

# Associate Professor Elizabeth KALUCY

E Kalucy, A Hordacre

Primary Health Care Research and Information Service, Department of General Practice, Flinders University

## **Using the Internet to Extend the Knowledge Base of General Practice Organisations**

### **Abstract**

Elizabeth Kalucy and Ann-Louise Hordacre, Primary Health Care Research and Information Service, Department of General Practice, Flinders University.

How can we, as researchers, use the internet to collect and share information, now that most organisations have broadband internet access? Information and communication technologies play an important role in developing the knowledge base of the meso-level general practice organisations known as the Division Network, creating a firm structure to support informal knowledge exchange within the network, and to drive improvement in health service provision. Routine annual reporting for accountability and information purposes has been greatly enhanced by use of the internet, by improving the quality of data collected and the capacity to share the resulting information.

The Primary Health Care Research and Information Service (PHC RIS) moved to online administration of the Annual Survey of Divisions (ASD) of General Practice in 2006. Our motivation to move from a Word to Web format was two-fold – to improve the quality of the data and reduce respondent burden. Considerable effort was expended to ensure the online data entry tool was practical, intuitive, secure, and available for simultaneous access for multiple users. We found that the web survey resulted in more efficient data collection, reduced error rates and an easier process for respondents. However, it was apparent that not all users adapted well to the new methods.

The results of the Annual Survey of Divisions have appeared in a series of reports over twelve years, a valuable resource widely used by policy makers, the Divisions Network and researchers. However, a report format cannot adequately account for the depth of information collected. The internet creates an opportunity to present information in new interactive ways. PHC RIS has developed a suite of online tools and resources to present results from the ASD and extend the knowledge base about primary health services in Australia. These tools will be discussed, with an analysis of online activity.

### **Introduction**

I have four main points to make in this paper.

- Routine organisation reports can contribute both to accountability and to the knowledge base for knowledge exchange between organisations.
- Web-based data collection is very efficient.
- The internet offers novel ways to present information.
- Better presentation means better exchange and transfer of knowledge, if the information infrastructure and good content are supported by favourable organisational culture and skills.

I am going to illustrate these points using the case study of the Annual Survey of Divisions of General Practice, which PHC RIS has been conducting under our contract with the Department of Health and Ageing (Hordacre, Howard, Moretti, & Kalucy, 2007).

The Divisions of General Practice Network has become an important feature of the primary health care system. At June 2007, the Network consisted of 119 Divisions, 8 state based organisations and the national organisation, the Australian General Practice Network (AGPN), which receive core funding from the Australian Government Department of Health and Ageing. These meso level organisations are the most organised component of primary care in Australia. Their role is to support general practices in delivering high quality health care, to implement national health programs and to assist in integrating general practice with the rest of the health care system. As they have no contractual arrangement with the practices in their catchment area, they rely on persuasion and influence resulting from the support they can provide to these practices.

## **Knowledge Transfer and Exchange**

Knowledge transfer and exchange are important processes within this network of organisations, to enable them to benefit from each other's experience and innovations. The Canadian Institute of Health Research views knowledge transfer as 'an on-going and iterative process requiring active and conscious participation of both researchers and research-users' (Frank, 2006). It is an essential ingredient in effective knowledge management: developing and exploiting tangible and intangible knowledge assets of an organisation. Haines identified four essential pillars of knowledge management (Haines, 2001):

- content: implicit/explicit
- infrastructure: user-friendly, available
- skills: to use resources
- culture: which promotes information sharing

Divisions need access to both content knowledge and know-how. They need ready access to facts and figures about their own operations as well as characteristics of their catchment areas for needs assessment, planning, and funding submissions and reports. They need to know who's doing what and with what effect, so they can copy and adapt successful programs to different contexts or avoid unsuccessful approaches. They need the 'know-how' on what's working well and less well in relation to rolling out national programs, engaging with their general practices, integrating with other parts of the health sector, and managing change.

Divisions of General Practice exist within a culture that supports formal and informal exchange and sharing of information. Relationships between people and personal communication are the basis for exchange of implicit, uncoded information in all its subtlety. State and national infrastructure, in terms of the state based organisations and AGPN, is essential to provide opportunities for such relationships to be established and maintained. These organisations support and organise the meetings of many subgroups according to interests and expertise - CEOs, immunisation coordinators, mental health, practice nursing, information management, eHealth, etc, as well as annual meetings at national and state level. Electronic, telephone and video linkups complement the personal meetings, which cost more in time and money.

Another essential component to support knowledge transfer and exchange is information infrastructure. Each network organisation contributes to the information infrastructure, according to their needs. For example, AGPN has set up a website location at which Divisions can deposit the resources they have developed, for the benefit of the rest of the network. Such resources recognise the skill base of Division staff and include evaluation and project reports but also administrative

resources, and the policy and implementation information relating to programs such as practice nursing, aged care GP panels, governance and community engagement.

## **Routine Reporting as a Source of Information about Divisions**

A major source of information about Divisions derives from compulsory annual reporting. [Division reports to government - powerpoint slide 10]. Early in each calendar year Divisions and other Network organisations provide the Department of Health and Ageing with a business plan for the following financial year, following an agreed structure, and in the third quarter of each year they produce a 12 month report on their achievements for the previous financial year. In addition, to keep track of Divisions membership, activities and infrastructure, there has been a comprehensive survey of Divisions conducted annually (with one exception) since 1992. This survey has been part of Divisions' contractual requirements, and has achieved 100% response rate since 1998 (with one Division excused from its commitment in 2004-05).

While the main function of the plans and reports is government accountability, they are a valuable resource to add to the knowledge base about the Divisions network. Since 1998 the Australian government has invested in information infrastructure engaging PHC RIS (formerly the National Information Service) to facilitate collection, collation and display of Divisions surveys, plans and reports (excluding financial reports). The public display of this information resource assists in accountability to the community and lays the foundation for knowledge transfer and exchange within the Divisions Network, and more broadly with managers, practitioners, policy makers and researchers in other organisations. This is consistent with the COUNT principle: Collect Once, Use Numerous Times (Audit Commission, 2008).

While the principle of collation and public display has been admirable, making sense of diverse documents from so many organisations has been a challenge. The standardised quantitative nature of the Annual Survey provided much readier access to summary aggregated information than that available through the plans and reports prior to 2005.

It is of note that the structure of Divisions plans and reports changed considerably in response to the Review of the Divisions in 2003 (Australian Government Department of Health and Ageing, 2004), with a National Quality and Performance System (NQPS) introduced for the 2005-2008 funding agreement. An important feature of the new system was national performance indicators at four levels (Australian Government Department of Health and Ageing, 2006). Part of the intention of this new system was to enable consistent information to be collected across all Divisions, so that the effect of Divisions on service delivery and health care could be monitored. Previous reports and the annual survey had a strong process focus, so that there was much information about who did what and how much of it, but little about the crucial question of 'with what effect'.

## **Data Collection on the Internet**

PHC RIS has continually improved and enhanced methods used in the Annual Survey. In 2005 we decided to convert the Annual Survey from an emailed locked Word form to a web platform. There were many reasons for this decision (Kalucy, Hordacre, & Patterson, in press). The long survey was time consuming, requiring contributions from many staff which led to multiple versions of documents. Large word documents were difficult and slow to navigate. A locked word form allowed little opportunity for skipping non-applicable questions, inserting data checks, or pre-populating fields. Questions were complicated and sometimes ambiguous, with definitions and explanations often unused, leading to invalid data. As well as these sources of errors and waste for Divisions, for PHC RIS much time was spent clarifying and correcting data with respondents, and transferring data from a Word form to SPSS for data analysis carried the risk of error.

Our situation with the Annual Survey met all the requirements for the development of a web survey – the total sample was known and defined, each organisation had access to secure broadband, and staff had the skills to use the internet; anonymity was not required, the survey was compulsory so additional incentives were not required for completion other than providing an acceptable interface (Eysenbach & Wyatt, 2002). As described in Kalucy, Hordacre and Patterson (in press), we used in-house web programming and information technology skills to transform the complicated long word form. [What we did – Word to Web. powerpoint slide 12]. This required some months of work, undertaken during the consultation process with funders about the survey content. The broad specifications were developed through our experience with Divisions. More than one person needed to be able to access the survey at any one time, secure passwords were needed, each Division designated the person responsible for submitting the survey and could then control the passwords needed for staff members. We included built in validation and checking of data, easily accessible help and definitions, pull down menus, an attractive user-friendly interface, a map to help navigate the long survey, and a bar to indicate extent of completion. There were even fireworks when the survey was successfully completed and submitted.

The administration of the online survey led to immediate efficiencies for PHC RIS. The data were cleaner, and the number of data points that needed to be followed up by phone with Divisions staff was a fraction, 2%, of what was needed the previous year. Automatic transfer to SPSS avoided errors. Responses came in more quickly from Divisions, so results were fed back to individual Divisions and the Network earlier in the planning cycle.

The following year, PHC RIS undertook the major project of transforming the elaborate planning and reporting proforma to a web-based system, replacing the previous word template which had been a very long word document with attendant problems of version control, instability, and inconsistency between organisations as they adapted it to their preferences. We built on the skills and processes developed for the Annual Survey, including the password system, and integrated both into the Divisions Information Online System. This was completed in 2007, when most Divisions, given the option, chose to complete their 12 month reports for 2006-2007 online.

## **Presentation of Information on the Internet**

Once the data collection had been transferred to the web, the second stage of the project was finding ways to use the potential of the internet to develop novel ways to display the survey outputs. This is consistent with the concept that knowledge transfer requires researchers deliberately getting together (in this case virtually) with end-users with an explicit intent of changing the behaviour (outputs) of both sides (Frank, 2006). We recognised that users had specific needs we could not anticipate, and therefore we needed to make it possible for them to create their own results from a menu of possibilities, in a ‘self serve’ manner. In previous years we had published a comprehensive national report with aggregated data and trends over time, and a brief summary, in printed and downloadable format, as well as tailored individual feedback [Power point slides 14-15]. Tables and figures from the report had also been available for download as these were often used in presentations and reports, and data had always been available on request. To supplement these outputs, we developed: [Power point slide 16]

- a benchmarking tool to assist people to identify groups of Divisions by various demographic and location filters, in acknowledgement of the diversity of Divisions.
- a mapping tool to display the results in a more visually appealing way, and identify Divisions with similar programs and activities
- Fast Facts which provide well over 100 topic summaries with graphs in individual indexed webpages – they provide ready access to information at state and territory level.

These tools have proved consistently popular, according to the records of web hits. We hear anecdotes of how they are being used by Divisions, State health departments, researchers and media. However, one of the frustrating aspects of being an information service is the difficulty of finding out for what purpose our information and resources are used - except when we stumble over examples by accident.

The story of displaying the Divisions reports from the National Quality and Performance System is somewhat similar. The first year of NQPS reports was challenging as all were completed in word documents, and were not available for public display until a year after they had been completed. Some sections of the report were considered too sensitive for display and removed, and other sections needed to be carefully checked to ensure that privacy and confidentiality was not being breached. Once this editing process was completed each Division's report was transferred to pdf format and uploaded for separate display. The complexity of the reporting proforma resulted in very long pdf documents, which were difficult to search or aggregate, and extremely arduous to convert to meaningful accessible information.

In contrast, online reporting the following year (2007) resulted in much quicker and easier process. Reports were available for display as soon as they had been appropriately approved via the on-line system (though to avoid misleading information due to small numbers no reports were displayed until 50% had been approved). Privacy issues were dealt with at the point of data entry. Differential access to reports was possible through the password system, with Government and Divisions Network members having access to more sections of the reports than are publicly available. While qualitative indicators still require analysis for greater meaning, quantitative indicators were aggregated automatically for display, by organisational filters such as state or demographic categories. Users can opt to look at results for an indicator for all Divisions in urban areas of NSW, for example, or for those with more than 10% indigenous population in the catchment area.

## **Conclusions**

The internet can enhance knowledge transfer, by smoothing the pathways from data to meaningful information with efficient data collection through a user friendly interface, and innovative display to meet the needs of potential users of information. Through information infrastructure, a repository of relevant valid information can be presented in such a way that people can access it to develop their knowledge base.

The principle of making optimum use of routinely collected reporting information by collecting once and using numerous times remains sound. The internet can assist to ease the burden on those who provide data and make the resulting information more readily available and useful. In this way it can assist in knowledge transfer and exchange.

However, information infrastructure and relevant, quality, well presented information is necessary but not sufficient to ensure knowledge transfer and exchange. Favourable culture and skills which actively support organisational learning are the other essential components.

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