A MODEL FOR HTA PRIORITY SETTING: EXPERIENCE IN LITHUANIA

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Objectives: To promote the further development of HTA, this study aims to design a model for HTA priority setting, which would address national needs for a country with little experience in the field of HTA, and assess its feasibility for the health system.

Methods: Literature search and review, as well as qualitative research have been used in the design and testing of the model for HTA priority setting. To test the model and the methodology, a three-round Delphi study was conducted in 2011 in the form of an electronic questionnaire, which was distributed to the panel of eleven national experts. The panel was composed of experts representing various fields of the health care sector: policy-makers, health care service professionals and academics, with diverse professional roles.

Results: The designed model consists of four stages: (i) selection of experts for the panel, (ii) indication and selection of health policy topics, (iii) identification of health technologies, and (iv) priority setting. Three rounds of the Delphi study were performed to test the model and reach expert consensus on a list of health technologies for assessment, including pharmaceuticals, vaccines, medical devices, diagnostic methods, public health interventions, organizational systems, etc.

Conclusions: Based on the Delphi technique as a method for consensus building, the model for HTA priority setting was developed for Lithuania; however, it could also be used for other countries with little experience in the field of HTA.

Keywords: health technologies, priority setting, health system, Delphi technique

Development and implementation of health technologies has become a challenge to numerous health systems around the world. With growing healthcare costs, priority setting is becoming an important part of the functioning and effectiveness of healthcare systems (1).

Even though Lithuania started taking its first steps in health technology assessment in approximately 1993, it still remains among the countries that continue implementing a health technology assessment (HTA) system. Due to political, economic, and other factors, institutionalization of the HTA system remains inconsistent (2). Article 54 of the Law on the Health System of the Republic of Lithuania of 1994 prohibits the use of health technologies that have not been assessed or approved, except for in cases specified by the Law (3). The health technology assessment procedure is to be established and approved by the Ministry of Health of the Republic of Lithuania; however, the procedure is yet pending (2). Some health technologies are assessed by private or governmental institutions; however, there is no unified system of assessment that would contribute to the design and implementation of evidence-based health care (2).

Decision makers that take part in processes of health technology implementation and funding not only face the priority setting issue but also suffer from insufficiency of impartial and evidence-based information. As a result, fragmented decisions are made in line with the interests of policy makers or stakeholders rather than those of the public. Such issues could be addressed by priority setting, which is one of the first steps in the development of health technology assessment. Additionally, this effort would contribute to a more efficient health system. The objective of this research is to design a model for HTA priority setting, which would address national needs and assess its feasibility for the health system by using the opinion of national experts.

METHODS

The following methods were used to design and test the model for HTA priority setting: literature search and review and, Delphi technique. The Delphi technique is well suited as a method for consensus building by using a series of questionnaires delivered using multiple iterations to collect data from a panel of selected subjects (4). The Delphi technique was used to achieve a consensus of experts on HTA priorities in Lithuania as well as to test the feasibility of the developed model.

Literature Search

The literature was searched for the priority setting systems used internationally. The literature was searched in databases (Pubmed, Medline), Web sites of Europe-based health technology assessment agencies and international health technology assessment organizations (INAHTA, HTAi, EUnetHTA), international libraries and e-journal databases. The following search criteria were used: (i) only priority setting systems used in Europe were considered; (ii) the period was 1996–2011 (1996 was chosen as the starting date due to recommendations on priority setting by the Europe-wide EUR-ASSESS project) (5); and (iii) the search was undertaken in English using the keyword

combinations: priority setting, prioritization, health technology assessment. The literature search was carried out in 2011.

The literature review showed that variability exists in the priority setting systems across HTA agencies; however, many agencies usually use a criteria-based system for prioritizing health technologies. Based on the findings of the literature review, a model for HTA for priority setting was designed.

The Design of the Model for HTA Priority Setting

According to the experience of other countries and taking into consideration the very early stage of HTA development in Lithuania the design of the model for HTA priority setting was created consisting of four stages: (i) selection of a panel of experts; (ii) indication and selection of health policy topics; (iii) identification of health technologies; and (iv) priority setting. The model for HTA priority setting is provided in Figure 1.

Selection of the Expert Panel

In model designing and testing, selection of experts is an essential stage that seeks a reduction in possible clashes of expert interests and inconsistency in the object of expertise. Three key criteria were used for selection of experts: knowledge in HTA fundamentals; representation of the stakeholder groups such as health policy makers and implementers, healthcare sector administrators and the academic community; and involvement in different sectors of the health system. Experts were selected from among well-known national specialists, bearing in mind that no less than half of them had to work in different sectors undertaking several professional roles. A panel of eleven well-known health system experts was selected, comprised of health policy makers (3), health professionals working in health care (4), and members of the academic community (university teaching and research staff) (4).

The general public was not involved at this stage in the process of HTA priority setting, because awareness of the HTA among the general public is very low in the country. Consequently, it was hypothesized that the academic community would be able to represent public interest as well.

Delphi Study

The Delphi study comprised three rounds: (i) ranking of priority health policy topics; (ii) identifying the relevant health problems and health technologies to solve them; and (iii) assessing health technologies on the basis of criteria. The Delphi study was conducted by e-mail in 2011, ensuring the anonymity of respondents. The response rate for each stage of the research amounted to 100 percent.

Delphi-1 Round

The researchers defined health policy topics considering the current issues and priorities pertaining to national health policy. During the Delphi-1 round, the experts were asked to rank health policy topics defined by the researches as well as named by the experts themselves, considering health concerns of each field

as well as their scope and evaluating their relevance in the long-term perspective. The researchers identified the key health policy topics considering the compatibility of expert opinions, which was expressed as the coefficient of concordance (6).

Delphi-2 Round

During the Delphi-2 round, experts were asked to name no more than three health problems for selected health topic and suggest health technologies to solve them. The researchers selected health problems and health technologies using the following selection criteria: (i) consensus of expert opinion; (ii) experience of experts in health technology assessment. To ensure reliability of health technology selection, the test–retest method was used. Two weeks after the first selection, the researchers independently repeated the health technology selection on the basis of assessment criteria.

Delphi-3 Round

During the Delphi-3 round, experts were asked to use the five-point Likert scale (where numerical values from 1 to 5 respectively range from "totally in disagreement" to "totally in agreement") to assess health technologies on the basis of the following criteria: budget impact; health benefit; alternatives; expected level of interest from policy makers; timeliness; evidence; and ethical, legal, and social implications. These criteria were adapted to the national context by researchers based on a recent systematic review that identified twelve priority setting systems with different priority setting criteria used among HTA agencies (7).

Moreover, experts were requested to assign weights to each priority setting criterion from 1 (the lowest weight value) to 5 (the highest weight value), attaching the lowest weight value to the least important criteria.

Final priority score

The final priority score of each health technology was defined using the methodology used for priority setting in the field of health technologies, using the formula (8): priority score $= W1 \ln S1 + W2 \ln S2 + \ldots + W7 \ln S7$; where W is the criterion weight; S is the criterion score; and ln is the natural logarithm.

RESULTS

The model for HTA priority setting was designed on the basis of the experience of other countries (7–11), tailoring the findings to the national context. Considering the importance of stakeholder participation in decision making, the model accentuated the expert selection stage. During this stage, it is important to facilitate involvement and participation of all stakeholder groups in the process of HTA priority setting to ensure representation and externalization of group interests (health policy makers and implementers, healthcare sector administrators, and members of the academic community).
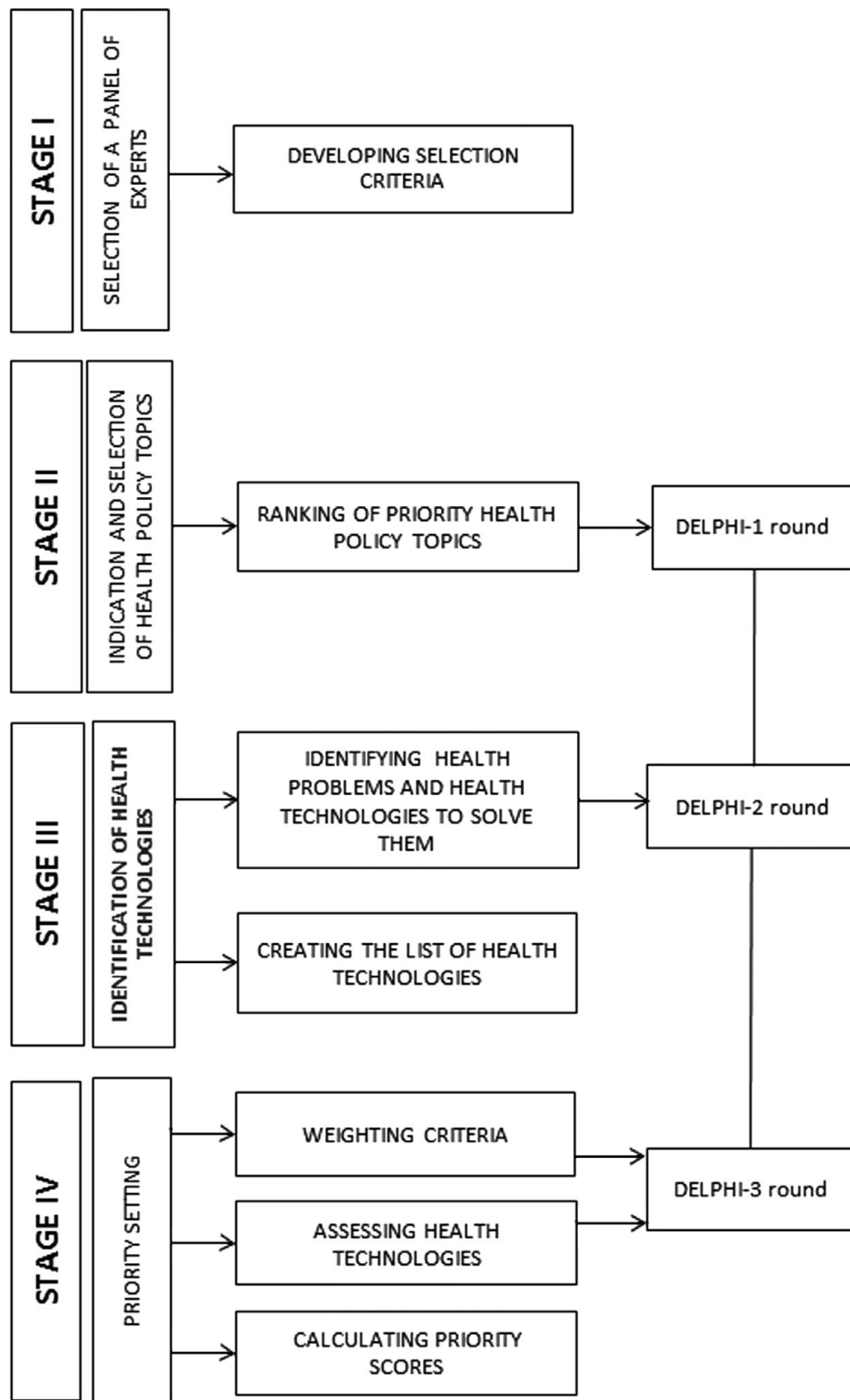
Figure 1. A model for HTA priority setting.

Selection of Health Topics

Sixteen health policy topics were suggested during the Delphi-1 round. However, considering the consensus of expert opinions measured by concordance coefficient, the following health policy topics were selected: healthy lifestyle, cardiovascular diseases, oncologic diseases, mental health, accidents and traumas, diabetes, environmental health, and communicable diseases. Following the scale of the coefficient of concordance (6),

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Table 1. Expert Opinion on Health Technologies for Their Assessment in Order of Importance

Health technology	Rank
Interventions to reduce road accidents	1
Smoking and alcohol abuse control policy interventions	2
Directly observed treatment strategy (DOTS) for treating tuberculosis	3
PAP smear test	4
Methods for the early diagnosis of cardiovascular diseases	5
Methods for the early diagnosis of diabetes	6
Community interventions for cardiovascular diseases prevention	7
Environmental strategies for promotion physical activity	8
Mammography equipment	9
Drugs for tuberculosis treatment	10
Methods for early diagnosis of mental disorders	11
Test for Human Immunodeficiency Virus (HIV)	12
Community interventions to promote healthy eating habits	13
Delivery and organization of mental health services	14
Techniques for air pollution control	15
Human papillomavirus (HPV) vaccines	16
Patient counseling on diabetes ant its complications	17
Occupational health and safety interventions	18
Test for prostate specific antigen (PSA)	19
Community interventions for injury and accident prevention	20
Environmental noise reduction techniques	21
Community interventions for prevention of smoking and alcohol abuse	22

opinions of the expert panel had a moderate degree of agreement, while agreement in each stakeholder group ranged from high to very high.

Identification and Prioritization of Health Technologies

On the basis of the Delphi-2 round results, the researchers selected fifteen relevant health problems and health technologies to solve them from those offered by experts. The list was created from twenty-two health technologies, which could be grouped as follows: pharmaceuticals (1), vaccines (1), medical equipment (1), diagnostic methods (6), public health interventions (8), organizational and managerial form systems (1), and other health technologies (4).

On the basis of expert opinion during the Delphi-3 round, national HTA priorities were set. Table 1 provides the final ranking for each health technology, tabulating the estimated final priority scores. Priority was given to public health interventions and diagnostic methods (five first positions) by experts.

Priority Setting Criteria and Their Weights

The study also aimed to assess the criteria that not only could be used in HTA priority setting, but also their relative importance and to test the criteria in the developed model. Experts were asked to assign a weight to each criterion during the third round or the Delphi-3 round. Table 2 lists the criteria and their weights for HTA priority setting. Seven criteria were included in HTA priority setting and assessed by experts. From among the criteria, the greatest weight was attributed to the criteria "health benefit" (mean = 4.75; SD = 0.43), while the least was attributed to the criteria "ethical, legal and social implications" (mean = 2.75; SD = 1.18). According to experts, the latter criterion was the least important in terms of importance for HTA priority setting. The criteria "alternatives," "expected level of interest from policy makers," and "evidence" received the least estimate values.

DISCUSSION

Based on the experiences of other countries, the theoretical model was designed for the context of Lithuania as a country that has little experience in health technology assessment as well as limited participation of stakeholders in policy making. The model's adaptability to the national health system was confirmed by expert consensus using the Delphi technique.

The priority setting process required naming health technologies that would contribute to resolution of significant current and future health concerns. The experts were inclined to prioritize health technologies for prevention. This reflects

Table 2. Expert Opinion on Importance of Criteria for Priority Setting: The Descriptive Analysis

Criterion	Criterion description	Min–Max value	Mean (SN)
Health benefit	Use of the health technology contributes to health maintenance and/or early diagnostics and/or treatment, reducing morbidity and/or mortality	4–5	4.75 (0.43)
Evidence	Health technology assessment already has sufficient data and information	1–5	3.90 (1.17)
Timeliness	Health technology assessment is timely and useful	3–5	3.72 (0.76)
Expected level of interest from policy makers	Health technology assessment would receive attention of health policy and/or decision makers in terms of relevance of its use and/or implementation	1–4	2.86 (1.17)
Ethical, legal, and social implications	Relevant ethical, social, and legal issues related to health technology implementation or application	1–5	2.75 (1.18)

specific features and the level of Lithuanian health policy, which still pays insufficient attention to evidence-based solutions for disease prevention strategies. Use of such technologies significantly contributes to delivery of public health improvement goals, which correspond to national policy targets. However, in an international context, public health and health promotion interventions are less frequently assessed by HTA agencies (12;13). With growing necessity to ensure efficient use of health technologies in the healthcare sector, timely assessment could become especially relevant to decision makers. However, effective measures should be taken to increase the accessibility and usability of health technology assessments among healthcare stakeholders. Most countries still find it challenging to integrate health technology assessments into decision-making processes (14). Numerous reasons are to blame for the still limited impact of health technology assessments on decision making (15). The strength of the developed model for HTA priority setting lies in the involvement of policy makers and other stakeholders who take part in processes of health technology implementation and funding. Furthermore, the increased interaction between researchers and policy makers in this model has been shown to enhance the use of research results in practice (16).

In Lithuania, the first study of its kind not only highlighted the particulars of HTA priority setting but also revealed the advantages and limitations of the methodology that was used. The aforementioned research has primarily focused on expert selection. It should be noted that subjective expert opinions are impossible to avoid, thus this factor had an impact on the results of the research. However, the investigation on the degree of agreement between expert opinions allows for the assertion that the method used was reliable. Participation of appropriately selected well-known experts representing key stakeholders promoted the diverse opinions required to ensure a transparent and unbiased HTA priority setting process. The research revealed high degrees of agreement among expert opinions, which was reflected by a respective coefficient of concordance, which demonstrates the reliability and content validity of the methodology used. In the field of HTA priority setting, public interest is becoming more and more significant (17). The following reasons determined the noninvolvement of the stakeholder to represent the public interest: the public is insufficiently informed about the implemented HTA system in the healthcare sector; moreover, the country still lacks a theoretical model that would explore possible options for participation of the public in decision making regarding health technology assessment; furthermore, this model should be tested. In the future, participation of the general public is crucial.

The tested model for HTA priority setting can be used and adjusted depending on the HTA development in the country. If required, in the future the list of criteria could be supplemented with additional clearly defined criteria. Additionally, the reliability of the process for attribution of criteria weights should be separately tested to ensure efficiency. Final decisions in defining priority health technologies should be taken, considering the results depend on the calculation methodology used. Therefore, it is advisable to design and test various calculation methodologies and assess the possibilities afforded by their usage. These issues reveal some of the prospects for important future research.

This model is primarily intended for the national healthcare sector; however, it can also be used to evaluate peculiarities pertaining to HTA priority setting in the international context, especially in countries such as Lithuania that only started taking steps toward HTA implementation. Moreover, it can also be used to share information and experience in designing and improving priority-setting models.

CONCLUSIONS

The model for HTA priority setting is an instrument comprising four clearly defined stages, using an expert panel consensus process. This model is exceptional for inclusion of stakeholders into the process of HTA priority setting; additionally, it can be adjusted and used for the entire health system, that is, not only reflect personal health priorities but also public health priorities. Although certain methodological limitations are particular to the model and more in-depth or additional evaluations are required, it could be adapted for the national health sector as well as internationally.

POLICY IMPLICATIONS

The designed model could be adapted to other countries implementing HTA systems and experiencing a limited impact of health technology assessment on decision making.

Lithuania has made the required political decisions and drafted necessary documents regulating the implementation of the HTA system (3;18), thus the research is a relevant and timely contribution to further development of the system. To ensure targeted implementation or development of health policy in this area, a joint political agreement and will is required as well as constructive action and use of evidence in policy-making processes.

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CONFLICTS OF INTEREST

All authors report they have no potential conflicts of interest.

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