



Hospital managers' need for information in decision-making – An interview study in nine European countries



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ABSTRACT

Assessments of new health technologies in Europe are often made at the hospital level. However, the guidelines for health technology assessment (HTA), e.g. the EUnetHTA Core Model, are produced by national HTA organizations and focus on decision-making at the national level. This paper describes the results of an interview study with European hospital managers about their need for information when deciding about investments in new treatments. The study is part of the AdHopHTA project. Face-to-face, structured interviews were conducted with 53 hospital managers from nine European countries. The hospital managers identified the clinical, economic, safety and organizational aspects of new treatments as being the most relevant for decision-making. With regard to economic aspects, the hospital managers typically had a narrower focus on budget impact and reimbursement. In addition to the information included in traditional HTAs, hospital managers sometimes needed information on the political and strategic aspects of new treatments, in particular the relationship between the treatment and the strategic goals of the hospital. If further studies are able to verify our results, guidelines for hospital-based HTA should be altered to reflect the information needs of hospital managers when deciding about investments in new treatments.

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1. Introduction

In many countries new health technologies (e.g. new pharmaceuticals or new devices) are being systematically assessed by national or regional health authorities before decisions on investment and implementation are made at the local hospitals [1]. However, the number of new health technologies considered and implemented at hospitals each year is often much higher than the capacity of the national Health Technology Assessment (HTA) units [2–4]. Hospitals have therefore started producing their own hospital based HTAs. Examples can be found from e.g. Canada, Spain, Italy, Denmark, Norway, France, Israel, Australia and USA [5–13].

Several guidelines exist on how to produce HTA and what type of information they should include. An example is the EUnetHTA HTA Core Model [14,15] that describes outcome measures divided into nine domains. This model was developed by a large number of primarily national HTA institutions. Little is known, however, about the compliance between this and other HTA models and the need for information on new health technologies by administrative and clinical hospital managers.

This subject is being studied in the European FP7 research project AdHopHTA [16]. The overall objective of this project is to strengthen the use and impact of HTA in hospitals. AdHopHTA brings together 10 partners from nine different countries: six hospitals with HTA programs (Spain, Denmark, Finland, Switzerland, Italy, Turkey); one hospital without a HTA program (Estonia); two national HTA agencies (Norway and Austria); and one business school (Spain).

The overall aim of this study is to understand which information European hospital managers need when making decision on investment in new health technologies. The results of the study should also form the basis for the development of guidelines for hospital based HTA in the AdHopHTA project.

A systematic literature review was carried out before starting this study [17]. The aim of the review was to identify empirical studies on the information hospital managers need when deciding on health technology investments. The review included 14 empirical studies. The studies were mainly semi-structured interviews and questionnaire surveys with health care managers from Europe, USA and Australia. The main results found were, that hospital managers most frequently mentioned the clinical effectiveness and the economic aspects as the most important aspects of new technologies in decision making. In parallel to this, an interview study [18] shows that hospital managers ranked information about clinical effectiveness and economic impact as most important in decision making. Secondly, that hospital managers rarely mentioned information on the ethical, legal and social aspects of new technologies as being important. Thirdly, that even though the political and strategic aspects of technology investments are traditionally not part of a HTA, the hospital managers often considered these aspects as important when making investment decisions. As an example a Canadian study [19] reported that hospital managers also included considerations regarding prestige and

competition among hospitals in their decision making. Finally, the review shows that hospital managers needed information on the economic aspects including on the one hand societal cost-effectiveness analysis and on the other hand more narrow hospital budget impact analysis.

In the light of the results of the systematic literature review it was decided that the interview study should specifically examine (i) whether information on some aspects of new health technologies are considered more important than other aspects, (ii) whether the political or strategic aspects of investment in new technologies should be included in hospital based HTA and (iii) whether information on the economic aspects of investment in new technologies should include description of the societal cost-effectiveness or the budget impact for the hospital or both.

2. Materials and methods

The study involved face-to-face, structured interviews with convenience samples of hospital managers in nine European countries.

2.1. The interview guide

An interview guide was developed including seven background questions dealing with the hospital and the respondent (e.g. size and type of hospital and the gender, age and education of the respondent), three introductory questions regarding decision making at the hospital in general, five questions about the information needed for decision-making and six questions about the decision-making process. See the interview guide in the online Appendix. The current article presents the answers to the questions about hospital managers' informational needs.

The interview guide also included information about the nine domains of the HTA Core Model as well as the domain covering strategic and political aspects identified in the literature [18,19]. In an attempt to avoid biasing the respondents in favor of HTA, the questionnaire did not include questions about the respondents' perception of the value of the content of HTA. Instead, an open question was asked at the beginning of the interview (see Question 4 in Box 1).

The interviewer noted all the information mentioned by the respondents in answer to the first question (see Question 4 in Box 1) using the respondents own wording.

If a respondent did not spontaneously mention informational needs within one or more of the 10 domains, the interviewer then asked explicitly about that domain (see Question 5 in Box 1).

The respondents' full answer to the question including explanations and examples were recorded or noted by the interviewer.

Finally, respondents were asked (in Question 6, see Box 1) to assess whether information on some domains were more or less relevant from their point of view. The objective of this question was to test, whether some types of information was in fact more important to hospital managers than others as the literature review indicated [17].

Box 1: Questions about decision makers need for information.

Question 4:

Which information would you – in the ideal situation – wish to have at your disposal as a basis for your decision on whether or not to invest in a new treatment?

Question 5: (Ask only if the following domains have not been touched upon)

Do you think that the following should be part of the basis for decision making:

- a. Information on the health problem of the patients, the patients' needs and the current technology should be part of the basis for decision making?
- b. Information on the characteristics and content of the new treatment should be part of the basis for decision making?
- c. Information on the clinical effectiveness of and patient satisfaction with the new treatment should be part of the basis for decision making?
- d. Information on safety aspects of the new treatment should be part of the basis for decision making?
- e. Information on the economic aspects of the new treatment should be part of the basis for decision making?
- f. Information on the ethical aspects of the new treatment should be part of the basis for decision making?
- g. Information on the internal and external organizational aspects of the new treatment should be part of the basis for decision making?
- h. Information on the social aspects, e.g. influence on the life of the patients, of the new treatment should be part of the basis for decision making?
- i. Information on the legal aspects of the new treatment should be part of the basis for decision making?
- j. Information on political and strategic aspects of the new treatment?

Question 6:

We have now been through a number of different information or criteria that according to you should be part of a basis for decision making. Could you assess whether some of this information is "highly relevant" and other "less relevant"?

If "yes" → Please indicate the most relevant information?

An interview instruction was produced to assist the interviewers in this task (see online Appendix). To simplify the analysis of the answers, each partner was asked to report the results in a Reporting template in English (see online Appendix).

Thus, the interviewers should summarize each respondents' answer to each of the questions in the questionnaire without limitation on lengths of the text etc. The interviewers were also asked to record expressive quotations from the respondents in order to document and support the findings.

To avoid misunderstandings and -interpretations the interviewers were also asked to resubmit the template with the answers from the interview to the respondent for approval.

The interview guide was piloted with three managers at Odense University Hospital (Denmark) to check its construct validity. The questions were generally well understood by the respondents. However, the respondents stated that the term "new health technologies" were considered to be a very broad term that made it difficult to answer the questions. One respondent mentioned that his need for information varied depending on the type of health technology in question. Therefore it was decided to use the term "treatment" in order to focus on the smaller group of new medical or surgical treatments with a clear clinical objective.

2.2. The respondents

Respondents were clinical managers (i.e. head of clinical departments) and hospital managers (i.e. chief executive officer or chief medical officer) of hospitals in the nine countries participating in the AdHopHTA project.

The respondents were a convenience sample since partners from each country were asked to select the respondents. Partners were asked to interview one clinical manager and one hospital manager from three different types of hospitals:

- A university hospital/research and training hospital with a HTA unit.
- A university hospital/research and training hospital without a HTA unit.
- A small/middle size hospital.

The total sample was thus expected to consist of six managers from each country, with 54 respondents in total.

Each respondent was contacted by email by the local partners. Hereafter, the place and time for the meeting was arranged with each respondent. Usually the interview took place at the hospital where the hospital manager or clinical manager was working. Interviews were conducted by the study partners in the local language. Generally, two interviewers participated in each interview.

2.3. Data analysis

Analysis of data from the interviews was done by use of content analysis [20] by the Danish partners in the project. Firstly the team of Danish partners (KK, AMØ, MBO) read the reporting templates to get a first overall picture of the data. Hereafter, answers to the questions about information needs (see Questions 4–6 in Box 1) were coded to identify the terms and concepts used in the description of the need for information on new treatments within each of the nine domains in the HTA Core Model and the additional domain on political and strategic aspects.

Coding was done for the existence of a concept within the answers to each of the three questions (see Box 1) and not for the frequency of the use of the concept by each respondent. The terms and concepts were hereafter examined using conceptual analysis to establish the existence and frequency of concepts within the 10 domains. This was done manually without the use of a software program.

Table 1
Description of respondents by country, managerial position, age, gender and education.

Country	Number of respondents	Proportion of hospital managers	Proportion of managers from university hospitals	Mean age (years)	Proportion of women	Proportion with a medical education
Austria	7	3/7	4/7	52.7	1/7	6/7
Denmark	6	3/6	4/6	53.6	1/6	6/6
Spain	6	3/6	4/6	55.8	3/6	6/6
Estonia	6	3/6	4/6	55.3	1/6	5/6
Finland	6	3/6	4/6	54.4	1/6	6/6
Italy	6	3/6	4/6	62.8	0/6	6/6
Norway	4	2/4	3/4	52.8	1/4	3/4
Switzerland	6	4/6	4/6	60.0	0/6	5/6
Turkey	6	4/6	4/6	46.5	0/6	6/6
Total	53	52.8%	66.0%	54.9	15.1%	92.4%

Table 2
Types of information that hospital and clinical managers wish to have at their disposal as a basis for decision making (based on Questions 4 and 5).

	Answers to Question 4		Answers to Question 5		Answers in total	
	Number of respondents	(% total)	Number of respondents	(% total)	Number of respondents	(% total)
D1: Health problem	27	(50.9%)	15	(28.3%)	42	(79.2%)
D2: Content of treatment	16	(30.2%)	15	(28.3%)	31	(58.5%)
D3: Clinical effectiveness	41	(77.4%)	7	(13.2%)	48	(90.6%)
D4: Safety	23	(43.4%)	22	(41.5%)	45	(84.9%)
D5: Economics	50	(94.3%)	3	(5.7%)	53	(100.0%)
D6: Ethics	6	(11.3%)	34	(64.2%)	40	(75.5%)
D7: Organizational aspects	23	(43.4%)	28	(52.8%)	51	(96.2%)
D8: Social aspects	4	(7.5%)	33	(62.3%)	37	(69.8%)
D9: Legal aspects	3	(5.7%)	38	(71.7%)	41	(77.4%)
D10: Political and strategic aspects	11	(20.8%)	32	(60.4%)	43	(81.1%)

3. Results

3.1. The respondents

The interviews were conducted in April–June 2013. Fifty of the interviews were carried out as personal interview, and three were done by telephone for practical reasons. The mean duration of the interviews was 40 min.

Table 1 displays the characteristics of the respondents. About 50% are hospital managers (the rest being clinical managers) and 66% are from university hospitals as planned. Most of the respondents were male medical doctors aged 50–60.

3.2. Managers need for information on new treatments

All of the respondents were able to answer the question on the type of information they in the ideal situation wish to have as the basis for making decisions on new treatments (see Question 4 in Box 1). The information most frequently mentioned was about economics, clinical effectiveness, organizational and safety aspects of new treatments as shown in Table 2. The number of domains mentioned varied between one and nine, but most respondents mentioned information within three or four domains. The most frequent combination of information needed was within the domains on clinical effectiveness and economic aspects alone (five respondents) or in combination with organizational aspects (three respondents) or safety (three respondents).

Table 3

The types of information considered by hospital and clinical managers to be the most relevant when making decisions about investing in new treatments (based on Question 6).

Domain	Number of respondents (N = 53)	Proportion
D1: Health problem	12	22.6%
D2: Content of treatment	1	1.9%
D3: Clinical effectiveness	38	71.7%
D4: Safety	20	37.7%
D5: Economics	39	73.6%
D6: Ethics	2	3.8%
D7: Organizational aspects	11	20.8%
D8: Social aspects	1	1.9%
D9: Legal aspects	1	1.9%
D10: Political and strategic aspects	10	18.9%

Table 2 also shows the answers to Question 5 about additional information that should be part of the basis for decision making. The number of domains mentioned varied between zero and nine. As the table shows, information within all domains are considered relevant by at least 50% of the respondents.

Table 3 shows the types of information considered as most relevant by the respondents (Question 6 in Box 1). Of the 53 respondents, 50 identified some information as being more relevant than other information. Only three respondents said that all types of information were equally important.

The most frequent combinations of information that the respondents considered as most relevant were

Box 2: Examples of political and strategic aspects of new treatments mentioned by the respondents.	
Political aspects	Strategic aspects
(No 2): "Political decisions often overrule everything else. That we know of." (No 23) "Political aspects are growing in Finland."	(No. 3) "Research strategies." (No. 16) "Even if we do not like it, political/strategic considerations are very important because if one wants to be a pioneer in the field, we have to be the first to adopt a new technology." (No. 16) "Strategic aspects in order to become an authority in Spain and Europe." (No. 8) "Political aspects no. But hospital strategic aspects are relevant." (No. 23) "Political no. But hospital has strategy." (No 24) "In Finland politics affect only on budget, but in our hospitals we have our own strategy." (No. 34) "The hospital has its strategic investment plan." (No. 38) "Relevant information is also if a technology is "profile-building."

Box 3: Examples of societal and hospital perspective in the need for information on economic aspects in Questions 4, 5 or 6 (see Box 1).		
Societal perspective	Hospital perspective	Both societal and hospital perspective
(No 1): "Focus should to a greater extent be on a wider perspective across health care (e.g. general practice, hospital)." (No. 18) "Cost-effectiveness, cost-QALY. Whether the technology will help to reduce length of stay, use of human resources, less complications, long term effects. . ."	(No. 24) "There's no use to get same results spending more money than with previous techniques. Budget gives the frames for what we are able to invest in." (No 33): "The services are provided and new technologies purchased only in case these are financed by the EHIF (Estonian Health Insurance Fund) and listed in the annual contract." (No. 34) "There is no way to implement technologies, which are not covered by the annual contract." (No 35) "Cost of treatment is important as cost-effectiveness has to be favorable in order the Health Insurance will approve the treatment and add it to the list of reimbursed services." (No. 36) "Direct costs of technology in comparison with reimbursement possibilities." (No. 37) "One time investment, multiple consumables and staff costs, staff implications." (No. 38) "Replacement or new investment/ additional or substitute, supplier(s), maintenance, effects on staff (need for less or for more),	(No. 5) "Economy of the department as well as socio-economy, e.g. very expensive medicine." (No 9) "Very important, for the hospital as well as for society including private businesses i.e. return to work." (No. 16) "Cost-effectiveness is key. Maintenance cost and fungibles (e.g. batteries) are important and may be much larger than the initial investment." (No. 27) "Cost-effectiveness and comparison are important. Budget is the biggest determiner."

(i) clinical and economic aspects (10 respondents) or (ii) clinical, safety and economic aspects (9 respondents). As the table shows, clinical effectiveness and economics were considered as the most important information by more than 70% of the respondents. Hereafter comes information on safety, the patients' health problem, organizational aspects and political and strategic aspects.

Tables 2 and 3 show consistency in the answers to Questions 4 and 6. The economic and clinical aspects of new treatments are mentioned most and second most frequently in both questions and the five most frequent types of information are also the same in the two questions.

3.3. The importance of political and strategic aspects

Political and strategic aspects were identified as relevant for hospital based HTA in the literature review [17]. Political aspects refer for example to the alignment between the decision to invest in a technology and the local political climate or values. Strategic aspects refer for example to the fit between a given technology and the hospital's research strategy. After the identification and coding of the terms used by the respondents in the interviews, the terms were divided in these two groups. The terms that were coded into this tenth domain were subsequently divided into political and strategic aspects (see Box 2 for verbatim quotations from respondents). Most of the terms related to the hospital's own strategic research goals, competition with other hospitals, profile-building and investment. The number of each respondent is presented in brackets.

3.4. The content of the economic aspects

The respondents' perception of the type of information they need regarding economics was also captured. Box 3 shows some examples of quotes from respondents who

investment-costs (once), running costs/overheads, additional costs (IT, energy, heating, room adaptation etc.). . . .”

(No 52)
“Acceptable costs to the health care system, with if possible coverage by the insurance companies.”

(No 54) “Impact on cost of care and outpatient treatment.”

(No 55) “Economic aspects involved setting up the project, running the project (infrastructure and equipment, maintenance and running costs, personal and training). A whole chapter about medical economic analysis including billing possibilities and rate of coverage is included.

(No 56)
“Economical aspects are important but sometimes, a new technology should be founded even if leading to an economical loss (for example, until it is reimbursed or until prices fall on the market).”

(No. 57) “Economic impact on hospital given the DRG system.”

mentioned the economic aspects as most relevant. These quotes are divided in three groups:

- Economic information related to a societal perspective.
- Economic information related to a hospital perspective.
- Economic information related to both a societal and a hospital perspective.

As shown in [Box 3](#), it is not always clear whether the respondents are having a societal or a more narrow perspective of the economic aspects in mind. However,

some respondents clearly focused on the reimbursement to the hospital and not the societal economic impact. The examples also reveal that of the 39 respondents mentioning economics as one of the most relevant information (in Question 6), about one third was referring only to the economic impact on the hospital by using terms like budget impact, financing, reimbursement and Diagnosis-Related Groups (DRG). Only four respondents explicitly stated that both a societal and a hospital perspective on the economic aspects were needed.

3.5. Variation between settings and types of managers

Respondents from university hospitals and those from smaller hospitals varied somewhat in their answers to Question 6 about the most important information between respondents from university hospitals and smaller hospitals. The major difference was that hospital managers from university hospitals more frequently mentioned information related to the clinical and economic aspects as the most relevant information, whereas managers from smaller hospitals more frequently mentioned information related to the organizational and the political and strategic domain. The differences between the answers from clinical and hospital managers were smaller. [Table 4](#) shows these results.

3.6. Differences between countries

Because of the small number of respondents, it was difficult to identify differences between countries. In the content analysis, however, some types of information were more often considered to be important in decision-making (Question 6 in [Box 1](#)) in some countries, see [Box 4](#).

4. Discussion

This interview study with 53 hospital managers from nine European countries found that information about clinical effectiveness and economic aspects were considered the most relevant when deciding about investments in new treatments. Hereafter comes information on safety, organizational aspects and the health problem of the patients.

About one in five respondents also considered information on the political and strategic aspects as important in decision making. When looking at the terms used by the respondents, the results indicate that in particular the relation between investment in new treatments and the hospitals' strategic goals (e.g. regarding research or competition) are of importance. This has also been suggested recently in other studies [[21](#)] and [[22](#)]. The political and strategic information domain is not included in the HTA Core Model, suggesting that the need for this kind of information is specific for hospital based HTA and perhaps not relevant for national HTA institutions and thus not typically included in guidelines for national HTA.

Analysis of the terms used by the respondents also shows that the economic focus of the hospital managers is quite narrow. The respondents are often focused on budget impact and reimbursement and less frequently on societal cost–utility analysis. This has also been demonstrated in other studies in [[19,23](#)].

Table 4

The types of information considered by managers from university hospitals and smaller hospitals to be the most relevant when making decisions about investing in new treatments (based on Question 6).

Domain	Managers from university hospitals (N = 35)		Managers from smaller hospitals (N = 18)	
	Number of respondents	Proportion	Number of respondents	Proportion
D1: Health problem	8	23.5%	4	21.1%
D2: Content of treatment	1	2.9%	0	0.0%
D3: Clinical effectiveness	27	79.4%	11	57.9%
D4: Safety	14	41.2%	7	36.8%
D5: Economics	27	79.4%	12	63.2%
D6: Ethics	3	8.8%	0	0.0%
D7: Organizational aspects	6	17.6%	7	36.8%
D8: Social aspects	1	2.9%	0	0.0%
D9: Legal aspects	1	2.9%	0	0.0%
D10: Political and strategic aspects	5	14.7%	5	26.3%

Box 4: Examples of answers from different countries reflecting the importance of information about the economic impact on the hospital.

Estonia:

- (No. 34) "It has to be sure that the technologies will not create economic losses to the hospital and for most investment decisions cost–recovery analysis are sufficient."
- (No 33) "The services are provided and new technologies purchased only in case these are financed by the EHIF (Estonian Health Insurance Fund) and listed in the annual contract."
- (No 36) "In Estonia 99% of decisions to implement or reject new technologies are not made at the hospital level, but by the Estonia Health Insurance Fund."

Switzerland:

- (No. 52) "Availability of the technology in the canton in Switzerland or in Europe and the existence of concurrence in this field is important. The competition between public and private sector is obviously interesting."
- (No 55) "However, in Switzerland, outpatient treatment is totally free and anybody can enter the market, whereas there is some regulation in the public sector of hospitals. This aspect should be taken into account if present."

Turkey:

- (No. 61) "Patient demand was the primary factor for the decision making process."
- (No. 63) "Patients' demands mainly forced us for the DaVinci robot. Patients preferred hospitals with robots for prostatectomy. So we decided to buy one to increase number of urologic cases."

Our interview findings are generally consistent with the results of a systematic literature review carried out prior to the interview study [17]. The review also found a high frequency of studies indicating that clinical and economic aspects of new health technologies are of most importance to hospital managers. The current interview study can be seen as a validation of the results from the review.

A relatively small number of respondents are included in this interview study, and that respondents were selected by local (i.e. hospital), regional or national HTA institutions involved in the AdHopHTA project. The respondents should thus not be considered representative for all hospital managers in Europe. Instead there is a risk that managers and hospitals with an interest in HTA and evidence based decision making have a higher probability of being included in the study. However, it should be noticed that the aim of the study was to do a qualitative study and to get an understanding of hospital managers need for information.

The strength of the method used is that personal interview is more relevant when the subject and the questions are complicated and when the specific wordings and terms used by the respondents are of interest. Also the use of local interviewers with a good understanding of the health care system in the country may have resulted in more valid answers and fewer misunderstandings.

The weakness of this study is that different interviewers have carried out the interviews in different countries. Even though a detailed interview instructions were produced (see online Appendix) and the interviewers were trained in the use of the questionnaire and the reporting template, there is still a risk that different understandings of the questions and tasks by the interviewers have had influence on the results from the interviews. The translation of the respondents answer into English may also have influenced the reporting of the results.

When considering the variation in the respondents' answers it should also be considered that hospital managers need for information may also vary with the type of health technology in question. To reduce this problem the respondents were asked about their information needs when deciding on investment in new treatments in order to focus on the smaller group of new medical or surgical treatments. However, there is still a risk that variation in the answers reflects that respondents were considering different types of health technologies when answering the questions. Similar, some of the variation in the need for information about economic aspects of new treatments may reflect differences in the local reimbursement systems in the countries involved in the study.

In addition it is unknown to what extent the answers from the hospital managers are reflecting the managers'

true need for information – or rather the managers' perception of the socially, politically or scientifically correct answer. This kind of social desirability bias may have been present [20]. For example hospital and clinical managers may not reveal the influence of third parties (e.g. local politicians, pharmaceutical industry, patient lobbies etc.) on the use of information in their decisions.

The results may also simply reflect the medical educational background of the respondents. However, the first question about need for information (see Question 4 in Box 1) was an open question with no limitation on the answer. The fact that the most frequent answer was related to the economic domain probably reflects that the respondents are hospital managers dealing with hospital costs and revenues in their daily life.

If the results are considered valid and consistent with other studies of the need for information by hospital managers in Europe, then the implication for hospital based HTA need to be considered. One implication could be that hospital based HTA approaches – e.g. mini-HTA [8] – should focus on the clinical, economic, safety and organizational aspects of new treatments. However, as the answers to Question 5 show (see Table 2) information about the other domains can also be relevant to hospital managers and should not be considered insignificant.

Another implication is that assessment of the economic impact should focus on the consequences for the hospital and include budget impact and reimbursement issues. Societal cost–utility analysis is not irrelevant but should be combined with economic analyses with a narrower perspective.

In addition, the study findings also suggest that description of the strategic aspects for the hospital considering investing in a new treatment should be included in hospital based HTA. This is quite different from the traditional content of HTA, as described in e.g. the HTA Core Model [14,15] and opens the door to new and strategic aspects of decision making to be included in the hospital based HTA report. More research is needed on this subject before the practical implications for hospital based HTA is clear and this subject will be included in a large scale survey of European hospital and clinical managers that is planned as the next step in the AdHopHTA project.

5. Conclusions

The results from this interview study with 53 European hospital managers show that their need for information in decision making about new treatments deviate from known accepted guidelines for production of HTA, as described in e.g. the HTA Core Model. The clinical, economic, safety and organizational aspects of new treatments were considered the most relevant information for decision making. However, at the same time the results reveal that information about other domains can also be of relevance to hospital managers and should not be considered insignificant. With regard to the economic aspects, hospital managers often have a quite narrow focus on budget impact and reimbursement. In addition to the traditional HTA domains hospital managers sometimes also need

information about the political and strategical aspects of new treatments, in particular the relationship between the new technology and the strategic goals of the hospital. This shows the need to contextualize HTA information to the hospital setting. If further studies are able to verify these results, guidelines for hospital based HTA should be altered to reflect the informational needs of hospital managers for deciding about whether to invest in new treatments.

Conflict of interests

The author(s) declare that they have no competing interests.

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References

- [1] INAHTA, International Network of Agencies for Health Technology Assessment. <http://www.inahta.org> [accessed July 2014].
- [2] Kidholm K, Ehlers L, Korsbek L, Kjaerby R, Beck M. Assessment of the quality of mini-HTA. *International Journal of Technology Assessment in Health Care* 2009;25(1):42–8.
- [3] Elston J, Stein K. A rapid needs assessment of the provision of health technology assessment in the south-west peninsula. *Journal of Public Health* 2007;29:157–64.
- [4] Oliver A, Mossialos E, Robinson R. Health technology assessment and its influence on health-care priority setting. *International Journal of Technology Assessment in Health Care* 2004;20:1–10.
- [5] McGregor M, Brophy JM. End-user involvement in health technology assessment (HTA) development: a way to increase impact. *International Journal of Technology Assessment in Health Care* 2005;21(2):263–7.
- [6] Sampietro-Colom L. Hospital based HTA at the Hospital Clinic of Barcelona. In the panel: hospital based HTA: what about methods, impact and future perspective? 8th HTAi Annual Meeting. 2011.
- [7] Favaretti C, Cicchetti A, Guarrera G, Marchetti M, Ricciardi W. Health technology assessment in Italy. *International Journal of Technology Assessment in Health Care* 2009;25(July (Suppl. 1)):127–33.
- [8] Ehlers L, Vestergaard M, Kidholm K, Bonnevie B, Pedersen PH, Jorgensen T, et al. Doing mini-health technology assessments in hospitals: a new concept of decision support in health care? *International Journal of Technology Assessment in Health Care* 2006;22(3):295–301.
- [9] Arentz-Hansen H, Ormstad SS, Hamidi V, Juvet LK, Fure B, Norderhaug IN. Pilot project on mini-HTA in the Western Norway Regional Health Authority. <http://www.kunnskapssenteret.no/Publikasjoner/Utptr%C3%B8ving+av+mini-HTA+i+Helse+Vest+RHF12308.cms?threepage=1> [accessed on 12.10.14].
- [10] Martelli N, van den Brink H, Denies F, Dervaux B, Germe AF, Prognon P, et al. Hospital-based health technology assessment in France: how to proceed to evaluate innovative medical devices? *Annales Pharmaceutiques Françaises* 2014;72(January (1)):3–14. <http://dx.doi.org/10.1016/j.pharma.2013.09.002> [French].
- [11] Mitchell MD, Agarwal R, Williams K, Umscheid CA. How technology assessment by hospitals differs from technology assessment by payers. In: HTAi V Annual Meeting 2008. Center for evidence-based Practice University of Pennsylvania Health System. 2008.
- [12] King RFP, International Society of Technology Assessment in Health Care. Controlled introduction of new technology into a university teaching hospital by the use of health technology assessment into the safety and efficacy of each procedure. In: International Society of Technology Assessment in Health Care, Annual Meeting 2003. 2003.
- [13] Greenberg D, Peterburg Y, Vekstein D, Pliskin JS. Decisions to adopt new technologies at the hospital level: insights from Israeli medical

- centers. *International Journal of Technology Assessment in Health Care* 2005;21(Spring (2)):219–27.
- [14] Lampe K, Makela M, Garrido MV, Anttila H, Autti-Rämö I, Hicks NJ, et al. The HTA Core Model: a novel method for producing and reporting health technology assessments. *International Journal of Technology Assessment in Health Care* 2009;25:9–20.
- [15] EUnetHTA, European network for Health Technology Assessment. <http://www.eunethta.eu/> [accessed July 2014].
- [16] AdhopHTA, Adopting Hospital Based Health Technology Assessment in EU. <http://www.adhophta.eu> [accessed July 2014].
- [17] Ølholm AM, Kidholm K, Birk-Olsen M, Christensen JB. Literature review of hospital managers need for information in decision making. *International Journal of Technology Assessment in Health Care*.
- [18] Greenberg D, Pliskin JS, Peterburg Y. Decision making in acquiring medical technologies in Israeli medical centers: a preliminary study. *International Journal of Technology Assessment in Health Care* 2003;19(Winter (1)):194–201.
- [19] McGregor M. What decision-makers want and what they have been getting. *Value in Health* 2006;9(May–June (3)):181–5.
- [20] Babbie E. *The practice of social research*, 7th ed. USA: Virginia; 1995.
- [21] Sampietro-Colom L, Morilla-Bachs I, Gutierrez-Moreno S, Gallo P. Development and test of a decision support tool for hospital health technology assessment. *International Journal of Technology Assessment in Health Care* 2012;28(October (4)):460–5.
- [22] Gurtner S. Making the right decisions about new technologies: a perspective on criteria and preferences in hospitals. *Health Care Management Review* 2014;39(July–September (3)):245–54.
- [23] Gallego G, Fowler S, van Gool K. Decision makers' perceptions of health technology decision making and priority setting at the institutional level. *Australian Health Review* 2008;32(August (3)):520–7.