

Measuring Up: Evaluating an Online Resource for Palliative Care

Introduction

Computer and internet use have become increasingly common in Australia. There has been a dramatic increase in home internet access, rising from just under 20% in 1998 to 60% in 2005-06. Nearly five million households now have internet access in the home ^[1]. There has also been a rapid adoption of information technology into health workplaces. Nearly 100% of physicians are able to access the Internet either at work or at home ^[2] and in Australia over 85% of nurses use a computer for some aspect of their work. ^[3] For governments and health services, there has been an increasing recognition of the potential that information and communications technologies offer in supporting both clinicians and health consumers through access to information, tools and resources.

In 2007, the Australian Government funded Flinders University to develop the Australian Knowledge Network in Palliative Care. When fully functional the Knowledge Network would provide the following functions:

- 1 A multi-layered website to meet the information and resources needs of all providing or affected by palliative care including palliative care specialists, researchers, educators, general health professionals such as GPs, nurses and allied health professionals, volunteers, patients, family and carers;
- 2 A repository of Australian palliative care “grey” literature;
- 3 A research data management system to support the development of the evidence base for palliative care;
- 4 Links to National Palliative Care Program initiatives and to other health and social care initiatives that affect palliative care, and
- 5 A framework of information, tools and functions to support the translation of evidence into practice.

This new online resource is scheduled for release in May 2008. It will incorporate the content and functions of CareSearch, an existing palliative care website, found at www.caresearch.com.au. One key component of the current project is the development and implementation of a plan to evaluate the existing website and the broader Knowledge Network project including the new online resources as they are released.

Evaluation can serve many purposes. However, its primary overarching role is to assist in decision making. Patton (1997) eloquently described the purpose of evaluation in the following terms:

As not everything can be done, there must be a basis for deciding which things are worth doing. Enter evaluation. ^[4]

Evaluation plays a critical role in project and service management by informing decision making through collecting and reviewing data that looks at the effects of interventions and activities. This information can be used to assess what changes are needed and whether interventions and activities are achieving their intended outcomes. ^[5]

Evaluations of information and communications technology (ICT) activities face specific challenges. First, ICT applications by their nature require an interaction between the user and a resource through a technologically-based interface. This creates a complexity in the nature of the object and activity being evaluated.

Second, ICT applications are commonly implemented into organisation and services which introduce additional variables relating to the uptake of applications.

Third, the applications may not only provide a function but may have an underlying purpose of supporting some type of change, such as cognitive and/or behaviour change. Yet it could be, for example, that the nature of the media being used could itself affect the transmission of information rather than the nature of the information itself.

Fourth, the interface itself may also be influenced by the social and environmental context within which it is found. Designing eHealth systems and services brings together people from diverse fields. Often collaborations are relatively superficial and exist for short timeframes during application development or implementation into the system or service.

Fifth, determining the most appropriate and meaningful evaluation measures can be problematic. For example, an increasing number of visits to a website may indicate success, but unless it is known that those coming to the site are the intended audience, the website may not have achieved its objective. These factors are just some examples of the specific complexities that confront evaluation of ICT programs. [6, 7, 8]

Developing the Evaluation Framework

When looking at the Knowledge Network activities and responsibilities, the challenge for the evaluation program was to develop a structure that linked potential activities into a conceptual framework and provided a basis for determining the priority of activities. The work of the project itself relates to the development of an online network resource for the palliative care clinical and consumer community. The primary objective is therefore to create the resource. Evaluation could potentially play a central role in iteratively improving the resource during its design and development phases. The framework needed to examine both use of the resource and the effects of the resource on various anticipated users. Evaluation could also provide a means of monitoring the development of the project in line with its described purposes. Program logic was used to help characterise the various players, purposes and short and long term outcomes. [9]

Overall the evaluation plan needed to provide a framework within which to manage different evaluation activities that could have different purposes. The overarching structure of the evaluation framework was built around four simple focus areas:

- Access: The resource is built in such a way as to enable access by intended users
- Use: The resource is used
- Usefulness: The resource makes a difference
- Process: The project is well managed.

Various evaluation activities were developed to meet the specific objectives within these focus areas, and to answer particular questions such as: How many people use the resource each week? Were those using the resource the intended audience? Can we improve the means by which users navigate to information? Were appropriate processes used to develop the content? Are the needs of particular groups such as GPs being met?

This evaluation framework enables us to expand evaluation tasks as time and resource permit. In developing the initial set of evaluations tasks, there was a review of the existing sources of data that are collected and other information flows that could be harvested to inform our understanding and decision making.

The framework provides an integrating mechanism that encourages not only individual analysis and application of findings but a cumulative perspective of findings over time and for different groups and functions. Further details on the evaluation plan and specific activities within each area are found in Table 1.

Table 1: Evaluation Framework

Evaluation Focus Area and Objective	Evaluation Activities
Access: Create CS_{Spckn}	User testing exercises <ul style="list-style-type: none"> • Advisory Group test • In-house group tests • External usability acceptance testing Expert review exercise
	Search term analysis
	End user input <ul style="list-style-type: none"> • Needs assessment tasks • Consultations

	<ul style="list-style-type: none"> • Conference feedback exercises
	<p>End user characteristics</p> <ul style="list-style-type: none"> • Consumer ICT attitudes study • Palliative care providers ICT attitudes study
	<p>Design processes</p> <ul style="list-style-type: none"> • Evidence base • National and international practices (eg accessibility, readability scales)
Use: CSpckn is used	Distribution logs
	<p>Media monitoring</p> <p>Request for resources</p> <p>Requests for presentations and publications</p>
	<p>Web metrics</p> <ul style="list-style-type: none"> • Visits • Hits • Downloads
	<p>Component evaluation</p> <ul style="list-style-type: none"> • GP evaluation study
	<p>Feedback surveys</p> <ul style="list-style-type: none"> • Online survey • Specialist services
	<p>Usage indicators</p> <ul style="list-style-type: none"> • Newsletter(s) registrations • Function registrations
Usefulness: CSpckn makes a difference	<p>Indirect indicators</p> <ul style="list-style-type: none"> • Correspondence/ feedback analysis • Download metrics (eg tools page, searching effectively booklet)
	<p>Feedback survey</p> <ul style="list-style-type: none"> • Attitudes and use • Outcomes measurement (information)
	<p>Focus groups</p> <ul style="list-style-type: none"> • Consumer • Clinician
	<p>Impact Research</p> <ul style="list-style-type: none"> • Intervention study of a component¹
	<p>Component impact</p> <ul style="list-style-type: none"> • RDMS survey • Literature and evidence access and functions survey
Process: CSpckn project is well managed	<p>Accountability</p> <ul style="list-style-type: none"> • Governance structures and processes • Progress reports
	<p>Project standards</p> <ul style="list-style-type: none"> • Quality processes • Operational manuals • Design standards (Web and content)
	Communication and dissemination

¹ Dependent on research funding

	<ul style="list-style-type: none">• Publication of research• Conference presentation
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Findings to date

The initial evaluation work has looked at formative activities related to the development of the new resources and summative activities relating to the existing website. The following studies have been completed.

User testing

Two sets of usability testing have been completed. One set was conducted in-house and the other by an external agency. The in-house series involved six clinicians. The external set involved six medical students and an expert reviewer. These two studies identified heuristic issues relating to the graphic design and navigation framework. As a direct result of these tests, menu bars were reworded and various graphic elements were revised.

Baseline feedback survey

Two feedback surveys were conducted on the existing website. The first survey was targeted specifically at those people visiting the website through an online popup box. It was designed to gather information on how visitors learned about the resource, what they are looking for and whether they find it a useful site. The second survey looked at awareness and use of the site by the core providers of palliative care, i.e., those who work in specialist palliative care services.

The online survey was completed by 130 respondents. Most people (89%) either fully or at least partly found what they were looking for, while palliative health professionals were even more likely to find what they needed (94%). The website was assessed as easy to use (94%), credible (96%), and importantly 97% of respondents indicated that would recommend the site to others.

There were 371 responses to the second survey, which was mailed out to specialist palliative care services. The majority of respondents in all groups (except for careworkers) use online resources. All health professional groups felt that websites are a suitable way of providing information to health professionals. However over 40% of respondents had not heard of the CareSearch website, and a further 24% had heard of it but had not used it. These findings have led to changes in the marketing strategy as well as the identification of potential barriers to the use of online resources for different groups.

Web metrics

Weekly usage statistics are compiled. The key indicators are the number of visits, hits, downloads and bandwidth as these are indicators of the current site's activity levels. These metrics show consistent levels of use with around 20,000 visits per month and between 200,000 and 400,000 hits per month.

Search term analysis

An analysis of the search terms used to bring people to the site via search engines was carried out over a one month period. This showed that there is a great diversity in the reasons why people are coming to the website. The search term analysis also showed that both clinicians and consumers are being referred to the site.

Web logs and datasets

A review of the feedback and enquiries for a six month period was completed. This showed the numbers of registrations for various functions such as forums, external agencies that were including links to the site and an analysis of secondary promotion through newsletters of external groups. These provide indicators of interest in the project and marketing support within the community. There are currently approximately 1200 people registered for the CareSearch eNews and Project News, the two key newsletters for the Project. There are 76 current users of the Research Data Management System and 51 active surveys.

Discussion

So what do we do with this information? First, basic web metrics are used for ongoing reporting purposes. It is provided in the in-house reports to the Management Group and the formal project reports to the funding provider.

Second, the findings of individual studies are used to iteratively inform the project's ongoing development. For example, undertaking a search term analysis not only provides information on the types of users looking

for information but assists in assessing and modifying work to enable search engine optimisation. By understanding how users are searching the website, we can tag pages more effectively for more efficient retrieval. Information on user awareness and use of the website within palliative care services provides not only baseline data for pre-test purposes but also enables us to improve marketing tactics and processes.

Third, the individual studies or tasks, when compiled, provide a more comprehensive picture of the patterns of use, users and the effects of the technology interface. This enables us to have a richer understanding of the processes at play. For example, information gathered in the feedback survey and the user testing suggests that different groups of health professionals have differential access to and experience with computer and web applications. This has led to a strategy that looks at using specialist link nurses as providing a brokerage service by distributing information held on the online resource to other members of the team who may not have direct access.

The focus on evaluation also contributes to developing on product and process improvement culture within the project by involving the project team and management group in problem identification and problem solving. For example, findings from the community consultation and needs assessment showed that end users will have different skills and knowledge bases. This recognition led to the project team implementing readability scores for web pages as an extra quality standard.

The future planned work on impacts and outcomes of the online resource will provide information on whether desired changes in knowledge and/or behaviour can be delivered through the online resource and how the system can be modified to improve transmission and uptake of information. While this work will be particularly challenging in terms of identifying the most relevant measures and means of assessing impacts and outcomes, it also could provide the most valuable information about online resources.

The process of designing and implementing an evaluation plan for this project has also led to a series of project based learnings around the role and usefulness of evaluation. They can be summarised as follows:

1. Evaluation can have many functions. It is important to identify the purpose of evaluation with regard to the specific project as this will shape the type of approaches used and particular evaluation activities undertaken.
2. Most projects will have specific or incidental sources of information and data. Many of these can contribute to evaluation functions or can be modified to meet evaluation objectives. Data that is part of the natural cycles of activity is cost effective and more easily understood by participants.
3. Evaluation can be used as part of management and decision making functions. This can add significant value by supporting decisions regarding resources and standards.
4. Building in the evaluation approaches from the start of a project creates a culture of assessment and review which can iteratively improve products and processes.

Conclusion

The design and implementation of an evaluation framework has been a major project activity but has provided significant benefits. Ongoing evaluation reduces the stress of “hoping for the best” and more importantly it provides concrete information that can be used to “achieve the best”.

References

ABS 8146.0 – Household Use of Information Technology, Australia 2005-6 Available from <http://www.abs.gov.au/Ausstats/abs@nsf/0/acc2d18cc958bc7bca2568a9001393ae?OpenDocument#>.

AAMC 2001 Medical School Graduation Questionnaire. Available at: www.aamc.org/meded/gq/start.htm.
Hegney, D., Buikstra E, Eley, R., Fallon, T., Gillmore, V & Soar, J 2007 Nurses and Information technology (Final report) Commonwealth of Australia.

Patton, M.Q. 1997. Utilization-focussed evaluation: the new century text (3rd ed.). Sage, Beverly Hills, CA, USA.

Eagar K, Cranny C & Fildes D (2004) Evaluation and palliative care: a guide to the evaluation of palliative care services and programs, p11, Centre for Health Service Development, University of Wollongong.

Pagliari C 2007 Design and Evaluation in eHealth: Challenges and Implications for an Interdisciplinary Field Journal of Medical Internet Research 9:2.

Ammenwertha E. , Gräberb S, Herrmann G, Bürkled T & , Königb J 2003 Evaluation of health information systems—problems and challenges International Journal of Medical Informatics 71, 125—135.

Yusofa, M., Papazafeiropouloub, A., Pualb, R., & Stergioulasb L. 2007 Investigating evaluation frameworks for health information systems International Journal of Medical Informatics.

Taylor-Powell E Logic Models: A framework for program planning and evaluation Accessed on line on 22 March 2008 at <http://www.uwex.edu/ces/pdande/evaluation/powerpt/nutritionconf05.ppt>.

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