

## **A PILOT APPLICATION OF THE VALUE TOOLKIT: ASSESSING THE IMPACT OF INFORMATION SERVICES TO CLINICIANS IN REGIONAL QUEENSLAND.**

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### **ABSTRACT**

This paper outlines the use of the Value Toolkit with clinicians in regional Queensland, in particular Queensland health personnel, to determine the impact of library services. The study revealed the identity of and details of information service users; provided data on information service provision; and systematically documented the impact of information service provision. The value users place on information services was measured and qualitative and quantitative evidence for the effectiveness of information services was obtained in terms of impact upon patient care outcomes. Recommendations for further service development based on these findings are included in this paper.

### **INTRODUCTION**

In the past 25 years researchers (Ali 2000; Burton 1995; Casado et al 1994; King 1987, Klein et al 1994, Marshall 1992, Scolaro 1996, Urquhart & Hepworth 1995a) have attempted to assess the value and impact of library and information services on clinical outcomes. Due to the similarities in the UK and Australian health care systems the work by Urquhart and Hepworth (1995a; 1995b) has widespread application.

The Value study (Urquhart & Hepworth 1995a) was funded by the British Library Research and Development Department and was designed to examine the effectiveness of National Health Service Library and Information Services. Over 600 clinicians and 43 health information and library services provided the data for the Value study and the Department of

Information and Library Studies at the University of Wales, Aberystwyth conducted the project between November 1993 and April 1995.

The Value Toolkit (Urquhart & Hepworth 1995b) was derived from the Value study (Urquhart & Hepworth 1995a) and has subsequently been used extensively in whole or in part throughout National Health Service libraries and various studies in the UK. The Value Toolkit (Urquhart & Hepworth 1995b) focuses on the assessment of user needs; information service provision; and information service outcomes. It includes benchmarked data for comparing subsequent impact or value studies.

This paper outlines a research project based on the Value Toolkit (Urquhart & Hepworth 1995b). The library and information services involved in this study were both small postgraduate multidisciplinary hospital based libraries. One library has a staff of 1.0 fulltime librarian and the other has a staff of 3.0 full time librarians. The goals of this study were to:

1. determine local patterns of information need and use; prompts to information seeking; and information selection;
2. to determine the impact or value of information provided by library and information services on patient care.

## **METHODOLOGY**

In defining the value of information the authors in this study used the same definition as in the Value study (Urquhart & Hepworth 1995a: 30-31), which had three distinct aspects:

1. Subjective expected value-in-use (a measure of users' willingness, based on past experience, to seek or use an information service / product)
2. Subjective value-in-use (users' opinions of the value of information used in their work)
3. Objective value-in-use (a measure of the actual impact of the information on a task)

The population for this study included all full time and part time medical staff employed by Queensland Health in the Rockhampton and Mackay District Health Services in acute and community care services and included:

- interns (postgraduate year one)
- junior house officers (postgraduate year two),
- senior and principal house officers (registrars),
- senior medical officers and consultants/visiting medical officers.

The study population (n=189) was identified from medical staff lists. Due to the transient nature of the local medical workforce it is possible that some part time staff may have been missed and some personnel may have left the employ of Queensland Health.

A critical incident survey consisting of a four-part questionnaire comprised of eight questions (Appendix 1) was distributed to all medical staff in the study. All questions were taken unaltered from the Value Toolkit (Urquhart & Hepworth 1995b). Unlike the Value study (Urquhart & Hepworth 1995a) the authors to date have not complimented the survey with interviews of clinicians to gather a more objective estimate of the value of the information use in clinical settings.

The questionnaire and explanatory covering letter was distributed via internal mail to all full time staff and was posted to part time staff. A collection box was placed in the medical staff room to facilitate the return of questionnaires by full time staff while a return envelope was provided for the part time participants

## RESULTS

63/189 questionnaires were returned for analysis. Six questionnaires completed by medical students and three incomplete questionnaires were excluded. Thus 54/189 (29%) questionnaires were analysed. Response rates varied from 18/73 (23%) in Mackay to 36/116 (31%) in Rockhampton.

For analysis of the data the respondents were grouped by career point and therefore likely information need/use. Because of the small sample size from Mackay only Rockhampton respondents were grouped as follows:

Respondent group	No. of Responses	Response Rate
Group 1: Interns and junior house officers (postgraduate years 1 and 2)	6/22	27%
Group 2: Senior house officers, principal house officers, registrars (clinicians undertaking or preparing for formal post graduate/specialist education)	11/32	34%
Group 3: Senior medical officers, consultants, visiting medical officers (members or fellows of specialist medical colleges)	19/62	31%

**Questionnaire 1: Patterns of information need and use**

Participants were asked to respond to three questions based on an occasion or incident in the previous seven days during which they needed information for patient care, teaching or personal continuing education.

Question 1.1 Respondents were asked why they needed information and the most frequently mentioned responses were:

<i>Information source</i>	<i>Frequency of mention</i>
Patient care - specific drug or therapy query	34
Patient care - rare condition or specific problem	34
Teaching - staff/students/colleagues eg: case presentations	33
Personal continuing education ie: life long learning	33
Patient care - patient care administration/records	17

Question 1.2 Participants were asked to nominate where they obtained information from and responded as follows:

<i>Information source</i>	<i>Frequency of mention</i>
Reference book or medical handbook	38
Local medical library	26
Personal or unit information files or databases	22
PubMed or Medline	21
Personal journal collection	16
Other sources: Up to Date, medical college websites, MIMS, Cochrane, Bandolier, Clinicians Knowledge Network and Harrison's Online.	13
Colleague	11
Pharmacy	8
Other library (University of Queensland, medical college)	4
	Total no. of responses = 54

Question 1.3 65% (35/54) of respondents indicated that they were successful in obtaining the information they needed. The remainder indicated that the information they obtained was incomplete or that they would require further searching to meet their needs.

### Questionnaire 2: Prompts to seeking information

This questionnaire is designed to gather data on what encourages participants to seek information and how the information will be used.

Question 2.1 In response to the question “What prompted you to make a search or request on this occasion” 80% (43/54) of respondents indicated personal curiosity or ‘need to know more’. Other frequently mentioned responses were:

- Reading of personal journals or books
- Enquiry from patient
- Information from a previous search
- Suggestion/advice/information from colleagues

Question 2.2 When asked how the information would be used a clear majority intended to share the information with colleagues, use it in a case presentation or add it to their personal information collection.

### Questionnaire 3: Information seeking and selection

Respondents were asked to indicate their views on, and experience with selecting material for reading. A large majority indicated that they looked for review articles and specific results or outcomes. Some looked for recent articles and most examined any abstract that was provided. Very few examined the method or statistics used in the item and even fewer looked at the author or author affiliation.

### Questionnaire 4: Impacts

Question 4.1 Respondents were asked: “What was the immediate impact of the information provided on your knowledge?” The following positive (ie: yes) responses were received:

<i>% responses YES</i>	<i>Impact statement</i>	<i>Value study % responses YES</i>
98%	It refreshed my memory of details or facts	57%
91%	Some of it was new to me	88%
87%	I could use at least some information immediately	73%

87%	I will share this information with colleagues	76%
83%	It substantiated what I knew or suspected	66%
69%	I will add this to my own information collection	91%
59%	I will need to obtain more information on the topic	71%
41%	I expected to find something else	17%

Question 4.2 In response to the question “ How might the information provided contribute to your future clinical decisions?” the following positive (ie: yes) responses were received:

- 85% Confirmation of proposed therapy
- 83% Recognition of abnormal/normal condition
- 80% Differential Diagnosis
- 70% Identification/evaluation of alternative therapies
- 70% Minimisation of risks of treatment
- 70% Revision of treatment plan
- 70% Improved quality of life for patient and or family
- 67% Choice of diagnostic test
- 44% Audit or standards of care
- 37% Legal or ethical issues

## DISCUSSION

The limitations of this research design are apparent in the data received. Simple yes/no responses make for positive bias and the high level of positive impacts reported may be a measure of how much respondents like the librarian as much as a measure of knowledge affecting behaviour and outcomes. Other independent evaluations to measure the value or impact of a library information service would be expected to elicit fewer positive impacts. The apparently level of evidence based practice was less than expected despite a high level of corporate support for this philosophy of service provision.

Busy clinicians tend to search for information infrequently thereby affecting the validity and subjectivity of their self reported behaviours and thus the value they place upon the

information they use in clinical decision making. Additionally while librarians tend to think in terms of question-answer-resolution (immediate impact) this is not the case for the clinicians whose searching is ongoing (future impact) and akin to solving a jigsaw.

### **Patterns of information need and use**

The frequency of responses show that patient care and education (Teaching - staff /students/colleagues, personal continuing education) were the most common need and use of information. These responses were almost equal in number and were high for all Groups of respondents. This is explained by a local emphasis on patient care and the need to constantly update and disseminate clinical knowledge. Several senior consultants have mentioned to the authors that in regional areas they tend to be “generalist specialists” who have a broad range of patients and thus have higher information needs than their metropolitan peers. They are also more actively involved in teaching of colleagues for the same reason, which may explain the exceptionally high response rates for the patient care and teaching statements.

The range of information resources used by respondents demonstrated reliance upon traditional sources such as textbooks despite the widespread availability of online content. This trend was consistent across sites and Groups. The most surprising finding was that a “reference book or medical handbook” was nominated more frequently than any other source (70%, 38/54) and that the local medical library was the second most frequent response (48%, 26/54). This may be due to an inherent bias in the study design because non-library users were not identified.

Personal or unit/departmental files or databases were nominated as the third most popular information source, especially in Group 3. This is apparently due to the fact that many respondents in Group 3 are sole or isolated specialists who rely upon their own resources, more than their peers in larger centres, to care for patients. Continuing a trend of information self reliance Group 3 respondents also nominated their medical college or other libraries as sources of information. Group 3 was also the most likely to look for a specific outcome or result in the literature to confirm what they already knew or suspected. This Group was the least likely to obtain information from the pharmacy and was more likely than others to use Medline in preference to other readily available databases when researching patient care.

The range of online resources nominated by respondents was extensive with PubMed / Medline being the most frequently mentioned. By contrast only five respondents mentioned the Queensland Health intranet based service, CKN: Clinicians Knowledge Network (a collection of 400+ online journals, numerous online textbooks, bibliographic databases and patient care resources) or its component databases such as MIMS or Harrison’s Online.

Junior doctors in Groups 1 and 2 relied on colleagues and materials at hand even if it were an out of date textbook or a convenient database. Networking was strong in all Groups (83% or 45/54 respondents indicated they would share information with colleagues) but particularly so in Groups 1 and 2, which reflects the teamwork approach to patient care and to continuing education in these Groups.

Most respondents (65%, 35/54) indicated that they were immediately successful in obtaining the information they needed. Approximately one in five (22%) indicated that they would need to continue their search for information at a later date. This phenomenon of interrupted searching reflects not just clinicians' time pressures but also the fact that much medical patient care is ongoing rather than discrete or isolated episodes of care. It also suggests that efforts to identify and locate information are dependant upon a high chance of success.

### **Prompts to seeking information and selection of information**

More than three in four respondents (80%, 43/54) were prompted to search for information by personal curiosity or "need to know". The "need to know" in turn was often prompted by something read in personal books or journals (30%, 16/54) or else was prompted by information obtained from a previous search (22%, 12/54). The ongoing nature of clinical enquiries was also documented in the Value study (Urquhart & Hepworth 1995a). Very few respondents were prompted to search for information as a result of information obtained from the library or from scanning in the library.

Some 80% (45/54) indicated that they would share with colleagues the information they obtained and 72% (39/54) intended to use the information for a case presentation. 62% (33/54) indicated that they would be adding the information to their personal collection which in turn is likely to be used at a later date (41%, 22/54, had obtained information from a personal or unit/department file or database). This trend was also documented by Urquhart and Hepworth (1995a: 71, 125-137) and reveals the extent of local informal learning.

The low level of use of evidence based practice resources and a lack of critical appraisal of the literature was noticeable. A surprisingly high numbers of respondents were content to look for review articles (85%, 46/54, always or often looked for review articles). By contrast less than a third indicated that they always or often considered research methods or statistics (31%, 17/54) when selecting readings. Just over a half of all respondents (52%, 28/54) always or often looked for recent articles only, thereby excluding older relevant evidence. The most experienced and senior clinicians were often looking for information to support their hypotheses. When selecting reading they were the most likely to look for specific results or outcomes and were the least likely to examine the method or statistics (47%, 9/19, indicted that they rarely or never examined the method or statistics). All Groups reported high use of colleagues as resource. A few respondents mentioned the Cochrane database by name but the majority apparently place convenience above other considerations when it comes to seeking and selecting information.

### **Impacts**

The majority of respondents were satisfied with the results of their search and nearly all (98%) mentioned at least one category of clinical decision that would be positively affected by the information they received. In a larger sample Urquhart and Hepworth (1995a: 104) recorded a similar high rate. This trend illustrates the range of clinical decisions that can be affected and the complexity of patient care.

### **Immediate Impact**

While 98% indicated that the information they received refreshed their memory of details or facts, 91% reported that they received new information, some of which could be used

immediately (87%). A majority (59%) indicated that they would need to obtain more information on the topic and this response reinforces a trend of ongoing searching that is identified elsewhere in this study. Similarly 87% reported that they would promptly share this information with colleagues, again reflecting trends noted elsewhere. However 41% indicated that they had expected to find something else. Senior consultants have mentioned to the authors that in these situations the information was often useful as background or contextual information and when an immediate impact was evident it was usually only for more unusual or acute patient care episodes.

### **Future Impact**

A clear majority of respondents in all Groups indicated that the information they received would confirm proposed therapy (85%), help the recognition of abnormal or normal conditions (83%) or aid differential diagnosis (80%). Other common responses including the identification/evaluation of alternative therapies (70%); minimisation of risks of treatment (70%); revision of treatment plans (70%); improved quality of life for patient (70%) and or family and choice of diagnostic test (67%) reflect the range of different ways in which the information would impact upon patient care. These results were consistent across all Groups and both sites.

### **CONCLUSIONS**

This pilot study has shown that library and information services are reported as generally having a positive impact on the quality of clinical care by affecting diagnosis, choice of therapy and overall treatment plans, but changes to behaviour were highly unlikely to be immediate. Continuing self education or life long learning is an equally powerful stimulus to seeking information as patient care. In many cases the information is a piece of a larger puzzle and although it does not complete the puzzle it is still valuable. This is especially in the case when considering the educational impact of information. Across all Groups there was a strong trend to sharing information and to collegial teaching and this function is evidently as important to clinicians as patient care. This type of information gathering is also characteristic of reflective professional practice.

Convenience is apparently valued more than evidence by clinicians seeking information for patient care decisions. Barriers to evidence include time, difficulty effectively accessing and using intranet and online resources, and high workloads. Therefore book collections in some instances apparently provide more use for clinicians than expensive intranets when considering generalist needs in a non research clinical setting.

The level of evidence based practice is apparently low. Review articles are still popular and many respondents demonstrated a lack of understanding of what resources were available and of how to use them appropriately. This may be because the available resources for evidence based practice are not as comprehensive as other databases and because it requires time to implement evidence based practice.

Libraries and their resources are often inaccessible or do not provide what clinicians need hence extensive use of personal collections, collegial networks and whatever resources are at hand.

Key areas for future investigation include: barriers to the widespread adoption of evidence based practice; the impact of information use by non library clients and the role of clinician “information gatekeepers”; the impact of library and information services on the “learning community” rather than on the individual; and the continued development of alternative sensitive impact measures.

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## **Appendix 1**

### **OPTIONAL QUESTION**

**Q1. My position in the hospital is best described as:**

*(Please tick the appropriate category)*

- |  |                          |
|--|--------------------------|
| Intern   | <input type="checkbox"/> |
| Junior House Officer                             | <input type="checkbox"/> |
| Senior House Officer                             | <input type="checkbox"/> |
| Registrar  | <input type="checkbox"/> |
| Senior Medical Officer / Consultant              | <input type="checkbox"/> |
| Visiting Medical Officer                         | <input type="checkbox"/> |
| Other inc. medical student (please specify)..... | <input type="checkbox"/> |
| <i>Comments (inc. speciality).....</i>           |                          |

### **Questionnaire 1: Patterns of information need and use.**

*Please think of ONE occasion during the last seven days (including today) on which you needed information for patient care, teaching or personal continuing education.*

**Q1.1 I needed the information for:**

*(Please tick the appropriate categories)*

- |  |                          |
|--|--------------------------|
| Patient care - patient care administration/records | <input type="checkbox"/> |
| Patient care - specific drug or therapy query      | <input type="checkbox"/> |
| Patient care - rare condition or specific problem  | <input type="checkbox"/> |

- Patient care - audit/standards/guidelines
- Teaching - patient education
- Teaching - staff/students/colleagues (e.g. case presentations)
- Personal continuing education
- Research (*personal*) - planned or in progress
- Research (*funded project/degree*) - planned or in progress
- Publication - paper/review/report/book
- Other (please specify).....
- Comments.....
  
- NOT APPLICABLE. (*information not needed*)

**Q1.2 I tried to obtain the information from:**

*(Please tick the appropriate categories)*

- Personal or unit/dept. information files or databases
- Reference book or medical handbook
- Personal journal collection
- Colleague
- Local medical library (i.e. this library)
- Other library (please specify) .....
- Pharmacy
- PubMed (MEDLINE)
- Other database system (please specify).....
- Other sources (please specify).....

Comments.....

**Q1.3 I was:**

*(Please tick the appropriate category)*

Successful in obtaining the information

Partly successful - information incomplete or to come later

Partly successful - time restraints require another try

Comments.....

**Questionnaire 2: What prompts you to seek information and whom does the information reach?**

**Q2.1 What prompted you to make a search or request on this occasion?**

*(Tick appropriate categories)*

Suggestion/advice/information from colleagues

Enquiry from patient

Reading of personal journals or books

Information obtained from the library

Information from a previous (eg: MEDLINE) search

Scanning in library

Personal curiosity or “need to know more”

Examination preparation

**Q2.2 How will the information be used?**

I will share this information with colleagues	YES	NO	N/A
I will use this information for a case presentation	YES	NO	N/A
I will use this information for writing a paper	YES	NO	N/A
I will use this information in an audit report	YES	NO	N/A
I will add this to my personal information collection	YES	NO	N/A

### Questionnaire 3: Information seeking and selection

#### Q3.1 Please indicate your views on, and experience with, selection for reading.

(Circle the appropriate point on the scale) *always: often: sometimes: rarely: never*

I look for review articles	1	2	3	4	5
I look for original research articles	1	2	3	4	5
I examine any abstract	1	2	3	4	5
I look for specific results or outcomes	1	2	3	4	5
I select recent articles only	1	2	3	4	5
I examine method or statistics	1	2	3	4	5
I look at the author or author affiliation	1	2	3	4	5

### Questionnaire 4: Impacts

**Q4.1 What was the IMMEDIATE impact of the information provided on your knowledge?**

(Please circle YES or NO or N/A, not applicable, for *each* statement)

It refreshed my memory of details or facts	YES	NO	N/A
Some of it was new to me	YES	NO	N/A
It substantiated what I knew or suspected	YES	NO	N/A
I could use at least some information immediately	YES	NO	N/A
I will need to obtain more information on the topic	YES	NO	N/A
I expected to find something else	YES	NO	N/A
I will share this information with colleagues	YES	NO	N/A
I will add this to my own information collection	YES	NO	N/A

*Comments*.....

**Q4.2 How might the information provided contribute to your FUTURE clinical decisions?**

(Please circle YES or NO or N/A, not applicable, for *each* statement)

*It may help - or did help - in*

Choice of diagnostic test	YES	NO	N/A
Recognition of abnormal or normal condition	YES	NO	N/A
Differential diagnosis	YES	NO	N/A
Confirmation of proposed therapy	YES	NO	N/A
Identification/evaluation of alternative therapies	YES	NO	N/A
Minimisation of risks of treatment	YES	NO	N/A
Revision of treatment plan	YES	NO	N/A
Audit or standards of care	YES	NO	N/A

Improved quality of life for patient and/or family            YES            NO            N/A

Legal or ethical issues            YES            NO            N/A

Comments.....

*Thank you for your help.*

*Please return this survey to the QUALITY OFFICE via the internal mail before xx/xx/2003*