Metrics, Measures and Meanings: Evaluating the CareSearch website Reference Number: WC0077

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Abstract
Background
Evaluation is an important part of planning and managing projects particularly when developing online resources. CareSearch palliative care knowledge network is an online resource consolidating evidence and quality information for palliative care health professionals and patients and their families.

Objective
To develop and implement an evaluation framework to assess use and usefulness of the CareSearch website

Method
An evaluation framework comprising four focus areas was developed:
- 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.

A series of activities and projects were undertaken to assess the effectiveness of the project and resource in each of these areas.

Findings
Usability testing led to iterative improvements in the graphic design and site architecture. Feedback surveys helped to identify potential users who were unaware of the site and determine levels of satisfaction of existing users. Site metrics established patterns of use and areas of interest. Correspondence analysis and resource requests provided measures of quality and use. An intervention study is planned to show whether online delivery of information can result in changes to clinical practice.

Conclusion
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 products, activities and services.
Introduction
Evaluating the success of a project or activity can be a complex process influenced by the purposes of the evaluation as well as the methods and measures used in carrying out the evaluation. Evaluation has often been used as a way of assessing the “success” of a project. It can be linked to economic rewards such as continued or expanded funding. It has also been used as a way of ensuring accountability in the delivery of projects ensuring that agreed benchmarks or goals are achieved. Increasingly its role in improving activities through developmental activities or through subsequent iterative cycles has been recognised. In all these aspects its fundamental role is to assist in decision making.

In 1997, Patton 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. ¹

This definition recognises a relationship between decision making and assessment that lies at the heart of evaluation activities. Importantly it recognises that assessment relates not only to a mechanism for measuring activity or outcomes but also to the need to determine what is valuable and should therefore be measured.

This challenge of finding what is important to evaluate raises many issues. Rowena Cullen has highlighted a number of these considerations in her papers dealing with evaluating digital libraries in the health sector. [1, 2] These papers describe approaches used in collecting data and efforts to identify evaluation dimensions in this field.

The nature of the Information and Communications Technology (ICT) environment introduces potential confounders. Trying to establish an association between the introduction of a resource such as a website or specific knowledge contained within a website and a change in action or behaviour is both conceptually and practically difficult. Yusof’s recent review of evaluation frameworks used in health informatics and information systems further suggests that these frameworks emphasise different aspects relating to human, organisational and technical factors of system design, development and use. [3]

The CareSearch Project
When an illness cannot be cured, the focus of care changes to helping patients to have the best quality of life possible while managing their symptoms. Palliative care addresses physical, emotional, spiritual and social needs associated with death and dying (World Health Organization, 2008) [4]. Palliative care will affect

all of us at some stage in our lives whether as a patient, carer, family member, neighbour or friend. Yet it has been as hard for those living with life-limiting illnesses to find reliable and trustworthy information about palliative care. It has also been difficult for health care professionals to find the underlying evidence. In effect, there has been a gap between the knowledge base for palliative care and its intended users and recipients.

In response to these needs, the Australian Government Department of Health and Ageing funded CareSearch, an online palliative care resource located at www.caresearch.com.au, and launched in May 2008. The project includes

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.

Evaluation has been a key component of the project’s activity and has informed the development of the resources as well as assessing their use.

Developing the methodology framework
When considering the role of evaluation for the project and the various purposes and approaches that could be used, the need to create a structure that linked potential activities into a conceptual framework and provided a basis for determining the priority of evaluation activities was recognised. The core deliverable for the project was to create an online network resource for the palliative care clinical and consumer community.

Potentially, evaluation can play a central role in iteratively improving resources during design and development phases. However, formative and process evaluations do not provide information about the use and impacts of the resource on intended and actual users. Summative evaluation is needed to determine whether these objectives are being met. An evaluation framework was needed that could organise the many purposes of evaluation and uses of evaluation findings. Program logic was used to help characterise the various players, purposes and short and long term outcomes. [5]

The overarching structure of the evaluation framework was built around four simple focus areas:
• Access: The resource is built to enable access by intended users
This focus area emphasizes development activities and promotes formative evaluation activities to provide feedback dynamically to the project. It also enables best practice standards to be addressed.

• Use: The resource is used
This focus area looks at measures of use. It uses measures such as site visits and page views to track web use. Participation data provides information on use of registered functions and resources. Specific evaluation activities such feedback surveys of online visitors or aware and use surveys of intended user groups provide further evaluation data.

• Usefulness: The resource makes a difference
This focus area addresses whether the resource made a difference to actual practice. This work looks at how the resource contributes or affects the intended health activity or decision making. These studies are still in train or in the development stage.

• Process: The project is well managed
This focus area provides ongoing feedback as to the conduct of the project itself. It identifies project milestones and tracks process indicators such as volunteer contributions to the project.

The overarching evaluation framework provides a focus for evaluation activities and projects that are developed and analysed independently but that can contribute to a broader picture of the functioning of the resource. It also encourages a deeper consideration of the possible role of the website’s content within a clinical setting which in turn leads to discussions as to how to evaluate this possible role and contribution.

Various evaluation activities have been developed to meet the specific objectives within these focus areas, and to answer particular questions. Different methodologies are used depending on the specific issue being investigated. Where possible data that is being collected as part of normal activities is used for evaluation purposes.

The framework of evaluation activities that have been completed or are in planning or data collection phases are described in Table 1. Examples of the findings and their implications for the project are also included in the table.
<table>
<thead>
<tr>
<th>Evaluation Focus Area</th>
<th>Evaluation Question</th>
<th>Evaluation Method</th>
<th>Activity Status</th>
<th>Example of findings and project implications</th>
</tr>
</thead>
</table>
| Access: The resource is built to enable access by intended users | Are intended users ICT ready? | eHealth literacy survey  
  - Consumer  
  - clinician | Complete | Digital divide means that not all intended users will be able to access through internet. Create print ready pages. Promote offline distribution Establish readability standards |
| | What content should be included and who are the intended users of the site? | Consultation workshop  
Presentation feedback exercises  
Stakeholder meetings | Complete | Particular groups have specific content needs. Need to create different pathways |
| | Is the web design and page layout user friendly? | User testing exercises  
  - In-house  
  - External usability acceptance testing | Complete | Dual navigation menu is acceptable Home page needed to be redesigned to facilitate movement |
| | Are there technical issues? | Web expert review | Complete | Wasted “prime” real estate on home page |
| | What is best practice in web design? | Evidence search and team assessment | Complete | Research evidence informs content development and web design |
| Use: The resource is used | Are people coming to the website? | Web metrics program | Ongoing | Increase in visits, page views Changing patterns of sections Time variables |
| | Do external organisations and agencies promote CareSearch? | Media monitoring  
Web scanning | Ongoing | Web links and electronic newsletter inclusions highlight organisations and groups promoting the resource. Enables marketing refinements |
<p>| | Where do site users come from? | Referring site analysis | Complete | Shows that many hospitals and academic departments include links |</p>
<table>
<thead>
<tr>
<th>Question</th>
<th>Method</th>
<th>Status</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>What information needs bring users to the site?</td>
<td>Search term analysis</td>
<td>Complete</td>
<td>Page position for CareSearch on search engine results led to search engine optimisation for some pages</td>
</tr>
<tr>
<td>What pages are being used?</td>
<td>Page popularity analysis</td>
<td>Complete</td>
<td>All sections in the website are being used.</td>
</tr>
<tr>
<td>Are palliative care workers using the site?</td>
<td>Palliative care service survey</td>
<td>Complete</td>
<td>70% of those working in specialist palliative care are aware of the site and 50% use it.</td>
</tr>
<tr>
<td>Do site visitors find the site useful?</td>
<td>Online feedback survey</td>
<td>Complete</td>
<td>Site visitors found the site easy to use (94%), credible (99%) and would recommend it to others (96%)</td>
</tr>
<tr>
<td>Are services and organisation interested in learning more?</td>
<td>Request and presentation log</td>
<td>Ongoing</td>
<td>80 organisational requests for resources in first six months 20 requests for presentations</td>
</tr>
<tr>
<td>Do other indicators provide proof of interest?</td>
<td>Newsletter registrations Registration for functions</td>
<td>Ongoing</td>
<td>Monthly email distribution list: 1,400 Nurses newsletter: 300</td>
</tr>
<tr>
<td><strong>Usefulness: The resource makes a difference</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are people using the resources in practice?</td>
<td>Correspondence analysis</td>
<td>Ongoing</td>
<td>Requests for additional specialist information demonstrate that the available information has been used.</td>
</tr>
<tr>
<td>Is the resource supporting other activities?</td>
<td>Participation measures</td>
<td>Ongoing</td>
<td>There is significant involvement with other palliative projects.</td>
</tr>
<tr>
<td>Are there surrogate measures that indicate usefulness?</td>
<td>Download metrics</td>
<td>Complete</td>
<td>Download requests for draft palliative care community guidelines were high. Patterns of access of online learning module suggest that users are</td>
</tr>
<tr>
<td>Question</td>
<td>Method</td>
<td>Status</td>
<td>Notes</td>
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<tr>
<td>Do GP use and make use of the information in the GP pages?</td>
<td>Site log analysis</td>
<td>Complete</td>
<td>GP pages are being viewed. The content is valuable.</td>
</tr>
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<td></td>
<td>GP focus groups</td>
<td></td>
<td></td>
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<tr>
<td>How do clinicians and consumers use the resources?</td>
<td>Focus group</td>
<td>Planned</td>
<td></td>
</tr>
<tr>
<td>Does access to the online information and evidence change practice?</td>
<td>Controlled trial</td>
<td>Planned</td>
<td></td>
</tr>
<tr>
<td>How has a Research Data management System influenced evidence generation in palliative care?</td>
<td>Stakeholder/user interviews</td>
<td>Planned</td>
<td></td>
</tr>
<tr>
<td>Process: Project is well managed</td>
<td>Are project deliverables being achieved?</td>
<td>Ongoing</td>
<td>All reporting milestones met</td>
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<td></td>
<td>Project tracking system</td>
<td></td>
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<tr>
<td>Can we demonstrate engagement with the community?</td>
<td>Contributor log</td>
<td>Ongoing</td>
<td>Over 130 volunteer contributed to the project in 2008.</td>
</tr>
<tr>
<td>Does the project meet national and international standards?</td>
<td>Accreditation</td>
<td>Complete</td>
<td>Compliance with Health Insite and HONCode</td>
</tr>
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</table>

Table 1: Evaluation Activities within the Evaluation Plan
**Discussion**
Evaluation provides a valuable approach to developing and assessing projects that exist in online environments. As ICT projects can be expensive, formative evaluation processes such as user testing can provide key information at critical points of the design and development. As few as five user testers can identify up to 85% of possible errors and issues. [6] Importantly, if done during the development phase, these issues can be rectified prior to release.

Often the outcomes or impacts of ICT projects are indirect. Simplistic evaluation strategies can finish with the creation of the system, program or website. The evaluation framework developed for the CareSearch project sought to extend this thinking through the cycle of development to an examination of planned and unintended uses and impacts.

The focus on evaluation has had a number of effects within the project. Firstly, it has reoriented the focus from content and structure to purposes and utility. Engaging with intended users has driven the project to find solutions and resources to support user’s needs and activities. For example, user testing and consultation activities have identified where forms and databases need modifying to improve the user’s experience.

Looking at purposes has ensured that available ongoing measures are interrogated for their meaning. Site logs and web based data collections are analysed for changes in pattern. Data that is collected is extracted for sample periods to assess how elements and components are used. For example, analysis of referring site URLs showed that hospital and university sites were including links on their websites or intranets that were being used by staff or students.

Future 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.

**References**
3. Yusof, M., Papazafeiropoulou, A., Pualb, R., & Stergioulasb L. 
Investigating evaluation frameworks for health information systems 
International Journal of Medical Informatics 2008 77: 377-385

