

## **Decision Making Processes for Introducing New Health Technology at Institutional Level: Decision Makers' Perspective.**

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*New health technologies have significantly improved health and quality of life. Nevertheless, they also create challenges in ensuring value for money and concerns over safety and efficacy. Health technology assessment (HTA) has been recognised as an essential tool in addressing these issues. However, concern about HTA dissemination and use by decision makers at institutional level has been expressed. This study explores health care decision makers' experiences concerning decision-making processes for the introduction and adoption of new health technologies at one group of not-for-profit private hospitals in South East Queensland. The aim of the study was to gain knowledge about HTA adoption at institutional level and suggest ways to encourage diffusion of HTA into practice. Thirteen in-depth, semi-structured interviews were conducted with key decision makers. Interviewees described decision-making processes as 'informal'. Safety and effectiveness were considered important, but cost and doctor demand were the standard drivers for decisions about the uptake of new technologies. The decision makers were generally unclear about HTA and its potential. Most information for decisions was based on information from suppliers, other hospitals within the group, and the people or departments who requested the product. The main areas identified for improvement were a desire to have a more formal process for evaluating new health technology, the need for unbiased and timely information, and the use of hospital based, or local HTA. Findings from this study show that the evidence provided by HTA is not being fully utilised by decision makers in this group of hospitals to make informed decisions.*

**Field of Research:** Management, Evidence-Based Decision-Making, Health Technology.

### **1. Introduction**

This study explores decision making processes to introduce new health technologies and decision makers' perception of HTA as a tool for evidence-based decision making. The study is part of a larger project which uses multi-method multiple case studies as the research design. The results presented in this paper are from the qualitative component of the project.

This paper starts with a review of the literature providing the background to the study. Then the methodological aspects will be discussed, followed by the findings, discussion and conclusion.

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### 2. Literature Review

Evidence indicates that new health technology is one of the major drivers contributing to the escalation of health care expenditure (Productivity Commission 2005). In an environment of limited resources, this development has become a vital priority setting issue for decision makers in health services (May 2008).

Rapid introduction of new health technologies also raise concerns about their efficacy and safety (Oliver, Mossialos & Robinson 2004). Driven by these issues, health technology assessment (HTA) activity has developed in many countries. HTA is defined as 'a multidisciplinary field of policy analysis. It studies the medical, social, ethical, and economic implications of development, diffusion, and use of health technology' (International Network of Agencies for Health Technology Assessment 2008). Originally HTA developed to help policy makers at governmental level to make informed decisions regarding health technologies. Current and future trends show HTA target audiences are no longer restricted to policy makers, but include managers, clinicians, and the general public (Battista & Hodge 2009).

Despite the growing importance of HTA as a tool to support informed decision making, concern over its dissemination and use by decision makers has been expressed (Hivon et al. 2005). Research on decision making and priority setting regarding new health technologies has mainly focused on the policy makers at national level (Lehoux et al. 2005). Very little research has been conducted at the institutional or individual levels (Gallego, Fowler & Gool 2008).

Almost all research related to new health technologies focuses only on the decision making environment in public health institutions (Mullen 2004). Public hospitals, however, are not the only healthcare providers. With the increasing number of potential demands from the public, a number of countries, including Australia, have seen the emergence of private healthcare providers as a necessity (Sharma 2007). Yet, there is limited research on decision making to introduce health technology in the private hospital sector.

This paper examines the decision making processes for adopting new health technologies in the not-for-profit private hospitals. The research questions for this study are:

1. How is a decision on acquiring new health technologies made?
2. Do decision makers use HTA as a decision support tool?

### 3. Methodology and Research Design

This study used in-depth face to face interviews to answer the research questions. The study design was selected because we wanted to gain a deeper qualitative understanding of how decision making for introducing new health technologies is done in the not-for-profit private hospital setting. In asking the 'how' question, we wanted the decision makers to freely describe the various influences and dimensions of the decision making process. The interviews were conducted between May to October 2010.

### **3.1 Setting**

This study took place in South East Queensland, Australia. There are a variety of charitable and 'not-for-profit' health care groups in Australia. The hospitals selected for the study are under one parent company of a substantial not-for-profit private health care provider. To gain entry into private healthcare providers is difficult. However, after letters of invitation were sent out to the General Managers of the hospitals with a summary of the research project, three out of four hospitals in the group gave positive responses. These three hospitals became the research sites for this study. The largest of these three hospitals has 260 beds.

### **3.2 Participants and Recruitment**

Targeted convenience sampling was used to identify decision makers in these hospitals. Decision makers were selected based on who could provide the best information. From these three facilities, 13 key decision makers gave their consent to be interviewed; seven administrative managers, four nurse managers and two medical managers. These are senior managers who are involved directly with decision making processes in these hospitals; however most of them do not have full authority to approve the purchasing of new health technologies.

The General Managers from the three hospitals helped to develop the list of potential participants. Letters of invitation which outlined the research objectives were sent to the specified individuals. Those who answered positively were contacted and an interview was arranged to take place in a location that suited them.

### **3.3 Data collection and Analysis**

A four-part semi-structured interview guide was developed to investigate the current decision making processes, the mechanisms and criteria used for evaluation, the role of HTA as a tool for decision making, the implementation stage, and options for future improvement. The guide was used as a prompt sheet to ensure the same items were covered during each interview and the first author conducted all the interviews. The interviewees signed a consent form before the interview. The interviews were recorded with permission from the interviewees and the interviewer later transcribed the interviews. After each interview, preliminary data analysis was conducted. This permitted detection of issues that needed more investigation in the next interviews (Creswell 2003).

After preliminary analysis was carried out thematic analysis was conducted where paragraphs and sentences were coded and labelled into segments. This was repeated until all comments were allocated into categories (Silverman 2004).

### **3.4 Findings**

The results are divided into four categories; description of current decision-making processes, the evaluation mechanism for decision making, the decision makers' perception on HTA, and the implementation process of new health technologies and future improvement.

### 3.5 Description of Current Decision-making Processes

Respondents were asked to describe the current process for introducing new health technology. The majority of respondents described the current process as 'informal' or 'ad hoc'. However, there is a committee to review technology requests. The complexity of the decision making process is based on the cost involved. For technologies that cost less than AUD1,000 the department managers make their own decisions. There is a product review committee to evaluate new technologies, but this committee only acts in an advisory capacity. The committee does not have the authority to make binding decisions. The product review committee consists of managers from all departments in the hospitals.

If the technologies are not too costly (less than AUD1,000) or it involves a straightforward change in procedure, then often these are just approved for introduction immediately at the department level, without further consultation. If the new technology is more expensive and could affect business strategy, then the decisions will be left for senior executives to make. Usually, the decisions are made collectively, but ultimately, the final decisions will be made by the General Managers of the hospitals.

"I can't say we have formally documented the process. It may seem very formal further down, but from where I sit, to me, it looks like a very informal process. For example the product committee will evaluate the smaller ones, such as new stitches or a piece of equipment; the product committee will evaluate and do a trial".

Doctors are the main drivers for introducing new health technologies in these hospitals. In not-for-profit private hospitals, doctors are hospital 'customers' and not their employees. Usually, what the doctors demand the hospitals have to provide, because the doctors will take their patients with them if they move to another hospital. Despite the hospitals being described as 'not-for-profit' organizations, this does not mean they can operate without making a surplus as they need to generate funds for their on-going development and growth. They are still business entities and need customers (i.e. patients) to pay for their operational and development costs. Without patients, the not-for-profit hospitals will be out of business.

"Most cases are driven by clinical need - a doctor coming in and saying 'I want to use this', and because the doctors are our customers they have a lot of influence. Or on the other side they would say 'if you don't get this I am taking my business elsewhere' – that's the common one"

The decision making processes are quite similar between these three hospitals probably due to them being under the same parent company. The parent company does try to standardise the decision making processes, but this is still in an early stage.

These findings largely reflect the results of the study conducted by Gallego, Fowler & Gool (2008) in the Northern Sydney and Central Coast Area Health Service (NSCCAHS), though the study was conducted in public health setting.

### 3.6 The Evaluation Mechanism for Decision Making

All participating hospitals have a standardised mechanism to evaluate new health technologies. However, the mechanism is not a requirement for decision making processes. They have a product review committee to review the new health technologies before they decide to introduce the technologies. The product review committee evaluates the health technologies based on the technology itself, any workplace health and safety issues, the cost-benefit of the product, the organisational-technology fit, and the clinical and financial risk.

There is a standardised product review form that has been introduced by the parent company, but it is up to the General Managers to decide if the form is a requirement or not. This is one reason why there is a range of decision making processes between these hospitals.

For 'state-of-the-art' technologies, which are expensive items, the hospital's executive committee will make a decision purely from the business point of view. The executive committee consists of the General Manager and all hospital's directors. Here the requester must present a business case to the executive committee and in the business case, the product cost analysis, such as payback period is an important criterion.

Most of the information for the evaluation is supplied by the requesters. It is the requester's responsibility to find out any relevant information about the technologies. There are no standardised guidelines or specific criteria regarding the information that the requestor should investigate and provide. Usually the requestor gets the information from the suppliers or possibly the conferences they attend. Other sources of information were also quoted, such as from other hospitals within the group that had used the technologies, research publications, conferences and seminars.

"The person who wants to do it will provide lots of information to us, they get it from research, through their friends, through the conferences, seminars, through the companies who are providing the instrument, and also their personal experience....when they do trials for example, and sometimes they themselves are the researchers".

### 3.7 The Decision Makers' Perception on Health Technology Assessment (HTA)

Most of decision makers in not-for-profit private hospitals are not familiar with health technology assessment (HTA). The interviewer had to explain what HTA is and relate it to product review, as an example. However, they agreed that HTA could be a valuable tool for decision making and it should become a requirement for decision making processes.

"I think it is essential really. I think the health technology assessment form is a good basis to support decision making".

No decision makers in the three hospitals were familiar with the term 'mini-HTA', although they did express some difficulty in finding good guidelines or a checklist to

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assess new health technologies. They also believed that the decision processes should be more formal and structured.

“I think if you formalise things that is a good starting point, because if we have a formal approach to decision making, it takes emotion out of it. It's a good basis to take out the emotional part... because we know in hospital everybody wants something, particularly the doctors”.

### **3.8 The Implementation Process of New Health Technologies and Future Improvement.**

Usually when new technology is introduced, the implementation is quite complex. The policy and guidelines must be written, staff training must be undertaken, and the equipment must be set up, especially for significant and expensive pieces of technology. As one participant indicated:

“Even new equipment sometimes needs new policy and procedure. We also look around the health technology assessment itself whether it has a policy that supports the processes undertaken by the product review committee, so they have a guideline on how to go about assessing what we are looking for ... and it is their job to make sure it is formalised”.

As for post-implementation evaluation, the hospitals have a mechanism, because the instruction is clear from parent company, to investigate and review issues after the implementation phase. The hospitals have a formal structured evaluation process where a review form is used.

When asked for their suggestions on future improvement, most of the decision makers believe that it would be more effective if the decision making process is more formal and structured because such structured decision making will ensure the decisions are based on facts and will leave out biases and subjective decision making.

“I would probably say... about the advantages or disadvantages of it... needs more structure around the decision making processes. Like this review paper I'm giving you, this is very structured and used for a very large project. We could probably use a little bit more rigorous structure for some smaller processes, when we're purchasing many things... although it's always a collaborative decision on things. We could probably be more structured around analysis... you know”.

They were also talking about timely information and that they would like to get the information they need when they need it, and not have to wait for one or two years afterwards. Technologies are changing so fast, that one or two years delay means there will be a newer technology down the line.

“I think it's a lot to do with timing... you know, the world is changing very fast as far as technology is concerned and it's hard to do everything at once. So from my perspective it's all about timing. It is not an easy thing to

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say that we could do it better, but you know a lot of stuff that gets put on the table all the time....”

Participants also believe it would be beneficial if they can get information on new technology they want to introduce from an independent body such as HTA agencies, and not just from the requester(s) and the vendors, because they are interested parties.

### 4. Discussion

Overall, participants describe the decision making process as 'informal' and many of its aspects do not reflect evidence-based decision making. It seems only partial evidence is often considered, with business strategy and cost consideration as the major deciding factors for decisions. The participants revealed that the decision making criteria for introducing new health technologies is driven by the demand from doctors and sometimes from the pressure to be a market leader in health care.

These hospitals do have product review committees which function in a similar manner to health technology assessment. But their role in decision making processes is minimal and they are only involved as advisers. They do not have the authority to approve or reject proposals and they only evaluate the inexpensive technologies, which are not going to affect business strategy. Hospitals should upgrade their product review committees and should give them some autonomy to influence decisions regarding health technologies. These committees could become the HTA units at the hospitals and could play major roles in decision making processes, for example. they could be the committee that searches for information about new technologies and acts as an independent body, so that the information gathered is not biased.

The impact of HTA as a support tool for decision makers is still at an introductory stage. Most decision makers are not aware that they can acquire much of the information for new health technologies from independent bodies such as HTA agencies. They do know about TGA (Therapeutic Goods Administration), MSAC (Medical Services Advisory Committee), and PBAC (Pharmaceutical Benefits Advisory Committee), but they do not know that besides these agencies there are many more from around the world that can provide comprehensive evidence such as INAHTA (International Network of Agencies for Health Technology Assessment) and HTAi (Health Technology Assessment International). The evidence of this study is that lack of appropriate, standardised assessment might lead to poorly informed decisions, which, in turn, might affect the wellbeing of a patient because the hospital has invested in health technologies that are under-researched and not well tested.

The HTA agencies, or related regulatory bodies, should investigate more effective strategies to disseminate the evidence from HTA to decision makers at the hospital level. One such strategy is by promoting the application of a more structured decision making process for introducing new health technologies. To achieve this, the HTA form or guide or checklist should be applied. The hospitals should create a process including guidelines and a review form which is in line with stated HTA reasoning. An existing example of such a form is the 'mini-HTA' form. To date, no

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standardised process has been introduced in the not-for-profit health sector. Currently, every hospital must create its own process. Each hospital must investigate on its own and discover the best practice to follow. Evidence from Danish hospitals indicates that 'mini-HTA' is a good tool to solve this issue (Kidholm et al. 2009). Hospitals should introduce the 'mini-HTA' form more rigorously, as it can become the best available tool at the evaluation stage of decision making processes for introducing new health technologies.

Another strategy that HTA agencies should look into is the communication process. Are the communication platforms they use currently good enough? Can it reach the target audiences effectively? A group of technicians and experts in documentation and diffusion/dissemination belonging to the Spanish Health Technology Assessment Agencies & Units (2009) found that 'at present, dissemination is mainly internal (among HTA agencies themselves, or among persons and/or institutions that (are) interested in HTA)'. Before the HTA reports can be effectively disseminated, publicity about what it is, its importance and its roles must be widely promoted. One of the strategies the HTA agencies could use to achieve this is by educating the target audiences (policy makers, decision makers, administrators, clinicians, healthcare professionals, the public and industries). The agencies can publish and present papers about HTA at healthcare professional conferences such as hospital administrative, medical and also nursing conferences to increase general awareness and not just publish and present at specific HTA conferences and journals.

### **5. Conclusion**

HTA in hospitals is still in its infancy and the process still has a long way to go for the benefits of disseminating HTA evidence to be measured and for it to be embedded into practice. Health regulatory bodies and HTA agencies should be more rigorous in making sure decision makers conduct a proper evaluation of new health technologies before they are introduced, in the best interest of the patients. One of the strategies that could be used is to introduce 'mini-HTA' or hospital based HTA, and makes this a requirement for decision making processes regarding the introduction of new health technologies.

Evidence from Denmark and other countries suggests a strong need for local HTA tools at hospitals (Ehlers et al. 2006). The 'mini-HTA' can become such a tool, ensuring that the format is flexible enough for local adaptation to meet local needs (Ehlers et al. 2006). Health authorities should take a leading role to introduce mini-HTA in both public and private hospitals.

HTA agencies should find ways to educate the target audiences about HTA and simultaneously increase the awareness about HTA.

### **6. Significance of the Study**

This study describes the decision making mechanisms local decision makers use to assess new health technologies. The study also provides insight into what decision makers believe the key characteristics for decision making should be, for future processes. The findings also contribute new knowledge to HTA future roles in



decision making at hospital level. The results from this study further emphasizes that the dissemination and implementation impact of HTA at institutional level is very low and more vigorous strategies are needed to increase the awareness among decision makers about HTA.

### 7. Limitation of the Study

Some of the limitations of this study include external validity, or the generalisability of the study. There were only 13 management participants in the study. Each participant was a healthcare professional from one group of not-for-profit private hospitals in South East Queensland, Australia, where several such groups exist. The participants were selected for their senior management roles, as a convenience sample who had specific engagement in key decision making.

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### References

- Battista, RN & Hodge, MJ 2009, 'The "natural history" of health technology assessment', *International Journal of Technology Assessment in Health Care*, vol. 25, Supplement 1, pp. 281-284.
- Creswell, JW 2003, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, SAGE Publications, Thousand Oak, CA.
- Ehlers, L, Vestergaard, M, Kidholm, K, Bonnevie, B, Pedersen, PH, Jorgensen, T, Jensen, MF, Kristensen, FB and Kjolby, M 2006, 'Doing mini-health technology assessments in hospitals: A new concept of decision support in health care?' *International Journal of Technology Assessment in Health Care*, vol. 22, no. 3, pp. 295-301.
- Gallego, G, Fowler, S and Gool, KV 2008, 'Decision makers' perceptions of health technology decision making and priority setting at the institutional level', *Australian Health Review*, vol. 32, no. 3, pp. 520-527.
- Hivon, M, Lehoux, P, Denis, J-L and Tailliez, S 2005, 'Use of health technology assessment in decision making: Coresponsibility of users and producers?', *International Journal of Technology Assessment in Health Care*, vol. 21, no. 2, pp. 268-275.
- International Network of Agencies for Health Technology Assessment, 2008, Retrieved 20 November 2008, from <http://www.inahta.org/HTA/>.
- Kidholm, K, Ehlers, L, Korsbek, L, Kjaerby, R, and Beck, M 2009, 'Assessment of the quality of mini-HTA', *International Journal of Technology Assessment in Health Care*, vol. 25, no. 1, pp. 42-48.
- Lehoux, P, Denis, J-L, Tailliez, S and Hivon, M 2005, 'Dissemination of Health Technology Assessments: Identifying the Visions Guiding an Evolving Policy Innovation in Canada', *Journal of Health Politics Policy and Law*, vol. 30, no. 4, pp. 603-642.

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- May, J 2008, 'Who shall live and who shall die? A case study of public engagement in health care planning', *International Journal of Market Research*, vol. 50, no. 3, pp. 319-338.
- Mullen, PM 2004, 'Quantifying priorities in healthcare: transparency or illusion?', *Health Services Management Research*, vol. 17, no. 1, pp. 47.
- Oliver, A, Mossialos, E and Robinson, R 2004, 'Health technology assessment and its influence on health-care priority setting', *International Journal of Technology Assessment in Health Care*, vol. 20, no. 1, pp. 1-10.
- Productivity Commission 2005, *Impacts of Advances in Medical Technology in Australia*, Productivity Commission Research Report, Melbourne, Australian Government.
- Sharma, EK 2007, 'Public Health, Private Opportunity; With the government expenditure on healthcare declining, it is private sector investment that will drive the sector's transformation', *Business Today*, pp. 126. Viewed 15 August 2009, from ABI/INFORM Global.
- Silverman, D 2004, 'Qualitative Research: Theory, Method and Practice', Sage Publications, Thousand Oaks, CA.