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## **Incorporating Economic Evidence Into Cancer Care: Searching For The Missing Link.**

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## **Abstract**

Since the early 1980s it has been identified that even though economic evaluation is considered useful by economists it is not widely used by health care decision-makers. One of the ways to close the gap is to involve decision-makers in the process. This project was set up to gain a better understanding of the information needs for resource allocation in the field of cancer care. The results of this project are intended to aid the development and use of the NSW Cancer Institute's Standard Cancer Treatments (CI-SCAT) website in future years. This initiative is part of the NSW 2004-2006 Cancer Strategy to ensure that clinical practice is evidence-based and research driven. The CI-SCAT Reference Group develops and approves clinical protocols to provide clinicians with chemotherapy cancer protocols, including the evidence, cost, and drug dose calculation. Members of CI-SCAT Reference Groups were surveyed in their capacity as clinicians and decision-makers in the Australian Health Care System. The survey asked about participants' knowledge, use and views of economic evaluation in decision making. It also sought information about their knowledge and views on how resource allocation decisions were made within your local area/hospital and whether participants would value greater access to various types of economic information.

This paper will explore what decision-makers at a state/local level value in terms of economic evidence.

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## 1. Background

In a world of scarcity, it is important that we allocate resources where they will give maximum benefit – the biggest bang for the health care dollar. (Birch and Gafni, 2006) Economic evaluation can provide decision-makers with important information to help fulfil this objective. However since the early 1980s it has been identified that even though economic evaluation is considered useful by health economists it is not widely used by health care decision-makers. (Ross, 1995) Australia was the first country to make economic evaluation mandatory as part of the pharmaceutical reimbursement process in 1993 and in 1995 Ross *et al* conducted one of the first surveys on decision-makers' perceptions about use of economic evaluation. (Drummond, 2004, Salked G, et al., 1999) Although more than ten years have passed it seems as though there is still a considerable gap between the production of economic evaluations and their use in decision-making. (Anell and Svarvar, 2000, Sloan and Grabowski, 1997) Numerous surveys have shown that the use of economic evidence faces some major obstacles in the local setting. (Anell and Svarvar, 2000, Campbell and Sprague, 2001, Fijn, et al., 1999, Luce BR and Brown RE, 1995, Odedina FT, et al., 2002, PausJenssen, et al., 2003, Santos Ramos, et al., 1993, Sapienza AM, et al., 1998, Sarpong, 1999, Sloan, et al., 1997, Walkom, et al., 2006) There is now ample evidence to suggest that having access to relevant economic information is a necessary but not a sufficient condition for its uptake. Yet, the main reasons for producing economic evidence are i) to have it inform decision-making and ii) to have such decision-making processes integrated into local policy and, ultimately influence clinical practice so that it maximises health outcomes within a given resource constraint.

Decisions about spending on medicines in general, not only cancer on drugs, occur at different levels in the Australian health care system. The Pharmaceutical Benefits Scheme (PBS) provides universal subsidised access to a wide range of medicines. (Salked G, et al., 1999). Prescription medicines are assessed by the Pharmaceutical Benefits Advisory Committee (PBAC), which considers cost effectiveness of medications in recommendations about PBS listing. (Commonwealth Department of Health and Aged Care, 2002) Like the PBAC in Australia, the National Institute for Health and Clinical Excellence (NICE) in the UK and the Canadian Common Drug Review (CDR) have had more success at integrating economic evidence at a national level of decision-making rather than local. (Drummond, 2004) In Australia, despite the importance of the nationally-funded PBS, local decision-makers (for example clinicians, administrators and

patients) play a vital role in the distribution of medicines. Once a drug is PBS-listed, local decision-makers exert control over prescribing patterns and are instrumental in determining whether medicines are used cost-effectively. For example medications which are not PBS-listed, are often funded at the local level, thereby determining the uptake of new medicines. (Gallego G, et al., 2004) However, the use of economic evidence at the local level is far more ad hoc and in most cases non-existent. (Gallego G, et al., 2005, Weekes and Brooks, 1996) Decision-making based on cost effectiveness assessment made at the national level may not translate to cost-effective use of medications at the local level.

Local health care delivery systems, such as area health services and/or hospitals are under considerable pressure to fund medicines rejected, restricted or pending approval by the PBAC. (Gallego G, et al., 2005) In 2005 the PBAC considered 12 cancer medicines and rejected six. (Australian Government. Department of Health and Ageing, 2006) Medications that do not meet the PBS subsidy criteria are widely prescribed in the oncology population. (Brien, et al., 2004, Gallego G, et al., 2004, Poole and Dooley, 2004) PBAC rejections often increase pressure on other systems (such as public hospitals) to fund drugs from their budgets. (Gallego G, 2006) If a drug is not listed on the PBS or the patient does not meet the eligibility criteria, the options are that i) patients can buy it as a private script or ii) public hospitals can fund it out of their own drug budgets for their inpatients. It has been estimated that high cost drugs including oncology drugs consume up to 4% of hospital drug expenditure. (Gallego G, et al., 2004)

Local decision-makers are the ones facing genuine budget constraints that impact on their ability to fund medicines, including scarcity in personnel, diagnostic tests, medicines supply, surgical procedures and bed capacity. (National Cancer Control Initiative, 2003) In other words, the stakes are higher at the local level; inefficient resource allocation decisions at the hospital setting can have an immediate and direct impact on the facility's ability to treat their patients effectively and equitably. Therefore, it is not surprising that increasingly, cancer clinicians are called upon to discuss the economic and clinical aspects of a proposed treatment plan.

Therefore a survey was set up to explore cancer care health care professionals' knowledge, use and views of economic evaluation. It also explored their knowledge and views on how resource allocation decisions are made within their local area/hospital and whether they would value greater access to various types of economic information

## **2. Methods**

### **2.1 Questionnaire development**

A survey instrument of three sections and 20 questions was developed using information from the literature. (Hoffmann and Graf von der Schulenburg, 2000, OECD, 2005) Section one sought preliminary details such as profession, job title and the reference group the participant belonged to (e.g. Oncology, Radiology etc.) Reference groups are composed by health care professionals who volunteer their time to review and edit cancer treatment protocols. They attend workshops throughout the year and come from different institutions within New South Wales (NSW). (Cancer Institute New South Wales (NSW), 2005)

The second section asked participants about their knowledge, use and views of economic evaluation in decision-making. The third and final section sought information about participants' knowledge and views on how resource allocation decisions were made within their local area/hospital. It also explored whether they would value greater access to various types of economic information.

### **2.2 Data Collection**

The survey was conducted between May and August 2006. Members of CI-SCAT reference groups were surveyed in their capacity as health care professionals and decision-makers in the Australian Health Care System. All members in the different reference groups (oncology, nursing, haematology and radiotherapy) were invited to participate. All members attending the reference groups workshops completed the survey.

### **2.3 Data Analysis**

Responses were collated and analysed using the Statistical Package for the Social Sciences (SPSS) for Windows Version 10 (SPSS Inc., Chicago USA). Descriptive statistics were used to summarise data.

### **2.4 Ethics**

This study was approved by the University Technology Sydney (UTS) Human Research Ethics Committee (HREC).

### 3. Results

The survey was completed by seventy four health care professionals (HCP). Table 1 describes the participants' characteristics.

**Table 1.** Participants' characteristics

<b>Characteristic</b>	<b>Percentage %</b>
<b>Reference group (n=74)</b>	
Oncology (n=7)	9.5
Nursing (n=43)	58.0
Haematology (n=9)	12.0
Radiology (n=15)	20.5
<b>Profession</b>	
Specialists (n=25)	34.0
<b>Budgetary responsibility (n=74)</b>	
Yes (n=37)	50.0
No (n=37)	50.0
<b>Involved in making decisions about the adoption or financing of health technologies or treatments at their institution (n=74)</b>	
Yes (n=36)	51.4
No (n=38)	48.6

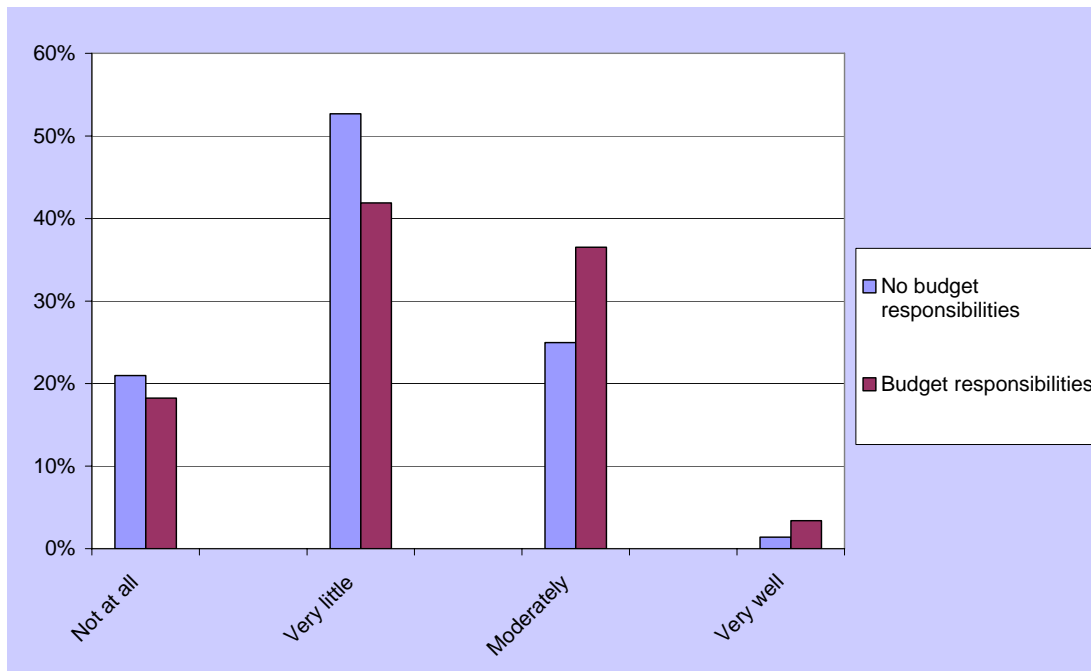
#### 3.1 Knowledge and views of economic evaluation

Fourteen respondents (19%) had some training in economics/health economics. Of these 36% had completed coursework at a Master's level (e.g. Public Health). Overall the knowledge of economic evaluation techniques seemed to be limited. Cost effectiveness analysis (CEA) and cost benefit analysis (CBA) were known better than cost utility analysis (CUA) and cost minimisation analysis (CMA). CBA seemed to be the most familiar technique.

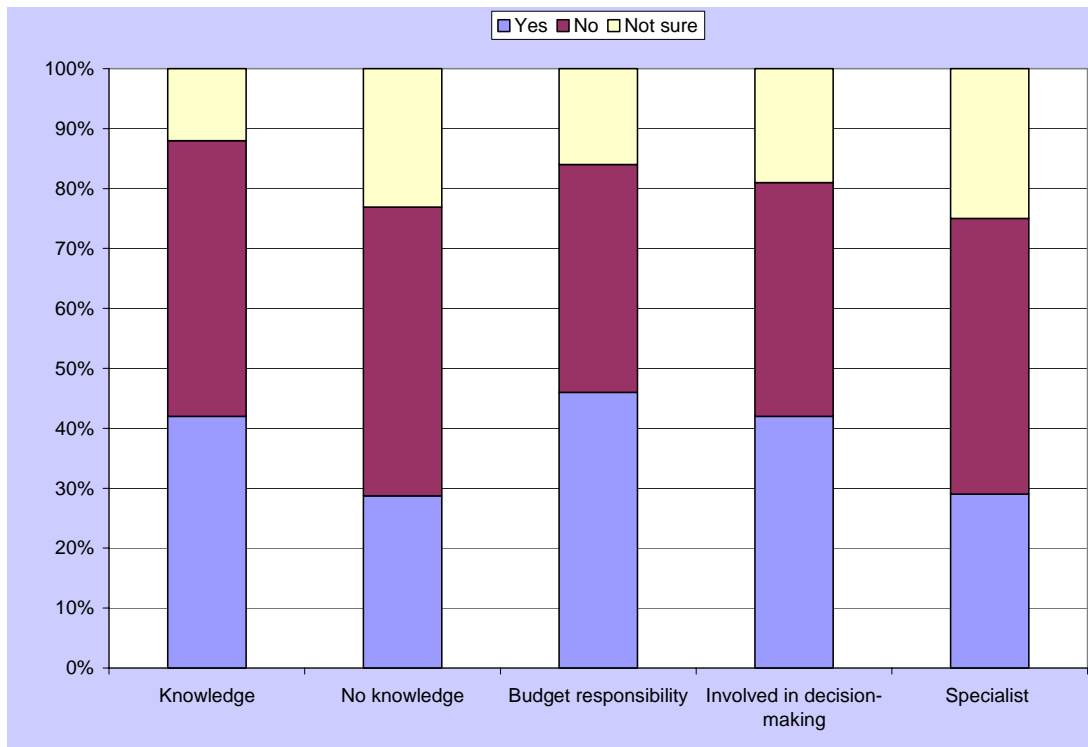
Participants with training in economics/health economics reported having better knowledge of CEA and CBA. When perceptions about knowledge of all four techniques were combined, those with budgetary responsibilities seemed to have better knowledge compared to those with no budget responsibilities. (See Figure 1)



Respondents were asked if they thought it was ethical to refuse to adopt or to finance a new health treatment on economic grounds at a local institution such as a hospital or Area Health Service. Almost half of the respondents (48%) considered it was unethical. The association between respondents' characteristics and "thinking it is ethical to refuse or to adopt to finance a new health treatment on economic grounds at a local institution such as a hospital or Area Health Service" was explored (see Figure 2). Those with no perceived knowledge of economic evaluation and specialists were more likely to consider it was unethical to refuse or to adopt to finance a new treatment on economic grounds.



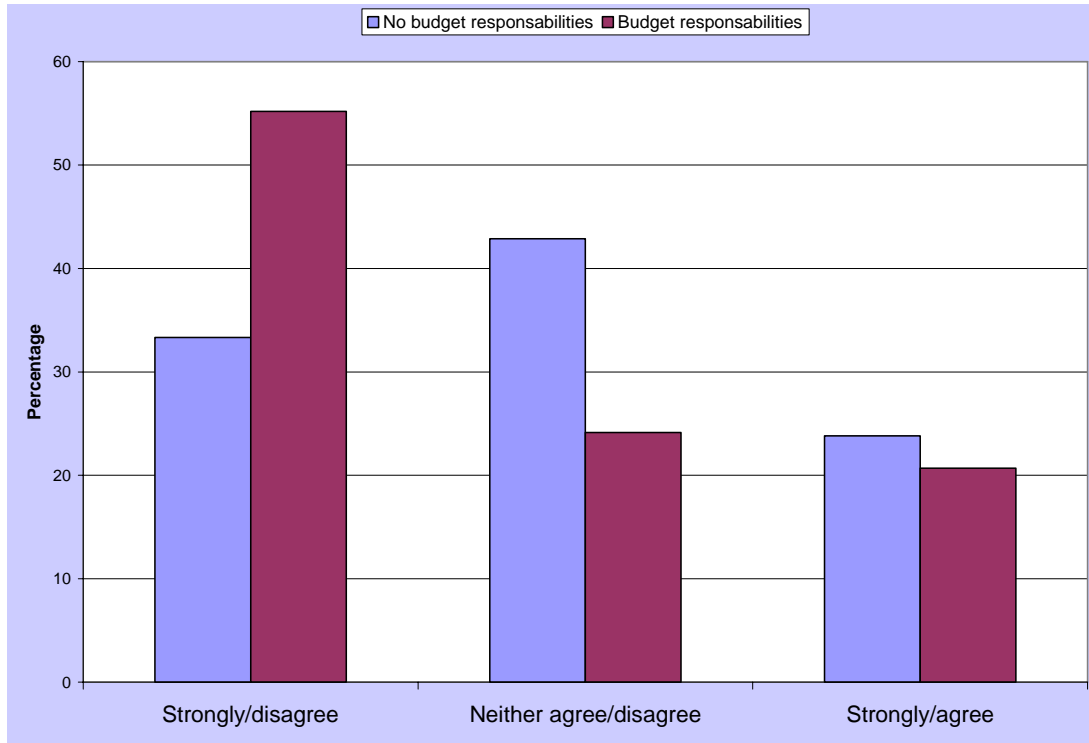
**Figure 1.** Differences in knowledge of economic evaluation.



**Figure 2.** Association between respondents' characteristics and thinking it is ethical to refuse or to adopt to finance a new health treatment on economic grounds.

More than half of the respondents (53%) considered that economic evidence would be a useful addition to the CI-SCAT website and 38% believed it would be useful in "some cases".

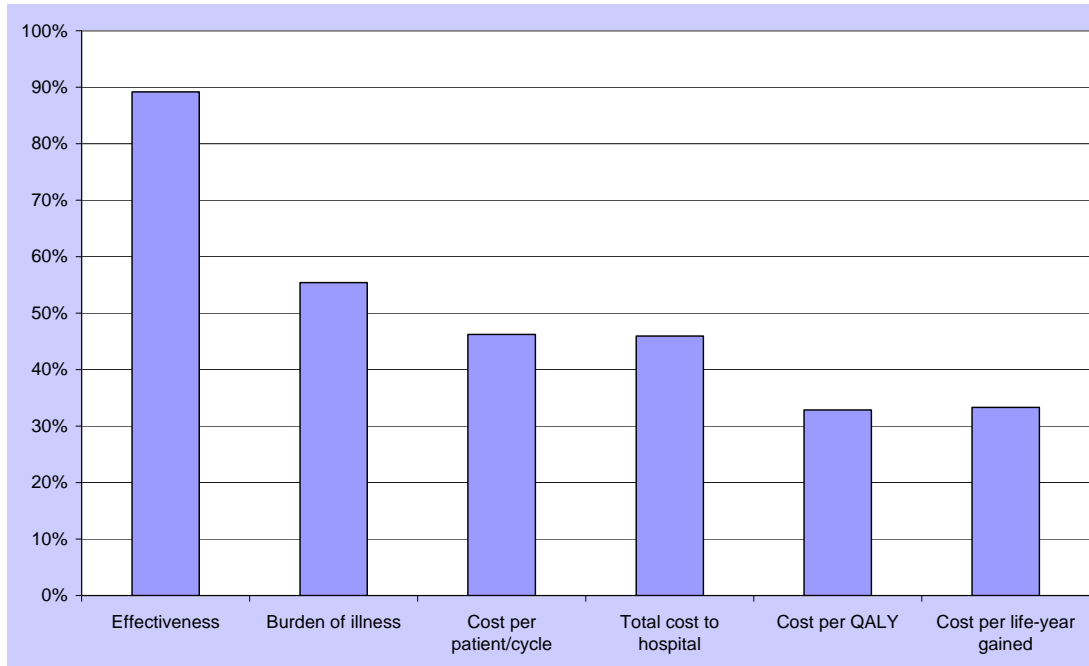
Respondents were asked to what extent they "agreed" or "disagreed" with six statements about the current role of economic evaluation at their institution. More than half of the respondents (59%) agreed that economic evaluation is a tool used infrequently by clinicians. Half (50%) agreed with the fact that it is a tool frequently used by managers. (See Figure 3) It is important to have in mind that this relates to respondents' perceived knowledge about economic evaluation. Only 27% of the respondents considered that that economic evaluation studies are biased in favour of the technology. The majority of respondents (66%) considered that "clinical departments have a hard time evaluating the economic repercussions of the new technology". The majority (77%) also considered that adequate resources are not available to conduct economic evaluation at a local level. One third (31%) of the respondents thought that national and international technology evaluation agencies have not produced effective resources for hospital management. Seventy four percent of those that have or had the budgetary responsibility agreed with this statement.



**Figure 3.** Economic evaluation is a tool infrequently used by:

When participants were asked about the potential role of economic evaluation half of the respondents (51%) considered that evidence from economic evaluations should influence clinical practice. Sixty percent considered that economic evaluations should inform decision-makers about which technologies are ‘good value for money’. However more than half of the respondents disagreed or strongly disagreed (65%) with the statement that economic evaluation should help contain health care spending. In contrast 84% agreed or strongly agreed with the fact that economic evaluation should identify ways to maximise health care gains within current resource constraints.

Participants were asked to rate the importance of a list of factors that could influence the adoption of new technologies at their institution on a five point scale: from “not helpful at all” to “very helpful”. The most important criteria in deciding whether to adopt a new treatment were evidence of effectiveness/efficacy (87%) and quality/safety (89%) of the new technology. Indication of the morbidity associated with the illness for individual patients (68%), national or state wide recommendations to implement (or not implement) technology (59%) and organisation/professional implications (57%) were also considered important by more than half the respondents. Figure 4 shows the criteria considered very helpful.



**Figure 4.** Percentage of respondents who would find the following types of evidence very helpful in the adoption of new technology.

### **3.2 Resource allocation decisions in respondents own institution/facility**

Respondents in the oncology, nursing and haematology reference groups (n=59) were asked about the impact of Pharmaceutical Benefits Advisory Committee (PBAC) decisions and funding of medications in their institutions. Respondents in the radiologist groups were excluded as they are less likely to be involved in decision about access to medicines. The majority of respondents (86%) stated that their institution generally followed recommendations made by the PBAC. However more than half (53%) also stated that their institution may consider funding medications out of their own drug budget even when rejected by the PBAC. (See Table 2)

**Table 2.** Access to oncology medications and role of the PBAC

	Not accurate % ( n )	Accurate % ( n )	Not sure % ( n )
Generally follows recommendations made by PBAC	6.8 (4)	86.4 (51)	6.8 (4)
Will await PBAC recommendations	22.0 (13)	66.1 (39)	11.9 (7)
Will not fund drugs that have been rejected by PBAC	42.4 (25)	40.7 (24)	16.9 (10)
May consider funding drugs out of its own drug budget even when PBAC has rejected the drug.	23.7 (14)	52.5 (31)	23.7 (14)
My institution gives clinicians freedom to determine what to prescribe and to whom and PBAC decisions have no bearing on this	61.0 (36)	20.3 (12)	18.6 (11)

Respondents were asked if the above mentioned characteristics (e.g PBAC recommendation) restricted prescribing. The majority of respondents (82%) considered it did.

Participants were asked to rate the influence of the main actors when considering the adoption of a new drug at their institution from: “none” to “very strong”. Drug committees were regarded as one of the main actors in deciding if a new drug should be adopted at an institution. The media on the other hand was considered to have no or weak influence. Clinicians, heads of departments and pharmacy had strong or very strong influence. (See Table 3)

**Table 3.** Main actors that influence a new drug being considered for adoption at an institution.

	None % ( n )	Weak % ( n )	Moderate % ( n )	Strong % ( n )	Very strong % ( n )
State Government (n=52)	19.2 (10)	13.5 (7)	21.2 (11)	9.6 (5)	36.5 (19)
Area CEO (n=52)	21.2 (11)	13.5 (7)	23.1 (12)	19.2 (10)	23.1 (12)
Area executive (n=51)	21.6 (11)	11.8 (6)	21.6 (11)	25.5 (13)	19.6 (10)
Drug committee (n=55)	1.8 (1)	7.3 (4)	14.5 (8)	36.4 (20)	40.0 (22)
Head of department or service (n=52)	3.8 (2)	7.7 (4)	21.2 (11)	30.8 (16)	36.5 (19)
Pharmacy (n=56)	7.1 (4)	7.1 (4)	25.0 (14)	35.7 (20)	25.0 (14)
Individual clinician (n=55)	1.8 (1)	9.1 (5)	20.0 (11)	41.8 (23)	27.3 (15)
Media (n=59)	33.3 (16)	25.0 (12)	16.7 (8)	18.8 (9)	6.3 (3)
Other (n=5)			1.7 (1) <sup>†</sup>	1.7 (1) <sup>*</sup>	5.1 (3) <sup>^</sup>

<sup>†</sup>Patient/consumer organisation

<sup>\*</sup>Commonwealth Government

Participants were asked to rate the level of influence of a list of factors in resource allocation decisions from: “none” to “very strong”. The high cost impact on local budgets was considered to have a very strong or strong influence in resource allocation decisions by the majority of respondents (83%). Favourable evidence on clinical effectiveness (74%), cost effectiveness (73%) and targeting a common cancer within the population (73%) were also considered a very strong or strong influence by almost the same percentage of respondents. Factors such as intensive marketing by industry (18%) and cancer with a very low survival rate (49%) did not have a very strong influence. (See Table 4)

**Table 4.** Factors that influence resource allocation decisions

Factors that influence resource allocation decisions	Percentage of respondents who considered this factor had strong or very strong influence %
High cost impact on the local budget	83
Clinical effectiveness	74
Favourable evidence on CE	73
Targets a very common cancer	73
Strong local clinical champion	54
DOH strategic priorities	54
AHS strategic priorities	47
Strong community voice	42
Cancer with a very low survival rate	39

More than half of the respondents (63%) agreed/strongly agreed with the statement that despite operating under capped budgets, new money can usually be found. Sixty six percent also agreed/strongly agreed that at their institution the concept of cost-containment is more important than cost-effectiveness. (See Table 5)

**Table 5.** Current resource allocation decisions at participants' institutions

	Strongly disagree/ disagree %	Neither agree/ disagree %	Agree/ Strongly agree %	Not sure %
The only economic criterion that tends to be considered is the direct financial cost of the new technology n=70	18.6	17.1	62.9	1.4
Despite the fact that we operate under a capped budget, new money can usually be found from somewhere n=70	39.1	15.9	43.4	1.4
At my institution, the concept of cost-containment is more important than cost-effectiveness. N=69	17.4	13.0	66.6	2.9
One of the barriers for taking up new technologies is the difficulty of moving resources from one sector (budget) to another n=70	5.7	14.3	77.1	2.9
Budgets are so tight that resources cannot be freed to adopt new technologies n=69	17.4	29.0	52.2	1.4
There are avenues where I can express my opinion on matters regarding resource allocation decisions n=71	39.5	19.7	38	2.8
I am not aware of the existence of a decision making process in our institution regarding the adoption of new technologies n=70	37.2	18.6	34.2	7.1
Technologies are adapted in line with clinical priorities n=70	37.2	28.6	32.8	1.4

## 4. Discussion

### 4.1 Knowledge and views of economic evaluation

These results provide an insight into the attitudes, perceptions and knowledge of health care professionals involved in cancer care.

In this study, a low percentage of health care professionals (HCP) had undertaken training in economics/health economics. These results are consistent with findings from previous surveys. (Hoffmann and Graf von der Schulenburg JM, 2000, Zwart-van Rijkom, et al., 2000) Cost benefit analysis (CBA) seemed to be the most familiar technique. This could be attributed to the fact that cost benefit is an expression commonly used to describe cost and consequences of an intervention. (Hoffmann and Graf von der Schulenburg JM, 2000) However participants' actual knowledge was not assessed.

Conflicting attitudes towards economic evaluation were found. Ninety percent of respondents believed that economic evidence would be a useful addition to the CI-SCAT website (52% always and 38% at least in some cases). While fifty one percent agreed that evidence from economic evaluation should influence clinical practice a similar percentage (48%) considered it would **not** be ethical to refuse to fund an intervention based on economic evidence. Specialists were more likely to consider it was unethical to refuse funding based on economic evidence. Ginsburg *et al* found that physicians in the United States considered cost-effectiveness important and appropriate in clinical practice but they had different views as to how cost-effectiveness decisions should be implemented. (Ginsburg, et al., 2000) It is also important to consider that health care professionals do not always do what they say and even though they might consider economic evidence is useful they might be hesitant to apply it in practice. (Anell and Svarvar, 2000, Drummond, et al., 1997, Ginsburg, et al., 2000)

In this study half of the respondents (50%) considered that economic evaluation was used by managers to make decisions. As previously stated this is according to respondents' perception of what economic evaluation is. Perhaps this could explain why this result differs from the literature. Previous studies have shown that the results of health economic evaluation are not widely used. (Duthie, et al., 1999, Hoffmann and Graf von der Schulenburg, 2000, Hoffmann, et al., 2002) Consistent with previous studies, lack of resources and expertise were identified as barriers to the use of economic evaluation. (Anell and Svarvar, 2000, Gallego G, et al., 2005, Hoffmann and Graf von der Schulenburg, 2000, Odedina FT, et al., 2002, Sloan and Grabowski, 1997, Spath, et al., 2003) In contrast with what has been previously reported in the literature only 27% of the respondents perceived studies are biased in favour of the technology. (Spath, et al., 2003)

Respondents had a positive attitude towards the potential use of economic evaluation. The majority considered that economic evaluation should inform decision-makers about which technologies are "good value for money" and identify ways to maximise health care gains with current resource constraints. However, there was also evidence, of a gap between what health care professionals say they want and what is produced by economic evaluations. Ninety percent of respondents said that they would find evidence about effectiveness, quality and safety useful however 47% considered cost per patient or the total cost of a technology useful and only 33% indicated that they would find



information about the cost per QALY or the cost per life-year-saved useful. It has previously been reported that health economics outcomes such as QALYs are either not understood or considered irrelevant by clinicians. (Duthie, et al., 1999) As the latter information is the type typically produced by economic evaluations, this result emphasises the importance of: i) education and capacity-building in relation to economic evaluation amongst end users of the information (in this case, clinicians and decision-makers); ii) using information understood and endorsed by clinicians and decision-makers as inputs to the economic evaluations; and iii) making the results transparent and accessible to the end-users.

#### **4.2 Resource allocation decisions in participants' own institution/facility**

The link between central and local drug funding decisions was explored. While the majority of respondents considered their institutions generally followed recommendations made by the PBAC, more than half (61%) mentioned that their institution would consider funding new drugs even when they had been rejected by the PBAC. It seems that when respondents say "yes" it means "yes" but "no" means "maybe". There are some important things to consider when interpreting these results: i) economic evidence used to support PBS-listing has not generally been accessible to health professionals and patients – documentation is 'commercial in confidence' and generally in a format which is not easy to understand (Marley J, 1996) ii) medicines used for in-patients in public hospitals are primarily funded by the hospital (Commonwealth Department of Health and Aged Care, 2000) and iii) public hospital decision-makers perceived that studies conducted from the hospital perspective will be more useful. (Gallego G, et al., 2005) It has been previously identified that decision-makers at the local level deal with identifiable patients and there is a considerably different emotional response. (Gallego G, 2006)

If it is assumed that decision-makers at the local level will rarely be able to use the results of economic evaluation (Weatherly, et al., 2002) the influence of PBAC decisions at the local level should be further explored.

This survey also explored who influences the adoption of new drugs and technologies at the local level. Not surprisingly Drug and Therapeutic Committees (DTCs), heads of departments and the state government were rated as having a strong influence when it comes to new drugs. This can be explained by the present drug funding arrangements. Currently the State-based public hospital medicines funding is included as part of the

financial grants from the Commonwealth to the States. This means it depends on budgetary allocation decisions made at a number of levels including the health department, health district or area health service and individual hospital. (Salked G, et al., 1999, The Society of Hospital Pharmacists of Australia (SHPA), 2004)

As previously reported in the literature, cost is a major driver in decisions about the allocation of resources. Eighty three percent of the respondents considered it had a strong influence and 62% agreed/strongly agreed with the statement that the only economic criterion that tends to be considered is the direct financial cost of the new technology. Clinical effectiveness was also rated high by 74%. (Fijn, et al., 1999, Jenkins KN and Barber N, 2004, Martin DK, et al., 2003, PausJenssen, et al., 2003, Spath, et al., 2003)

Respondents also considered that budgets are inflexible (72%) and too tight (56%) resulting in little capacity for resources to be used for the adoption of new technologies. This “drug budget silo mentality” previously described by Drummond *et al.* (de Pouvourville, et al., 2005) as well as the fragmentation of the funding system for pharmaceuticals in Australia, (Doecke C, 2005, Plumridge R, 2003) hinders the role of economic evaluation at the local setting. Instead there are perverse incentives to cost-shift and offload cost rather than work in the interest of the overall health system. (Hall J, 1999) Cost shifting is a well established practice, but is reactive and will be practised more widely as regulatory requirements or agreements are changed. This leads to administrative inefficiencies, inequitable access and, ultimately, the potential for worse health outcomes. (Hall J, 1999) It could be perceived that this is something unique to the Australian health care system however cost shifting of expensive treatments from secondary to primary care has also been described in the UK. (Crump BJ, et al., 1995, Orme M, 1991)

## **5. Limitations**

A well known limitation of surveys such as the one presented here is that health care professionals do not always do what they say and their stated demand for information does not always match actual demand. (Anell and Svarvar, 2000, Drummond, et al., 1997, Ginsburg, et al., 2000) There may also be a sample bias as participants belonged to a reference group and are already interested in best practice. However if this were the case we might be underestimating the challenges of bringing economic evidence into local decision-making.

## **6. Conclusions**

Providing economic evidence is necessary but by no means sufficient condition to ensure its use. It is important to develop a decision-making process that can absorb economic evidence. It is important to work with decision-makers to provide relevant local evidence that is consistent with economic principles. As stated by Drummond any attempt to use economic evaluation at the local level needs to take into account the decision-maker's objectives. (Drummond, 2004)

Future research will develop and explore models of best practice on how to incorporate economic evidence into the CI-SCAT cancer protocols by collaborating with the health care professionals in the CI-SCAT reference groups.

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