already a full member (52).

Discussion

The aim of this report was to highlight the range of options for topic identification, selection and prioritisation as an integrated part of implementing health technology assessment in LMICs.

The report is based on a systematic scoping search, a survey of TISP directed towards countries in Africa, Asia, Latin America and Eastern Europe with a formalised HTA system, and a webinar and notes made therefrom. The report is not intended to present comprehensive evidence concerning TISP; we cannot make claims concerning the relative effectiveness of one approach over another, as we found no evidence comparing TISP approaches. Thus, the results represent our understanding of how different strategies for prioritising HTA topics can be categorised by applying TISP. The results are intended to supplement existing guidance on HTA implementation in support of UHC, by providing more details about TISP. Further work may include more detailed analysis of context-specific needs, comparisons of different approaches and structural limitations.

Our findings suggest it is important to ensure that the initial criteria used to start TISP are transparent, as should be the procedures and involvement of stakeholders. Furthermore, TISP should give consideration to and acknowledge the nuances of the health system context (i.e. politics, needs, resources and values) in which it is applied. For low resourced settings, TISP may start up simply, but partnerships with more experienced countries, scientific networks and initiatives should be explored for growth, solidification and comprehensiveness.

The benefits of a rigorous TISP process with a predefined scope as compared to more pragmatic approaches need to be further investigated in different settings and for different technologies. In many cases, responsible bodies and decision makers need to react rapidly to specific situations that may not be predefined priorities of an HTA process. The importance of this should be reflected in a pragmatic planning drive for the TISP process within the relevant entity. A rigorous TISP process may act as a gateway for excluding topics of no interest based on what an HTA entity in a different setting has recommended. On the other hand, local and pragmatic HTA, relying on existing evidence synthesis and analysis, and involving local stakeholders, can promote confidence in the decision process, even when an existing HTA has a negative conclusion with regard to cost-effectiveness in a different setting.

Variations in topic identification approaches are expected and this was confirmed by the scoping review. Our results reveal that horizon scanning, which has been widely acknowledged in the HTA community, may serve several additional purposes (2). However, results from the scoping review and our survey revealed that only a limited number of countries use complex mix processes for topic identification. This has recently been confirmed at the regional HTAi Policy Forum meetings on approaches towards TISP in Latin America (22, 53). An important aspect to consider is that technologies are not simultaneously available in different countries, and clinical research to provide evidence on effectiveness may be very context specific. Thus, adopting topics from other contexts may only be partially relevant. Nevertheless, we consider that industry submission files, selection and prioritisation criteria as well as the output of TISP may be adopted or adapted from existing horizon scanning systems, even when other topic identification approaches are used. Also, horizon scanning outputs such as vignettes, brief assessment reports or rapid HTAs produced in a different country may serve directly as grounds for decisions on new technologies (34, 35, 54, 55), making collaborations on TISP that includes horizon scanning attractive. In particular, collaborations on TISP using identification criteria reflecting the needs of LMICs should be encouraged, as this may contribute to intensive assessments only being prioritised when certain criteria indicate that this is needed.

This report has several limitations. First, the aim of the report was not to be a comprehensive review of literature and detailed information has not been cited as would be the case in a review of literature. Second, the scoping search was limited to recent publications, and used search terms that may not have identified all relevant literature. This approach was chosen to restrict the number of irrelevant records to screen. We included additional literature relevant for LMICs following a pragmatic approach and the authors' knowledge of the subject, checking reference lists and identifying literature from the search for countries with a formalised HTA system. Third, we were very limited by the amount of information on TISP each record provided. Fourth, survey respondent selection was a convenience sample based on contacts available to the

researchers, and may therefore be biased. This may over- or underrepresent actual TISP processes. Also, confirmation of countries with a formalised HTA system is not straightforward and needs further scrutiny. Yet another aspect is that the survey was directed towards countries with formalised HTA systems and, with some exceptions (such as Kazakhstan), our report takes limited account of information from emerging HTA systems in LMICs (those as yet without a formalised HTA process). One example worth noting is Nepal, which was included for data-extraction in the scoping search, but excluded as a country example, since there is no formalised HTA system. Based on the included literature, Nepal has used expert committees to nominate topics for a "free national medicines lists" (56) to inform prioritisation of HTA. Similar situations may exist elsewhere, particularly in countries using WHO's essential technology lists to build national lists of essential technologies. Further research should seek to include these types of experiences.

Conclusion

Our findings suggest that, as with the HTA process, it is important to ensure that TISP is transparent in respect of criteria, procedures and involvement of stakeholders. TISP approaches should be carefully selected to acknowledge relationships with the health system context (i.e. politics, needs, resources and values) to which they are applied. For low resource settings, a simple approach towards TISP may be a starting point, but partnerships with more experienced countries, scientific networks and initiatives should be explored for growth, solidification and comprehensiveness.

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Appendices

Appendix 1 Topic identification, selection and prioritisation for HTA:

Systematic scoping review

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A1 Aim

The aim of the scoping review was to summarize recent (2015 and later) evidence on different approaches, methods, tools, collaborative initiatives, and networks for Topic Identification Selection and Prioritisation (TISP) in HTA (Health Technology Assessment).

A1 Methods

- We conducted a systematic literature search in the PubMed and Scopus databases as shown below,
- We inspected the following websites as stated in the project protocol (available at the NIPH Global health website: https://www.fhi.no/en/qk/global-healt-collaboration/evidence-to-decisions/partnering-low-and-middle-income-countries-to-support-local-implementation--/):

Health Technology assessment international (HHTAi, www.htai.org); The International Network of Agencies for Health Technology Assessment (INAHTA, https://www.inahta.org/); The European Network for Health Technology Assessment (EUnetHTA, www.eunethta.eu); The Asia-Pacific research network on HTA (HTAsia link, https://www.htasialink.org/); The HTA network of the Americas (RedETSA, www.redetsa.org); EuroScan international network (www.euroscan.org); The International Horizon Scanning Initiative (IHSI, https://ihsi-health.org/; The Professional Society for Health Economics and Outcome Research (ISPOR, https://www.ispor.org/); The International Decision Support Initiative (iDSI, https://idsihealth.org/); The World Health Organization (WHO, https://www.who.int/health-technologyassessment/en/).

- Additional information sources included the authors' prior knowledge, information identified through the search for candidate countries for a survey (see Appendix2) and information received from the authors' personal networks.

Literature searches were performed on 6 October 2020; the PubMed search was continued with automatic updates until 14 April 2021. Search terms for the scoping review included text words for topic identification, topic selection, topic prioritisation, horizon scanning, forecasting or innovation combined with text words for HTA (see Table A1.1). No limitations were set for country context.

Inclusion: first, records providing HTA information of potential relevance for TISP and national or regional HTA processes were included for full-text inspection; then only records where data could be extracted according to predefined questions or domains of information were retained. Records where no relevant data could be extracted were excluded.

The predefined elements extracted covered the following: Reference; Type of information (study type); Setting (regions, countries and type of HTA process covered by the information); Overall TISP process description; Details on identification; Details on selection including description of criteria; Details on prioritisation including description of criteria; Methods or Tools for the TISP process (name and description of method or tool); Collaborative networks or initiatives (names, contact addresses and purpose); Other relevant information including information on evaluations.

Title and abstract screening was performed by two authors (VL and JB) independently of each other. Disagreement was resolved by consensus. Screening of full-text and data extraction was carried out by one reviewer (VL or JB) and checked by the other. The studies were not quality appraised. The extracted data was sorted and categorized according to predefined questions corresponding to the extracted data-fields. The main aim of the analyses was to describe different options, tools and criteria, given that this was not a review of the evidence of how TISP is performed in a particular setting. Detailed methodology on how to perform horizon scanning and details of the various information sources were not extracted as this was considered out of scope for the report. Main findings for all questions were summarized narratively and in summary in tables of findings.

Table A1.1 Search strategies

	PubMed, date of last search:14 April 2021
#1	((((topic[ti] OR topics[ti]) AND (identif*[ti] OR select*[ti] OR priorit*[ti])) OR TISP[ti] OR (horizon[ti] AND scan*[ti]) OR (early[ti] AND (alert*[ti] OR awareness[ti] OR assessment*[ti])) OR ((disruptive[ti] OR emerging[ti] OR emergent[ti] OR future[ti] OR innovative[ti] OR new[ti] OR novel[ti] OR promising[ti]) AND (diagnostic*[ti] OR method[ti] OR methods[ti] OR procedure[ti] OR procedures[ti] OR technology[ti] OR technologies[ti] OR technique[ti] OR techniques[ti] OR therapy[ti] OR therapies[ti])) OR diffusion of innovation[mh] OR "diffusion of innovation"[ti] OR "emerging innovation"[ti] OR "emerging innovations"[ti] OR "disruptive innovation"[ti] OR

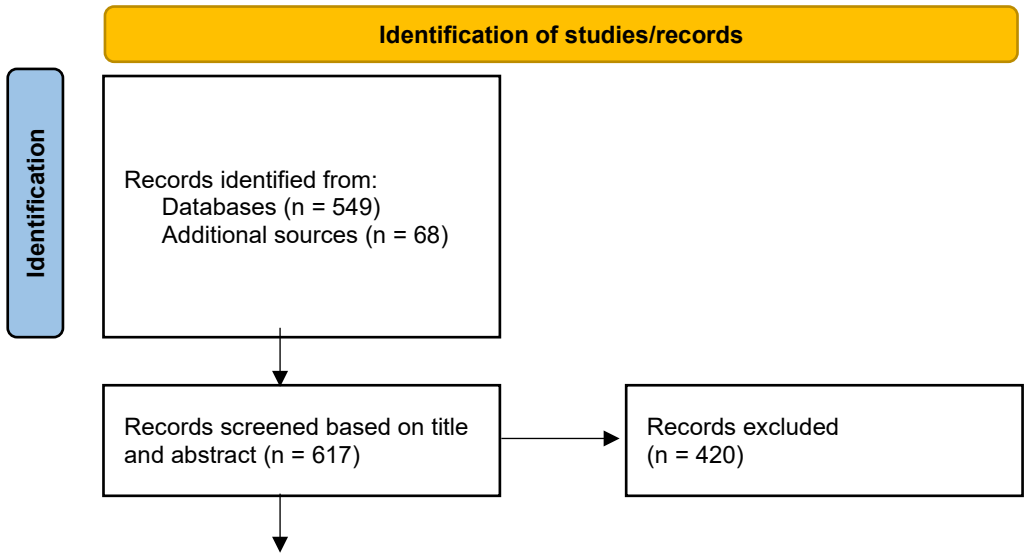
	"disruptive innovations"[ti] OR "technology forecasting"[ti]) **AND** ("technology assessment"[tw] OR "technology assessments"[tw] OR "biotechnology assessment"[tw] OR "biotechnology assessments"[tw] OR HTA[tw] OR HTAs[tw] OR technology assessment, biomedical/mt[mh])) AND 2015:2021[dp]
#2	(("topic selection"[tw] OR "topic identification"[tw] OR "topic prioritization"[tw] OR "topic prioritisation"[tw] OR TISP[tw] OR "horizon scanning"[tw] OR "horizon scan"[tw] OR "horizon scans"[tw] OR "scanning the horizon"[tw] OR "early alert"[tw] OR "early alerts"[tw] OR "early awareness"[tw] OR "early assessment"[tw] OR "early assessments"[tw] OR "disruptive technology"[tw] OR "disruptive technologies"[tw] OR "emerging diagnostic"[tw] OR "emerging diagnostics"[tw] OR "emerging method"[tw] OR "emerging methods"[tw] OR "emerging procedure"[tw] OR "emerging procedures"[tw] OR "emerging technology"[tw] OR "emerging technologies"[tw] OR "emerging technique"[tw] OR "emerging techniques"[tw] OR "emerging therapy"[tw] OR "emerging therapies"[tw] OR "emergent technology"[tw] OR "emergent technologies"[tw] OR "emergent technique"[tw] OR "emergent techniques"[tw] OR "emergent therapy"[tw] OR "emergent therapies"[tw] OR "future diagnostic"[tw] OR "future diagnostics"[tw] OR "future method"[tw] OR "future methods"[tw] OR "future procedure"[tw] OR "future procedures"[tw] OR "future technology"[tw] OR "future technologies"[tw] OR "future technique"[tw] OR "future techniques"[tw] OR "future therapy"[tw] OR "future therapies"[tw] OR "innovative diagnostic"[tw] OR "innovative diagnostics"[tw] OR "innovative method"[tw] OR "innovative methods"[tw] OR "innovative procedure"[tw] OR "innovative procedures"[tw] OR "innovative technology"[tw] OR "innovative technologies"[tw] OR "innovative technique"[tw] OR "innovative techniques"[tw] OR "innovative therapy"[tw] OR "innovative therapies"[tw] OR "new diagnostic"[tw] OR "new diagnostics"[tw] OR "new method"[tw] OR "new methods"[tw] OR "new procedure"[tw] OR "new procedures"[tw] OR "new technology"[tw] OR "new technologies"[tw] OR "new technique"[tw] OR "new techniques"[tw] OR "new therapy"[tw] OR "new therapies"[tw] OR "novel diagnostic"[tw] OR "novel diagnostics"[tw] OR "novel method"[tw] OR "novel methods"[tw] OR "novel procedure"[tw] OR "novel procedures"[tw] OR "novel technology"[tw] OR "novel technologies"[tw] OR "novel technique"[tw] OR "novel techniques"[tw] OR "novel therapy"[tw] OR "novel therapies"[tw] OR "promising diagnostic"[tw] OR "promising diagnostics"[tw] OR "promising method"[tw] OR "promising methods"[tw] OR "promising procedure"[tw] OR "promising procedures"[tw] OR "promising technology"[tw] OR "promising technologies"[tw] OR "promising technique"[tw] OR "promising techniques"[tw] OR "promising therapy"[tw] OR "promising therapies"[tw] OR "diffusion of innovation"[mh] OR "diffusion of innovation"[tw] OR "emerging innovation"[tw] OR "disruptive innovation"[tw] OR "technology forecasting"[tw]) **AND** ((("technology assessment"[tw] OR "technology assessments"[tw] OR "biotechnology assessment"[tw] OR "biotechnology assessments"[tw] OR HTA[tw] OR HTAs[tw]) AND (method*[ti] OR method*[ot] OR criteri*[tw] OR tool*[tw])) OR technology assessment, biomedical/mt[mh])) AND 2015:2021[dp]
#3	(("topic selection"[tw] OR "topic identification"[tw] OR "topic prioritization"[tw] OR "topic prioritisation"[tw] OR TISP[tw] OR "horizon scanning"[tw] OR "horizon scan"[tw] OR "horizon scans"[tw] OR "scanning the horizon"[tw] OR "early alert"[tw] OR "early alerts"[tw] OR "early awareness"[tw] OR "early assessment"[tw] OR "early assessments"[tw]) AND ("disruptive technology"[tw] OR "disruptive technologies"[tw] OR "emerging diagnostic"[tw] OR "emerging diagnostics"[tw] OR "emerging method"[tw] OR "emerging methods"[tw] OR "emerging procedure"[tw] OR "emerging procedures"[tw] OR "emerging technology"[tw] OR "emerging technologies"[tw] OR "emerging technique"[tw] OR "emerging techniques"[tw] OR "emerging therapy"[tw] OR "emerging therapies"[tw] OR "emergent technology"[tw] OR "emergent technologies"[tw] OR "emergent technique"[tw] OR "emergent techniques"[tw] OR "emergent therapy"[tw] OR "emergent therapies"[tw] OR "future diagnostic"[tw] OR "future diagnostics"[tw] OR "future method"[tw] OR "future methods"[tw] OR "future procedure"[tw] OR "future procedures"[tw] OR "future technology"[tw] OR "future technologies"[tw] OR "future technique"[tw] OR "future techniques"[tw] OR "future therapy"[tw] OR "future therapies"[tw] OR "innovative diagnostic"[tw] OR "innovative diagnostics"[tw] OR "innovative method"[tw] OR "innovative methods"[tw] OR "innovative procedure"[tw] OR "innovative procedures"[tw] OR "innovative technology"[tw] OR "innovative technologies"[tw] OR "innovative technique"[tw] OR "innovative techniques"[tw] OR "innovative therapy"[tw] OR "innovative therapies"[tw] OR "new diagnostic"[tw] OR "new diagnostics"[tw] OR "new method"[tw] OR "new methods"[tw] OR "new procedure"[tw] OR "new procedures"[tw] OR "new technology"[tw] OR "new technologies"[tw] OR "new technique"[tw] OR "new techniques"[tw] OR "new therapy"[tw] OR "new therapies"[tw] OR "novel diagnostic"[tw] OR "novel diagnostics"[tw] OR "novel method"[tw] OR "novel methods"[tw] OR "novel procedure"[tw] OR "novel procedures"[tw] OR "novel technology"[tw] OR "novel

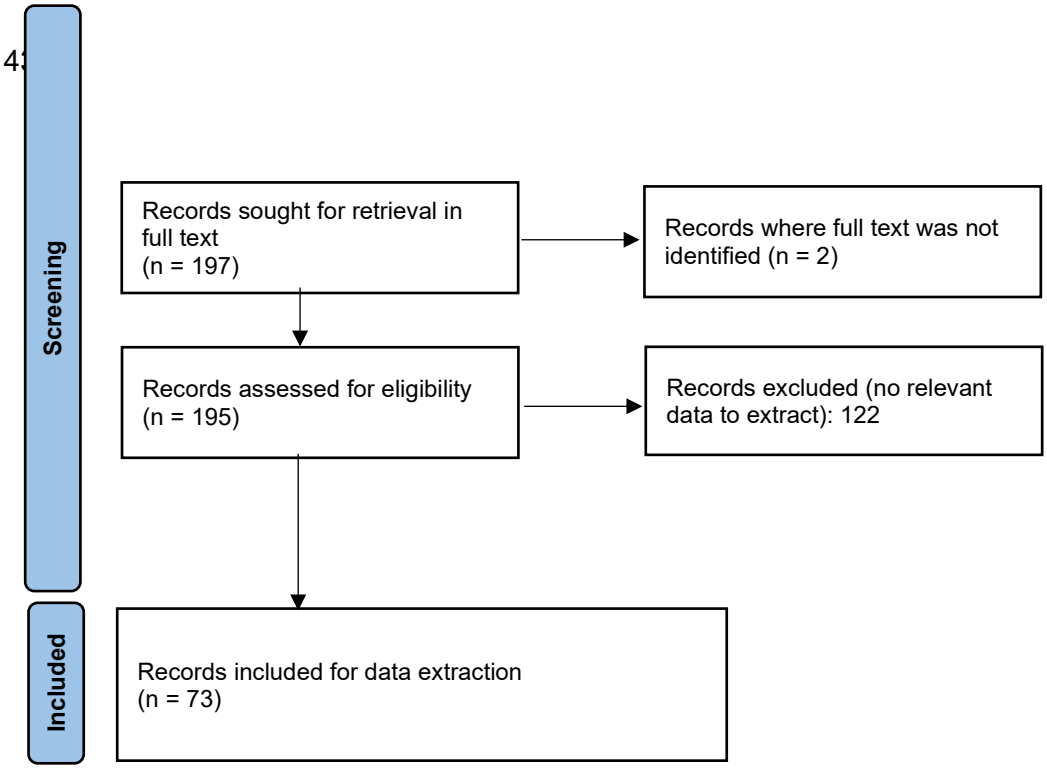
	technologies"[tw] OR "novel technique"[tw] OR "novel techniques"[tw] OR "novel therapy"[tw] OR "novel therapies"[tw] OR "promising diagnostic"[tw] OR "promising diagnostics"[tw] OR "promising method"[tw] OR "promising methods"[tw] OR "promising procedure"[tw] OR "promising procedures"[tw] OR "promising technology"[tw] OR "promising technologies"[tw] OR "promising technique"[tw] OR "promising techniques"[tw] OR "promising therapy"[tw] OR "promising therapies"[tw] OR "diffusion of innovation"[mh] OR "diffusion of innovation"[tw] OR "emerging innovation"[tw] OR "disruptive innovation"[tw] OR "technology forecasting"[tw])) AND 2015:2021[dp]
#4	#1 OR #2 OR #3
	Scopus, Date of last search: 6 October 2020
#1	TITLE((topic* AND (identif* OR select* OR priorit*)) OR TISP OR (horizon AND scan*) OR (early AND (alert* OR awareness OR assessment*)) OR ((disruptive OR emerging OR emergent OR emergence OR future OR innovative OR new OR novel OR promising) AND (diagnostic* OR method* OR procedure* OR technolog* OR technique* OR therap*)) OR "diffusion of innovation" OR "emerging innovation*" OR "disruptive innovation*" OR "technology forecasting") **AND** TITLE-ABS-KEY("technology assessment*" OR "biotechnology assessment*" OR HTA OR HTAs) AND PUBYEAR AFT 2014 AND NOT INDEX(medline)
#2	TITLE-ABS-KEY((topic* W/5 (identif* OR select* OR priorit*)) OR TISP OR (horizon W/1 scan*) OR (early PRE/2 (alert* OR awareness OR assessment*)) OR ((disruptive OR emerging OR emergent OR emergence OR future OR innovative OR new OR novel OR promising) PRE/5 (diagnostic* OR method* OR procedure* OR technolog* OR technique* OR therap*)) OR "diffusion of innovation" OR "emerging innovation*" OR "disruptive innovation*" OR “technology forecasting”) **AND** TITLE-ABS-KEY("technology assessment*" OR "biotechnology assessment*" OR HTA OR HTAs) AND (TITLE(method*) OR KEY(method*) OR AUTHKEY(method*) OR TITLE-ABS-KEY(criteri* OR tool*)) AND PUBYEAR AFT 2014 AND NOT INDEX(medline)
#3	#1 OR #2

A1 Results

A total of 72 records were included in full-text (see Figure A1.1 PRISMA Flow chart). A total of 34 records contained general information or covered more than one country (Table A1.2) and the rest provided information on individual countries. We found no systematic review or scoping review on TISP processes. Main findings are provided in the report. Identified horizon scanning systems are described in table A1.3 and potentially relevant networks are in table A1.4.

Figure A1.1 PRISMA Flowchart:





Flowchart adapted from: The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

Table A1.2 Included records covering more than one country

Included record	Type of record	Included for Question (Q)	Region covered
1. Angelis A, Lange A, Kanavos P. Using health technology assessment to assess the value of new medicines: results of a systematic review and expert consultation across eight European countries. Eur J Health Econ. 2018;19(1):123-52.	SR/HTA not on TISP per se	Q1-2 very limited information	Europe
2. Brixner D, Kaló Z, Maniadakis N, Kim K, Wijaya K. An Evidence Framework for Off-Patent Pharmaceutical Review for Health Technology Assessment in Emerging Markets. Value Health Reg Issues. 2018;16:9-13.	Study (development of tool-submission file)	Q1, Q4, Q5	Emerging markets for pharmaceuticals (Kazakhstan, Vietnam, Indonesia)
3. Calabrò GE, La Torre G, de Waure C, Villari P, Federici A, Ricciardi W, et al. Disinvestment in healthcare: an overview of HTA agencies and organizations activities at European level. BMC Health Serv Res. 2018;18(1):148.	Study (Disinvestment)	Q1	Europe
4. Castro HE KR, Suharlim C, et al. 2020. Arlington, VA: USAID/MSH, 2020. A Roadmap for Systematic Priority Setting and Health Technology Assessment (HTA). Arlington, VA: USAID/MSH, .	Guidance (Institutionalizing HTA) – cited in introduction	Q1-Q4	General

Included record	Type of record	Included for Question (Q)	Region covered
5. Ciani O, Wilcher B, Blankart CR, Hatz M, Rupel VP, Erker RS, et al. Health technology assessment of medical devices: a survey of non-European union agencies. Int J Technol Assess Health Care. 2015;31(3):154-65.	Survey	Q2, Q4 (very limited)	Non-European union HTA agencies
6. Doos L, Packer C, Ward D, Simpson S, Stevens A. Past speculations of the future: a review of the methods used for forecasting emerging health technologies. BMJ Open. 2016;6(3):e010479.	Review/survey	Q1, Q6	Global (no restriction to country or region)
7. Douw K, Vondeling H. Selection of new health technologies for assessment aimed at informing decision making: A survey among horizon scanning systems. Int J Technol Assess Health Care. 2006;22(2):177-83.	Survey/Horizon Scanning	Q4	Global
8. Esandi ME, Gutiérrez-Ibarluzea I, Ibargoyen-Roteta N, Godman B. An evidence-based framework for identifying technologies of no or low-added value (NLVT). Int J Technol Assess Health Care. 2020;36(1):50-7.	Systematic scoping review (Disinvestment)	Q1,Q6	Global
9. EUnetHTA. EUnetHTA WP7 Analysis of HTA and reimbursement procedures in EUnetHTA partner countries. 2017; Available from:https://www.eunethta.eu/national-implementation/analysis-hta-reimbursementprocedures-eunethta-partner-countries/ (Accessed August 2021).	Survey/HTA	Q1	Europe
10. EuroScan, A toolkit for the identification and assessment of new and emerging health technologies. Birmingham, UK: EuroScan International Network / University of Birmingham; 2014. [+ Inspected current website: International HealthTechScan (euroscan.org)]	Guidance (Toolkit Horizon scanning/ Network)	Q1,Q2,Q3,Q4,Q5,Q6 – general categorized information	Global
11. Frutos Pérez-Surio A G-GM, Alcácera López MA, Sagredo Samanes MA, Pardo Jario M del P, Salvador Gómez M del T. Systematic review for the development of a pharmaceutical and medical products prioritization framework. J Pharm Policy Pract. 2019;12(1):1–7.	SR (Prioritisation)	Q4 – general on criteria	Global
12. García-Mochón L, Espín Balbino J, Olry de Labry Lima A, Caro Martinez A, Martin Ruiz E, Pérez Velasco R. HTA and decision-making processes in Central, Eastern and South Eastern Europe: Results from a survey. Health Policy. 2019;123(2):182-90.	Study-survey	Q2, Q4 –	Central and eastern Europe

Included record	Type of record	Included for Question (Q)	Region covered
13. Henshall C, Oortwijn W, Stevens A, Granados A, Banta D. Priority Setting for Health Technology Assessment: Theoretical Considerations and Practical Approaches: A paper produced by the Priority Setting Subgroup of the EUR-ASSESS Project. Int J Technol Assess Health Care. 1997;13(2):144-85.	Recommendations/priority setting HTA	Q4	Global
14. Hines P, Hiu Yu L, Guy RH, Brand A, Papaluca-Amati M. Scanning the horizon: a systematic literature review of methodologies. BMJ Open. 2019;9(5):e026764.	SR/Horizon scanning	Q2,Q3,Q4,Q5 – General horizon scanning	Global
15. iDSI. HTA Toolkit v1, the International Decision Support Initiative (iDSI): www.idsihealth.org/HTATOOLKIT.	Guidance/HTA	Q1	LMICs
16. https://www.ipaac.eu/res/file/outputs/wp9/horizon-scanning-systems-cancer-control-europe.pdf	Project report/Horizon scanning for cancer	Q1	Europe
17. Lauvrak V A-HH, Di Bidino R, Erdos J, Garrett Z, Guilhaume C, Migliore A, Scintee SG, Usher, C WA. Recommendations for Horizon Scanning, Topic Identification, Selection and Prioritisation for European Cooperation on Health Technology Assessment. EUnetHTA WP4 Deliverable 4.10, Oslo, 2020.	Recommendations/TISP	Q1 General information on TISP	Europe
18. Lepage-Nefkens I DK, Mantjes G, de Graaf G, Leroy R, Cleemput I. Horizon scanning for pharmaceuticals: proposal for the BeNeLuxA collaboration. Brussels: Belgian Health Care Knowledge Centre (KCE); 2017. [+Additional web site International Horizon Scanning Initiative IHSI: www.ihsi-health.org]	Report/ Guidance (Collaborative initiative)/ Horizon scanning	Q2,Q3,Q4,Q5; network	Europe/Global
19. Lerner JC, Robertson DC, Goldstein SM. Case studies on forecasting for innovative technologies: frequent revisions improve accuracy. Health Aff (Millwood). 2015;34(2):311-8.	Study (Forecasting systems)	Q2,Q3,Q6; general	Europe
20. Marangi M, Ivanovic J, Pistritto G. The Horizon Scanning System at The Italian Medicines Agency. Drug Discov Today. 2019;24(6):1268-80.	Study+review (Horizon Scanning)	Q1,Q2,Q3,Q4; Included for HS system, country case not further commented on	Europe, Italy as case
21. Mundy L, Trowman R, Kearney B. Overcoming the barriers to achieving universal health care in the Asian Region. Int J Technol Assess Health Care.	Report (HTAi Asia Policy Forum	Q1, Q6 – general HTA Asia	Asia

Included record	Type of record	Included for Question (Q)	Region covered
2018;34(4):352-9.	meeting on Universal Health Coverage)		
22. Mundy L, Trowman R, Kearney B. Sustainability of healthcare systems in Asia: exploring the roles of horizon scanning and reassessment in the health technology assessment landscape. Int J Technol Assess Health Care. 2020;36(3):262-9.	Report (HTAi Asia Policy Forum meeting 2019 on Horizon scanning and re-assessment)	Q1,Q34, Q6 – general TISP Asia	Asia
23. Ni M, Borsci S, Walne S, McLister AP, Buckle P, Barlow JG, et al. The Lean and Agile Multi-dimensional Process (LAMP) - a new framework for rapid and iterative evidence generation to support health-care technology design and development. Expert Rev Med Devices. 2020;17(4):277-88.	Study (Early HTA)	Q1,Q2,Q3	Global
24. Oortwijn W, Sampietro-Colom L, Habens F, Trowman R. How can health systems prepare for new and emerging health technologies? The role of horizon scanning revisited. Int J Technol Assess Health Care. 2018;34(3):254-9.	Report (HTAi Global Policy forum meeting on Horizon scanning)	Q1,Q2	Global
25. Oortwijn W, van Oosterhout S, Kapiriri L. Application of evidence-informed deliberative processes in health technology assessment in low- and middle-income countries. Int J Technol Assess Health Care. 2020:1-5.	Guidance (cited in the introduction)	Q1	LMICs
26. Packer C, Simpson S, de Almeida RT. Euroscan internaitonal network member agencies: their structure, processes, and outputs. Int J Technol Assess Health Care. 2015;31(1-2):78-85.	Study	Q1,Q2,Q3,Q4	Europe
27. Pichon-Riviere A, Augustovski F, García Martí S, Alfie V, Sampietro-Colom L. The link between health technology assessment and decision making for the allocation of health resources in Latin America. Int J Technol Assess Health Care. 2020;36(2):173-8.	Report (HTAi Latin American Policy forum on model of connection between HTA and decision making)	Q3/6	Latin America
28. Pichon-Riviere A, Augustovski, F, Alfie, V, Marti, SG, Martí. SG. Background Document Identification and selection	Study (HTAi Latin	Q1,Q4	Latin America

Included record	Type of record	Included for Question (Q)	Region covered
of health technologies in need for HTA for reimbursement decisions ON-LINE Meeting October 2020. 2020.	American Policy Forum on TISP)		
29. Pichon-Riviere A, Augustovski, Federico, Garcia-Marti, Sebastian, Alcaraz, Andrea, Alfie, Veronica, Sampietro-Colom, Laura. Identification and selection of health technologies for assessment by agencies in support of reimbursement decisions in Latin America. Journal: International Journal of Technology Assessment in Health Care Manuscript ID IJTAHC-21-056R1. 2021;(In process).	Report (HTAi Latin American Policy Forum on TISP)	Q1,Q2,Q3,Q4,Q5,Q6	Latin America
30. Specchia ML, Favale M, Di Nardo F, Rotundo G, Favaretti C, Ricciardi W, et al. How to choose health technologies to be assessed by HTA? A review of criteria for priority setting. Epidemiol Prev. 2015;39(4 Suppl 1):39-44.	SR – prioritisation criteria	Q4	Global
31. Teerawattananon Y, Luz K, Yothasmutra C, Pwu RF, Ahn J, Shafie AA, et al. Historical development of the HTAsiaInk network and its key determinants of success. Int J Technol Assess Health Care. 2018;34(3):260-6.	Study (HTA network(s))	Q5	Asia
32. Teerawattananon Y, Rattanavipapong W, Lin LW, Dabak SV, Gibbons B, Isaranuwatchai W, et al. Landscape analysis of health technology assessment (HTA): systems and practices in Asia. Int J Technol Assess Health Care. 2019;35(6):416-21.	Study-survey (on HTA)	Q1,Q2,Q4	Nine Asian countries (Bhutan, India, Indonesia, Japan, Malaysia, Philippines, Singapore, Taiwan, Thailand)
33. Varela-Lema L, Atienza-Merino G, López-García M. [Priority setting of health interventions. Review of criteria, approaches and role of assessment agencies]. Gac Sanit. 2017;31(4):349-57.	Review - prioritisation criteria	*Q1,Q3,Q4*	*Global [-in Spanish]*
34. Vogler S, Paris V, Panteli D. European Observatory Policy Briefs. In: Richardson E, Palm W, Mossialos E, editors. Ensuring access to medicines: How to redesign pricing, reimbursement and procurement? Copenhagen (Denmark): European Observatory on Health Systems and Policies © World Health Organization 2018 (acting as the host	Policy Brief	Q1	Europe

Included record	Type of record	Included for Question (Q)	Region covered
organization for, and secretariat of, the European Observatory on Health Systems and Policies). 2018.			
35. Wild C, Stricka M, Patera N. Guidance for the development of a National HTA-strategy. Health Policy Technol. 2017;6(3):339-47.	Guidance (Institutionalizing HTA -cited in introduction)	Q1,Q4,Q5	Europe, Lithuania as case

Q = Question, Q1) Approaches, methods, tools and general process of TISP, information on the overall TISP process, Q2) Identification, Q3) Selection and/or selection criteria, Q4) Prioritisation and/or prioritisation criteria, Q5) Networks and initiatives, Q6) Other

Table A1.3 Included records reporting on individual countries

Included record	Type of record	Included for Question (Q)	Country
36. Arab-Zozani M, Sokhanvar M, Kakemam E, Didehban T, Hassanipour S. History of Health Technology Assessment in Iran. Int J Technol Assess Health Care. 2020;36(1):34-9.	Study	Q1,Q2,Q6	Iran
37. Bae EY. Role of Health Technology Assessment in Drug Policies: Korea. Value Health Reg Issues. 2019;18:24-9.	Study	Q1 (very limited)	South Korea
38. Canadian Agency for Drugs and Technology in Health. About Horizon Scanning. CADTH.CA, HTTPS://WWW.CADTH.'CA/ABOUT-CADTH/WHAT-WE-DO/PRODUCTS-SERVICES/HORIZON-SCANNING (2015, accessed 8 April 2020).	Website procedures (Horizon scanning)	Q1,Q2,Q3,Q4,Q6	Canada
39. Campbell B, Campbell M, Dobson L, Higgins J, Dillon B, Marlow M, et al. Assessing the value of innovative medical devices and diagnostics: the importance of clear and relevant claims of benefit. Int J Technol Assess Health Care. 2018;34(4):419-24. [In addition the following related websites: Medical Device Technology evaluation programme: Medical Technologies Evaluation Programme | NICE guidance | Our programmes | What we do | About | NICE and www.healthtech.connect.org.uk]	Study + websites	Q1,Q2,Q3,Q4,Q6	England (NICE)
40. Campbell B, Dobson L, Higgins J, Dillon B, Marlow M, Pomfrett C. A new health technology assessment system for devices: The first five	Study	Q1,Q2,Q3,Q4	England (NICE)

Included record	Type of record	Included for Question (Q)	Country
years. Int J Technol Assess Health Care. 2017;33(1):19-24.			
41. Cook A, Streit E, Davage G. Involving clinical experts in prioritising topics for health technology assessment: a randomised controlled trial. BMJ Open. 2017;7(8):e016104.	Study (RCT)	Q1, Q6	England NICE
42. Csanádi M, Ozierański P, Löblová O, King L, Kaló Z, Botz L. Shedding light on the HTA consultancy market: Insights from Poland. Health Policy. 2019;123(12):1237-43.	Study (Submission files)	Q1	Poland
43. Eriksson I, Wettermark B, Persson M, Edström M, Godman B, Lindhé A, et al. The Early Awareness and Alert System in Sweden: History and Current Status. Front Pharmacol. 2017;8:674.	Study	Q1,Q2,Q3,Q4,Q6	Sweden
44. Gomes PTC, Mata VE, Borges TC, Galato D. Horizon scanning in Brazil: outputs and repercussions. Rev Saude Publica. 2019;53:111.	Study	Q1,Q2,Q4,Q5 – Country example	Brazil
45. Groves PH, Pomfrett C, Marlow M. Review of the role of NICE in promoting the adoption of innovative cardiac technologies. Heart. 2018;104(22):1817-22.	Study	Q2	England, NICE
46. Hasegawa M, Komoto S, Shiroiwa T, Fukuda T. Formal Implementation of Cost-Effectiveness Evaluations in Japan: A Unique Health Technology Assessment System. Value Health. 2020;23(1):43-51.	Study/Policy report	Q1	Japan
47. Kosherbayeva L, Hailey D, Kurakbaev K, Tabarov A, Kumar A, Gutzskaya G, et al. A process of prioritizing topics for health technology assessment in Kazakhstan. Int J Technol Assess Health Care. 2016;32(3):147-51.	Study	Q2,Q4 – Survey responder; Country example	Kazakhstan
48. Krabbe L, Buchberger B. [Horizon Scanning in Health Care: A German Perspective]. Gesundheitswesen. 2019;81(7):539-43.	Study	Q1,Q2,Q4 – TISP,	Germany
49. Lach K, Dziwisz M, Rémuzat C, Toumi M. Towards a more transparent HTA process in Poland: new Polish HTA methodological guidelines. J Mark Access Health Policy. 2017;5(1):1355202.	Study	Very limited on TISP, Survey responder; included for more details on HTA process country example.	Poland
50. Lee SS, Myung JE, Strachan L. Delayed Patient Access to Innovative Medical Technologies in South Korea: A Lead-Time Analysis of	Study	Q1 (very limited), not included as example	South Korea

Included record	Type of record	Included for Question (Q)	Country
Reimbursement Coverage Determinations. Int J Technol Assess Health Care. 2019;35(3):229-36.			
51. Lessa F, Ferraz MB. Health technology assessment: The process in Brazil. Rev Panam Salud Publica Pan Am J Public Health. 2017;41.	Study	Q1,Q6, Country example	Brazil
52. Lipska I, McAuslane N, Leufkens H, Hövels A. A decade of health technology assessment in Poland. Int J Technol Assess Health Care. 2017;33(3):350-7.	Study	Q1,Q2 (very limited), Survey responder; country example	Poland
53. McIntosh HM, Calvert J, Macpherson KJ, Thompson L. The Healthcare Improvement Scotland evidence note rapid review process: providing timely, reliable evidence to inform imperative decisions on healthcare. Int J Evid Based Healthc. 2016;14(2):95-101.	Study (Pragmatic approach)	Q2,Q3	Scotland
54. Mundy L. Platelet-rich plasma: a case study for the identification of disinvestment opportunities using horizon scanning. Aust Health Rev. 2017;41(1):33-7.	Study	Q1 (very limited)	Australia
55. Nachtnebel A, Breuer J, Willenbacher W, Bucsics A, Krippl P, Wild C. Looking back on 5 years of horizon scanning in oncology. Int J Technol Assess Health Care. 2016;32(1-2):54-60.	Study (Horizon Scanning oncology)	Q1, Q2,Q3,Q4,Q6; HS only briefly commented on	Austria
56. Nascimento A, Vidal AT, Almeida RT. [Mapping stakeholders' preferences in prioritization criteria for horizon scanning in healthcare technologies]. Cad Saude Publica. 2016;32(7).	Study	Q1,Q2,Q4,(Q5); Country example	Brazil
57. Németh B, Csanádi M, Kaló Z. Overview on the current implementation of health technology assessment in the healthcare system in Hungary. Int J Technol Assess Health Care. 2017;33(3):333-8.	Study	Q1,Q2 (very limited) -	Hungary
58. Pearce F, Lin L, Teo E, Ng K, Khoo D. Health Technology Assessment and Its Use in Drug Policies: Singapore. Value Health Reg Issues. 2019;18:176-83.	Study	Q1,Q2,Q4	Singapore
59. Prinja S, Downey LE, Gauba VK, Swaminathan S. Health Technology Assessment for Policy Making in India: Current Scenario and Way Forward. Pharmacoecon Open. 2018;2(1):1-3.	Study	Q1,Q2	India

Included record	Type of record	Included for Question (Q)	Country
60. Roza S, Junainah S, Izzuna MMG, Ku Nurhasni KAR, Yusof MAM, Noormah MD, et al. Health Technology Assessment in Malaysia: Past, Present, and Future. Int J Technol Assess Health Care. 2019;35(6):446-51.	Study	Q1,Q2,Q3,Q4,Q6	Malaysia
61. Ruggeri M, Cadeddu C, Roazzi P, Mandolini D, Grigioni M, Marchetti M. Multi-Criteria-Decision-Analysis (MCDA) for the Horizon Scanning of Health Innovations an Application to COVID 19 Emergency. Int J Environ Res Public Health. 2020;17(21).	Study (Early HTA/MCDA)	Q1,Q4	Italy
62. Sharma M, Teerawattananon Y, Luz A, Li R, Rattanavipapong W, Dabak S. Institutionalizing Evidence-Informed Priority Setting for Universal Health Coverage: Lessons From Indonesia. Inquiry. 2020;57:46958020924920.	Study	Q5	Indonesia
63. Singh D, Luz ACG, Rattanavipapong W, Teerawattananon Y. Designing the Free Drugs List in Nepal: A Balancing Act Between Technical Strengths and Policy Processes. MDM Policy Pract. 2017;2(1):2381468317691766.	Study	Q1,Q2,Q4	Nepal
64. Smith J, Ward D, Michaelides M, Moore AT, Simpson S. New and emerging technologies for the treatment of inherited retinal diseases: a horizon scanning review. Eye (Lond). 2015;29(9):1131-40.	Study	Q1	UK
65. Specchia ML, Favale M, Di Nardo F, Rotundo G, Favaretti C, Ricciardi W, et al. How to choose health technologies to be assessed by HTA? A review of criteria for priority setting. Epidemiol Prev. 2015;39(4 Suppl 1):39-44.	SR (TISP)	Q4	Global
66. Tanvejsilp P, Taychakhoonavudh S, Chaikledkaew U, Chaiyakunapruk N, Ngorsuraches S. Revisiting Roles of Health Technology Assessment on Drug Policy in Universal Health Coverage in Thailand: Where Are We? And What Is Next? Value Health Reg Issues. 2019;18:78-82.	Study	Q1 (very limited)	Thailand
67. Tark JY, Jeong JY, Lee M, Park E, Park J, Park JJ, et al. Early assessment and prediction of potential impact of the implantation of polyurethane scaffold in partial meniscal lesions: A pilot horizon scanning activity in	Study	Q1,Q3, Q4	South Korea

Included record	Type of record	Included for Question (Q)	Country
South Korea. Int J Technol Assess Health Care. 2015;31(6):380-9.			
68. Tipton K, De Lurio J, Erinoff E, Hulshizer R, Robertson D, Beales D, et al. Patient and caregiver engagement in the Patient-Centered Outcomes Research Institute (PCORI) Health Care Horizon Scanning System (HCHSS) process. Int J Technol Assess Health Care. 2020:1-12.	Study	Q4,Q6	USA
69. Trevitt S, Simpson S, Wood A. Artificial Pancreas Device Systems for the Closed-Loop Control of Type 1 Diabetes: What Systems Are in Development? J Diabetes Sci Technol. 2016;10(3):714-23.	Study	Q1	England
70. Tummers M, Kværner K, Sampietro-Colom L, Siebert M, Krahn M, Melien Ø, et al. On the integration of early health technology assessment in the innovation process: reflections from five stakeholders. Int J Technol Assess Health Care. 2020:1-5.	Study (Early HTA)	Q3/6	Europe
71. Uzochukwu BSC, Okeke C, O'Brien N, Ruiz F, Sombie I, Hollingworth S. Health technology assessment and priority setting for universal health coverage: a qualitative study of stakeholders' capacity, needs, policy areas of demand and perspectives in Nigeria. Global Health. 2020;16(1):58.	Study	Q1,Q2,Q3/4, Q5	Nigeria
72. Verbakel JY, Turner PJ, Thompson MJ, Plüddemann A, Price CP, Shinkins B, et al. Common evidence gaps in point-of-care diagnostic test evaluation: a review of horizon scan reports. BMJ Open. 2017;7(9):e015760.	Study	Q2,Q6	England
73. Wong WQ, Lin L, Ju H, Ng K. Towards greater impact in health technology assessment: horizon scanning for new and emerging technologies in Singapore. Int J Technol Assess Health Care. 2020:1-7.	Study and review	Q1,Q2,Q3,Q4	Singapore

Q = Question, Q1) Approaches, methods, tools and general process of TISP, information on the overall TISP process, Q2) Identification, Q3) Selection and/or selection criteria, Q4) Prioritisation and/or prioritisation criteria, Q5) Networks and initiatives, Q6) Other

Table A1.4 Identified publicly funded Horizon Scanning/Early Awareness systems informing prioritisation of HTA

Country	Organisation Acronym	Scope of HSS
Global (Ministry level initiative)	IHSI	Currently only plans for establishing a database on pharmaceuticals, but plans to eventually extend this if there is sufficient interest and funding. Currently only European members, but open to new members.
Austria	LBI/HTA (AIHTA)	Oncology, focus on new pharmaceuticals
Brazil	CONITEC	Broad spectrum of technologies: (see: http://conitec.gov.br/images/Radar/LivroMHT.pdf and http://www.inahta.org/members/conitec/)
Canada	CADTH	Emerging health technology likely to have a significant impact on the delivery of health care in Canada.
England/UK	NIHR Innovation Observatory	Innovations and new technologies (currently mainly pharmaceuticals)
	SPS Horizon Scanning Service	New pharmaceuticals
	HealthTech Connect	Devices, diagnostics and digital health technologies
France	INCa	Oncology, focus on pharmaceuticals
Italy	IHSP AGENAS	IHSP: Focus on emerging and new pharmaceuticals AGENAS: Focus on medical technologies other than pharmaceuticals
Malaysia	MAHTAS	Broad spectrum of health technologies: (See https://www.moh.gov.my/moh/resources/Horizon_Scanning.pdf?mid=638 and https://www.inahta.org/members/mahtas/)
Netherlands	ZIN	New pharmaceuticals
Norway	NIPH	Any technology to be assessed on National level (collaborates with NOMA for pharmaceuticals)
	NOMA	New pharmaceuticals (approx. 6 months before MA)
Portugal	IPO COIMBRA	Oncology
Scotland	HIS SMC HIS SHTG	HIS SMC New pharmaceuticals HIS SHTG Other technologies

Sweden	JanusInfo (Managed Introduction)	New pharmaceuticals
Wales	AWMSG	New pharmaceuticals

Table A1.5 Identified networks and initiatives relevant for TISP and LMICs

Organisation Acronym	Type of organisation	Type of membership	Focus
Directly related to TISP:			
IHSI	Governmental initiative for cross-country collaboration. Legally registered as a non-profit foundation in Belgium	Ministry level appointed organisations	Horizon Scanning (Currently only pharmaceuticals)
i-HTS (formerly EuroScan int)	Non-governmental scientific network. Legally registered in Germany, non-profit foundation.	Organisational membership, + Individual memberships (excluding industry representatives)	Horizon Scanning and early awareness
FIND	A global non-profit organization driving innovation in the development and delivery of diagnostics to combat major diseases affecting the world's poorest populations	Organisational membership, Individual memberships	New diagnostics
MURIA	Scientific network	Personal and organisational partners. Membership is open to anyone in Africa and beyond interested in undertaking medicine utilisation research to enhance the rational and sustainable use of medicines in Africa. However, no one directly employed by the pharmaceutical industry can be a member of MURIA. There is no membership fee	Pharmaceuticals – Africa
ECRI	ECRI is a US Section 501(c) – Private non-profit research contract organisation	Membership per payment/agreement	Research contract organisation including Horizon scanning
Indirect relevance:			
WHO	All countries which are members of the United Nations may become members of WHO by accepting its Constitution. Currently 194 member states	Country level; Organisational partnerships; Partnerships/commissions in individual projects	Health globally – several initiatives on HTA, provides lists of essential technologies that can be applied at

			Ministry level for identifying topics relevant for beneficial packages
INAHTA	The International Network of Agencies for Health Technology Assessment. INAHTA is a network of 51 (public) HTA agencies that support health system decision making around the globe.	Global independent network for non-profit HTA agencies/institutions	HTA – global
HTAi	Global scientific society/network	Organisational membership and individual based membership	HTA – global
ISPOR	Global scientific society/network	Organisational membership and Individual membership	Health economical evaluations/HTA global
ISPIH	Global scientific society/network	Organisational and Individual membership	Priorities in Health – global
HTAsiaLink	A non-profit collaborative research network of Health Technology Assessment (HTA) agencies in the Asia-Pacific region established on September 2010.	Organisational membership, Associate membership, 34 organisations in 14 Asian countries and Australia + Imperial College London, UK and PriceLess SA from South Africa	HTA – regional (Asia)
RedETSA	Red de Evaluación de Tecnologías en Salud de las Américas (RedETSA) Formed by ministries of health, regulatory authorities, HTA agencies, collaborating centres of the Pan American Health Organization/World Health Organization (PAHO/WHO), and research and educational institutions in the Americas.	Organisational membership, 17 countries represented by 34 institutions	HTA – regional (Latin America)
EUnetHTA	European network for Health technology assessment (EUnetHTA) is a collaborative network for non-profit governmental HTA agencies/institutions involved in HTA in the European Union and selected associated countries.	Organisational membership Established as a project by the European Commission in 2006. Final project year 2021, but continuation of collaboration based on the project is expected.	HTA – regional Europe
Cochrane Collaboration	An international independent non-governmental, non-profit organisation. Legally registered in	Organisational partnerships and individual membership	Evidence based medicine

	the United Kingdom as a UK Charity and a Limited Liability Company and global scientific network		
IDSI	The International Decision Support Initiative (iDSI) is a global network of health, policy and economic expertise, working to achieve Universal Health Coverage and the health Sustainable Development Goal (SDG 3).	Partner based membership 20 partners (9 core partners and 11 supporting partners)	Universal Health Coverage
Collectivity	Scientific network /network of experts in the field of health issues and systems	Personal	Health – LMICs
MSH	A global, non-profit organization, partners with governments, civil society, the private sector, and health care workers to build resilient and sustainable health systems.	By contract	Health – LMICs – Evidence HTA

Appendix 2 Survey

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Thanks to Elisabet Hafstad[1], Information Specialist for literature searches and Eia Skjønsberg[1] for technical contributions to the development and conduct of the survey.
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A2. Aims

The aims of the survey were to:

- Explore how TISP is performed in selected African, Asian, Latin American and European countries with a formalised HTA system
- Seek information on what has influenced a country's choice of option for TISP
- Seek information on what were considered future needs for TISP

A2. Methods

Survey preparation and structure

A survey was developed and piloted in collaboration with HITAP Thailand. The structure of the survey followed the aims stated above:

- The HTA system: Scope, capacity and main stakeholders
- How TISP is performed
- Factors that have influenced the selection of TISP
- Future needs

The following definitions were used in the survey:

Topic Identification, Selection and Prioritisation (TISP): The process leading to a topic being identified and prioritised for HTA.
Horizon scanning: The systematic identification of health technologies that are new, emerging or becoming obsolete and that have the potential to effect health, health services and/or society. Relying on horizon scanning is one option for a proactive TISP process.
Formalised HTA system: A system where HTA is set up at national or regional level to work in a predefined manner, with defined process steps, and with a clear commission to support decisions applicable to Universal Health Coverage (UHC).

The final wording of the questions was influenced by the findings of the scoping search and by the pilot test. The Questback online platform was used to develop the survey, send out the questionnaire and used to receive automatically generated visualizations of frequencies or percentages of the various responses per question. The raw data was also downloaded into Microsoft Excel where additional visualizations and tabulations were performed.

Inclusion of candidate countries

To identify candidate countries, we performed a systematic search for countries in Africa, Asia, Latin America and Eastern Europe. The original plan was to include LMICs with a formalized HTA system. However, as we found that this represents very few countries, we decided to diverge from the protocol and include any country in Africa, Asia, Latin America and Eastern Europe.

The systematic search was performed in PubMed and Scopus. Literature searches were performed on 6 October 2020 and the PubMed search was continued until 14 April 2021. The search strategies combined text words for HTA system, HTA framework, HTA organisations (see Table A2.1 and the Cochrane Effective Practice and Organisation of Care (EPOC) group filter for Low and Middle Income Countries (Available at. https://epoc.cochrane.org/lmic-filters)), which selects for information from countries in Africa, Latin America, Asia and Eastern Europe. We also inspected predefined websites as stated in the project protocol (available at the NIPH Golbal health web-site): Health Technology assessment international (HHTAi, www.htai.org); The International Network of Agencies for Health Technology Assessment (INAHTA (http://www.inahta.org/); The Asia-Pacific research network on HTA (HTAsia link, https://www.htasialink.org/); The HTA network of the Americas (RedETSA, www.redetsa.org); EuroScan international network (www.euroscan.org); The International Horizon Scanning Initiative (IHSI, https://ihsi-health.org/; The Professional Society for Health Economics and Outcome Research (ISPOR, https://www.ispor.org/); The International Decision Support Initiative (iDSI, https://idsihealth.org/); The World Health Organization (WHO, https://www.who.int/health-technologyassessment/en/).

A pragmatic inclusion procedure for literature was followed: where we found more than one record for a country, only the newest record was included in full-text. Older records were excluded if the newest record gave sufficient information on the status of HTA implementation. Only countries fulfilling our predefined definition of potentially having a formalized HTA system were included. Although our unit of analysis was the country, we directed the survey at individuals identified through our networks who we knew were familiar with the HTA system in their own country, or individuals identified through literature who had published on either HTA or TISP in one of the selected countries. TISP expertise was self-selected; participants were asked whether they had sufficient experience and understanding of the HTA system in the country to respond to questions about TISP. If they responded no, they did not continue with the survey.

Table A2.1 Search strategy candidate countries

PubMed
(((technology assessment, biomedical[mh] OR "technology assessment"[tw] OR "technology assessments"[tw] OR "biotechnology assessment"[tw] OR "biotechnology assessments"[tw] OR HTA[tw] OR HTAs[tw]) AND (agency[tw] OR agencies[tw] OR system[tw] OR systems[tw] OR framework*[tw] OR process*[tw] OR model*[tw] OR policy[tw] OR policies[tw] OR network*[tw] OR organization*[tw] OR organization*[tw] OR OG[sh])) OR"technology assessment, biomedical/OG"[mh]) AND [Cochrane Effective Practice and Organisation of Care (EPOC) group filter for Low and Middle Income Countries] AND 2015:2021[dp]
SCOPUS
TITLE-ABS-KEY("technology assessment*" OR "biotechnology assessment*" OR HTA OR HTAs) AND TITLE-ABS-KEY(agency OR agencies OR system OR systems OR framework* OR process* OR model* OR policy OR policies OR network* OR organization* OR organization*)

A2. Results

Inclusion of countries

The systematic search retrieved 1077 records which were supplemented by additional 17 records retrieved from other sources. Records without information on HTA and records only from Western Europe, North America, Australia and New Zealand were excluded.

A total of 294 records were sorted based on region (Africa, Asia, Latin America, and Eastern Europe) and country. Based on the sorted list and inspection of the newest records, we identified 29 candidate countries as follows:

Africa/Middle East: South Africa, Iran, Tunisia

Asia Pacific: Malaysia, Singapore, South Korea, Thailand, Taiwan

Europe: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Kazakhstan, Latvia, Lithuania, Poland, Romania, Serbia, Slovakia, Turkey, Ukraine

Latin America: Argentina, Brazil, Chile, Colombia, Mexico, Uruguay, Peru

Survey response

Invitations were sent out to 48 individuals in the 29 countries. We received 23 responses covering 21 countries. Only one (1/23) respondent responded no to the question about having experience and understanding of the HTA system in the country. Three (3/22) respondents were unsure if they had a formalised HTA system; their responses were still included in the findings.

Main findings of the survey

The main findings of the survey are summarized in the report. More details on country selection and survey data analysis will be available in a separate publication.

Appendix 3 The webinar

A webinar was conducted on 16 June 2021. All survey respondents were invited to participate. All survey respondents also received a PDF of the presentations and were invited to provide comments in written form. The agenda of the webinar is given in table A3.1

Table A3.1 agenda of TISP webinar

12:00	Welcome, online etiquette, and introduction • *Lumbwe Chola, NIPH*
12:10	Options for Topic Identification, Selection and Prioritisation: results from scoping review • *Vigdis Lauvrak, NIPH*
12.20	Summary of survey results from agencies with a formalised HTA system • *Elizabeth Peacocke, NIPH*
12:30	Panel discussion, questions and answers
	• *Thomas Wilkinson, World Bank* • *Francis Ruiz, International Decision Support Initiative* • *Vigdis Lauvrak, Norwegian Institute of Public Health* moderated by *Lumbwe Chola*
13:15	Webinar ends

A total of 16 participants attended the webinar. The webinar was recorded and key take-home messages from the panel section were noted. Written input from one participant was received and has been used to inform this report.

Take-home messages from the webinar

- Timely prioritisation of topics for HTA is an integral part of the HTA process and has critical importance as it impacts on all that is done downstream in the process. It can be used to illuminate the whole process, it is important for stakeholder identification, has implication for the analysis and provides awareness on available data and decision criteria. It should also give an impression of the level of implication.
- TISP is determined in national priority settings that depend on national legislation and health systems. Barriers towards introducing a rigorous TISP process, as well as the different aspects of TISP, including stakeholder engagement, need to be further investigated. In particular, more clarity on what would be the benefits of a rigorous process is needed, taking resource use into consideration.
- Health systems, in particular in LMICs, tend to be fragmented. Although the majority of survey respondents point to the MoH as the formal decision maker, the actual decision to cover a specific technology may in practice be made by someone else, such as a social insurance company.
- The focus of HTA (in LMICs) has been largely on pharmaceuticals. However, non-pharmaceuticals including medical devices, diagnostics, and vaccines, as well as other questions such as the whole content of a health benefits package within a particular area, may be of great importance for LMICs. These questions may benefit from a transparent decision process informed by evidence synthesis, as well as other analysis that may be provided by HTA institutions/conductors. Questions regarding non-pharmaceuticals are typically more complicated (with regard to evidence and other analytical approaches). Collaboration within these fields may be of great importance for LMICs. Different TISP approaches for different technologies and questions may be beneficial.

- In many cases, competent bodies and decision makers need to act rapidly to specific situations that may not be predefined priorities of an HTA process. The importance of this should be reflected in a pragmatic planning drive in HTA institutions. The benefits of a rigorous process with a predefined scope compared to more pragmatic approaches for TISP need to be further investigated in different settings and for different technologies and questions.
- Horizon scanning for new medicines may not be an important issue for LMICs as the time horizon for when an HTA is needed is far behind the time frame for more developed countries. Rather than setting up horizon scanning on medicines for LMICs, LMICs may benefit from evidence created by other systems and international collaborative initiatives. In this way, a rigorous TISP process may act as a gateway to exclude topics of no interest based on what an HTA entity in a different setting has concluded. On the other hand, local and pragmatic HTA (relying on existing evidence synthesis and analysis) involving local stakeholders can promote confidence in the decision process, even when an existing HTA has a negative conclusion with regard to cost-effectiveness in a different setting.
- Survey responses may be focused on an idealised conception rather than what is really happening and validation of responses is needed.
- Political influence is a challenge and each country needs to find its own pathway. When determining the prioritisation of HTAs, it is important to have different options for TISP on the table in order to reflect a diversity of approaches.

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