

Supporting health professionals in evidence-based practice: a case study of the Clinicians Knowledge Network

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Abstract:

The Clinicians Knowledge Network (CKN) was launched as a statewide collection of clinical knowledge resources supporting evidence-based practice within Queensland Health in 2001. This paper details developments during the period from the launch to today, making comparisons with other Australian statewide clinical knowledge resource systems. Issues affecting local implementation, in addition to strategic priorities for statewide and national clinical knowledge services, are discussed.

INTRODUCTION

Since the implementation of the first clinical knowledge resource project in Australia in mid-1997, the Clinical Information Access Project (CIAP) in NSW, other states and territories have followed suit (see Table 1). It is generally accepted that the ubiquitous availability of such resources improves patient outcomes by transitioning research into practice. Examples of substantial investments, in addition to the various statewide clinical knowledge projects, include the federal government funding of the Cochrane Library, as well as international e-health initiatives such as the UK National Electronic Library for Health. The extent to which the Australian government has demonstrated serious interest in this area is further evidenced by the work being undertaken by the National Health Information Management Principal Committee (NHIMPC).

Statewide Service Name	State	Established (Year)	Population	Procurement Method	Staff Numbers
CIAP (Clinical Information Access Project)	NSW	July 1997	6,549,177	Centralised ¹	50868
SALUS (South Australian Services Libraries Consortium)	SA	1999	1,514,337	Consortium ²	17399
CHC (Clinicians Health Channel)	VIC	March 2000	4,932,422	Centralised	42201
CIAO (Clinical Information Access Online)	WA	April 2000	1,959,088	Mixed ³	17345
CKN (Clinicians Knowledge Network)	QLD	March 2001	3,904,532	Mixed	37468
HIAP (Health Information Access Project)	ACT	July 2003	324,034	Centralised	3070
CROC (Clinical Resources Online)	NT	Nov 2004	192,898	<i>Not available</i>	2200
EPOCH (Electronic Portal for Online Clinical Help)	TAS	<i>Not available</i>	476,481	Mixed	6697

Table 1. Comparative data of the Statewide Clinical Knowledge Services

Notes: ¹ *Centralised* - primarily single purchaser. ² *Consortium* - allows an 'opt in' model to the library consortium purchasing electronic products. ³ *Mixed* – some central purchasing with other electronic purchases from library budgets.

In the Australian government health literature, these electronic resources have most recently been referred to as Electronic Clinical Knowledge Resources (ECKRs). They provide access to health knowledge at the passive end of a continuum of Clinical Decision Support (CDS) tools. At the other end of the continuum, dynamic clinical decision support systems utilise knowledge bases, algorithms and patient data to provide case specific advice. There is a great deal of interest in the development and integration of these technologies to further evidence-based practice and improve the cost-effectiveness of medical interventions. A feasibility

study by the National Health Information Management Principal Committee (NHIMPC) into ECKRs in early 2007 has progressed to a business case to identify options for a national procurement approach (Parker, 2007).

This paper will examine the development of the Clinicians Knowledge Network (CKN) within Queensland Health (QH) from its launch in 2001 to today. Comparison will be made with the other statewide ECKRs in identifying issues and outlining strategic imperatives.

CKN – HISTORY AND DEVELOPMENT

In 2000, the Business Case for the CKN presented to Queensland Health argued that the total cost of library resources could be reduced through statewide contracts, as had been demonstrated by CIAP and other statewide clinical knowledge resource systems. An additional benefit of such networked electronic access would be the increased availability of evidence-based resources to all Queensland Health clinicians. This contrasted with the situation at that time, where access was only possible at a Queensland Health library, an unsatisfactory situation, given that some districts were without their own library.

Following a joint tender with NSW Health, the contract was awarded to Health Communication Network (HCN) who remains the dominant Australian supplier for the statewide ECKRs. A Project Manager was appointed, with the project being sponsored by the Information Division (ID) of Queensland Health. Funding provided by a National Health Development Fund grant enabled CKN to be launched in March 2001 and to continue for two years. Subsequent funding, for 2003 and 2004, saw a levy applied to the Health Service Districts, based on the number of qualified full time equivalent (FTE) clinicians in each district. Annual funding has since shifted to an 'off the top' allocation, with no transactions appearing in district budgets. Elimination of the levy served to reinforce the strategic importance of CKN by demonstrating corporate commitment to its retention. It also served to highlight that resources were chosen on the basis of statewide priorities, and that these may differ from those of an individual district.

From its inception until 2007, the CKN remained a project within the Information Division of Queensland Health. An internal service level agreement for the CKN system management existed between the project and another internal department (InfoOperations), where system management tasks were integrated with web support and design. In April 2007, the CKN moved from project status to production status, and was relocated to the Library Services Unit of the Health Information Centre. This was partially prompted by extended leave being taken by the project manager, who had been responsible for the project from its inception. To provide ongoing support for the system, approval was given to add a part-time Project Officer – Clinical Knowledge Resources (0.5 EFT) position to the Library establishment.

Coinciding with these changes was acknowledgment that the CKN website needed to be relocated from behind the QH firewall, in order to address a long-standing problem, the result of authentication being solely Internet Protocol (IP) based.

Before the introduction of a reverse proxy server (RPS), there had been limited access for any sites not directly connected to the QH network. This greatly restricted the opportunity for clinicians to consult the system from home, one of the preferred locations for ECKRs use (Perks, 2002).

CKN resources are of two principal types:

- Point-of-care resources, designed to directly impact upon patient outcomes. Many of these are “ready reference” in nature, designed for quick identification and treatment of a condition at point of consultation with a patient (e.g. UpToDate, MIMS).
- Research resources – providing greater detail on all aspects of health and medicine; some specialisations of particular importance have been targeted, such as the national health priority areas. Products within this category include full textbooks and journals, and a range of citation databases (e.g. Medline, CINAHL.)

In rationalising the offerings within these two categories, priority is given to point-of-care, as these evidence-based resources have the potential for direct and immediate impacts on patient well-being.

Budget

Current funding for CKN resources, including staffing, is around AUD\$3.5 million per annum (approximately 0.90 cents per head of population statewide). This amount closely equates to the estimated expenditure Australia-wide for such services (0.86 cents). It is interesting to compare this figure to that quoted by Bacic for the 2003-2004 financial year i.e. “the total figure for four states and one territory amounted to almost \$10 million”. Accurate figures are difficult to ascertain, given the commercial-in-confidence nature of negotiations. From the information available, it would appear that over the past four years costs have fallen from around \$1.42 per head of population. This is probably the result of factors such as market maturation, competition between vendors and products, and improved negotiation and management of the various systems. Additional variables affecting the CKN budget, as well as other ECKRs, include consortium negotiations and publisher price increases, as well as USD\$/AUD\$ exchange rates at renewal time. In order to appreciate the impact of this on subscriptions, in January 2003, AUD\$1 was worth US\$0.59, whereas in January 2008, AUD\$1 was worth US\$0.89, an increase of 50 percent.

Until the RPS was implemented, the CKN budget had to accommodate the costs detailed in a service level agreement with the Information Directorate for the servers and technical system support for CKN, in addition to an internal recharging formula for “allowed” Internet sites and WAN traffic charges. Increased use of the system saw this figure rise to an average of \$10,500 per month or \$120,000 per annum in 2005-06. The elimination of these charges, as a result of expanded Internet Access to all QH staff, was useful in offsetting hosting costs associated with the RPS.

CKN content

Since being awarded the initial tender, Health Communication Network (HCN) has continued to be the major CKN contractor. This vendor is the sole licensee in Australia for MIMS, Micromedex, Therapeutic Guidelines and the Ovid 'point-of-care' titles. The contract is negotiated on an annual basis, and is currently renewed on 1st February each year. Over time, expansion of the system has seen a number of additional licences added, resulting in a number of different subscription renewal dates each year. For 2008, the respective vendors have been approached with the request that a common renewal date and/or multi-year licensing be negotiated. If either option eventuates, there will be a significant reduction in the internal workload, by eliminating the need for multiple briefing notes and approvals within Queensland Health, at both senior management and ministerial level.

Single contracts have been negotiated with other vendors for products such as:

- MD Consult - an excellent resource that provides access to over 50 premier on-line textbooks as well as 50 journals and the Clinics of North America series. The concurrent user licence threshold was being exceeded regularly and the licenses were increased early in 2005.
- EMedicine - a database where the concurrent user licence has been tripled due to its wide use.
- British Medical Journal, BMJ Journals and Clinical Evidence.
- Licenses for specialist journals:
 - The New England Journal of Medicine (NEJM)
 - Journal of the American Medical Association (JAMA)
 - Pediatrics
 - The British and American Journals of Bone and Joint Surgery
- Addition of the UpToDate database license in April 2007. This statewide licence resulted from 11 QH sites purchasing separate licences for UpToDate using local Health Service Area funds, and lobbying by clinicians.
- A series of nursing textbooks and the premier psychiatric medical text (Kaplan and Sadock).

A wide range of resources is available in the 2006-2007 version of CKN, chosen from a number of groupings commonly observed within ECKRs (Table 2).

Drugs/ Guidelines

Australian medicines handbook
Australian Prescriber
INCHEM
Micromedex Healthcare series
MIMS Online
MIMS Drug Alert
MIMS on PDA
Pharmaceutical Benefits Schedule
Standard Drug List
Therapeutic Guidelines (etG)

Textbooks

AccessMedicine
Books @ OVID
Medicine
Harrisons Online
Merck Manuals
Wheeless' textbook of Orthopaedics

EBM

Clinical Evidence
OVID EBMR
UpToDate

Citation Databases

CINAHL
Informit Austrom
Informit Austhealth
MEDLINE (OVID)
Psycinfo
SocIndex

Ejournals

Emerald
Lippincott, Williams and Wilkins
MDCOnsult
NEJM
OVID
PubMed Central
ScienceDirect

Table 2: CKN Resources within various ECKR categories (Perks 2002)

The variation in licensing models challenges product selection and ongoing development of ECKRs. In implementing a system, particularly from scratch, concurrent user licences are often the most cost-effective means, given that 'turn-aways' due to the number of licences being exceeded are unlikely. Beyond a certain level of use, unlimited user licences become increasingly cheaper than concurrent user licensing. However, until users discover, and become familiar with, each database, concurrent user licences are more cost effective. As a mature system, CKN has a mix of both concurrent user and site licences.

Whilst the implementation of the RPS has served to address a major equity of access issue affecting those in rural and remote areas, an issue remains in supporting evidence-based practice within Queensland. This concerns the availability of the CKN resources to private health providers and non-government organisations (NGOs). Negotiations with HCN and Ovid Technologies to develop service provision models saw a one year trial, from early 2005, of Ovid Medline, Evidence Based Medical Reviews and 140 journals from Lippincott, Williams and Wilkins. As a result, ongoing funding was allocated from February 2006 to allow continued access to the CKN resources by several NGOs, including Emergency Services, Royal Flying Doctor Service, Family Planning Australia (Queensland) and Multiple Sclerosis Queensland.

CKN Website

The CKN website underwent comparatively little change from the initial launch until 2006, when it was converted, using *TeamSite*, to conform to the 'Whole of Government' design standard. A redesigned site was launched to coincide with the implementation of the RPS. Emphasis has been given to consolidation of resources within one site, rather than being split between separate QH Library and CKN sites. This change has seen the addition of the UpToDate database to CKN, as well as ejournals that have been site licensed to the QH Libraries.

The majority of Australian ECKRs have a unified search interface which, whilst of interest in further developing the CKN, appears a costly option at this time. Training has focused on clinicians learning firstly to differentiate their information need as either a point of care resource or a research resource. Searching within the current CKN groups' products identified in Table 2 is also complicated by duplicated content between the various databases. A unified search engine will not resolve this problem, and may further compound the difficulties faced by time-poor clinicians by providing even more results to evaluate. However, such a mechanism would assist novice searchers and those who have not yet received training, and act in ensuring comprehensive searching. Should a unified search engine become available at a reasonable price, it will certainly be considered.

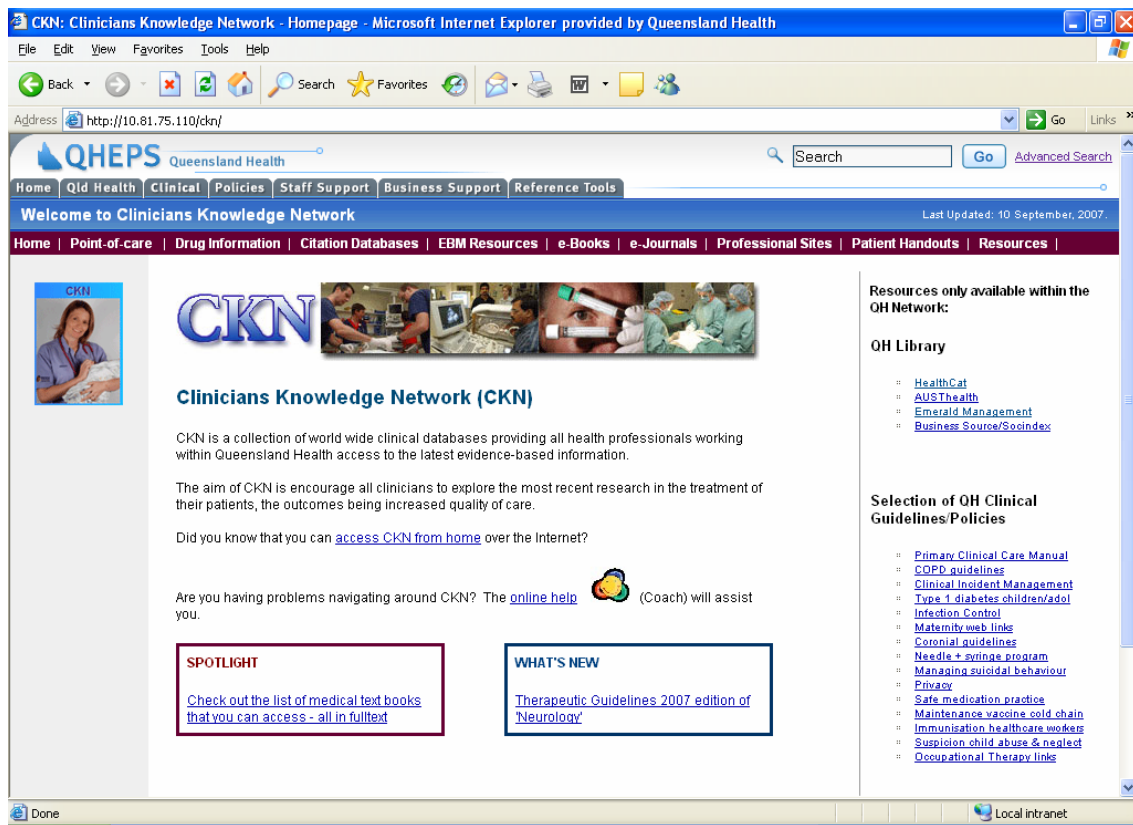


Figure 1. CKN Home Page launched to coincide with the RPS implementation

Training and Support

Levels of training and support have been designed to address a concern noted by the Organizational Improvement Unit within QH operating in 2005, i.e. that, although evidence-based resources had been made available, variability existed in the ability of clinicians to construct searches and find evidence to support clinical practice. In some cases, this lack of knowledge led to poor utilisation of resources. The challenge of adequately addressing training and support for CKN is a critical success factor.

Initiatives undertaken in direct support of training include:

Extensive Statewide Training Program to launch the CKN

Following the launch in March 2001, trainers travelled throughout the state, delivering instruction to more than 2,000 clinicians during an eight-month period. (Perks, 2002). From 2002, the Rural Health Training Units (RHTUs) were engaged to conduct training in all rural and remote sites.

Funding of Rural Health Training Unit

Since 2002, the CKN has provided \$20,000 per annum for each of the rural health training units. RHTU Managers provide annual reports on the activities of the trainers, including the sites visited and number of staff who have attended training. This CKN subsidy was increased to \$30,000 for 2006-07 to fund RHTU staff working from Townsville (servicing the Northern Health Service Area) and Rockhampton (servicing the Central Health Service Area). The continued and expanded funding for the program attests to the importance of introductory face-to-face training. Both online training and instruction manuals exist but, from a popularity viewpoint, primarily act as backup to the hands-on sessions (Iffinger, 2003). The time between RHTU trainers visiting rural and remote sites, coupled with staff turnover and the increase in clinician numbers within QH in recent years, has necessitated that training be repeated regularly.

Production of Training Materials

The production and maintenance of standardised training materials was identified as a priority in October 2005, the aim being to reduce duplication, add consistency and provide easy access to resources that are regularly updated. In 2007, a shared network drive for the QH Libraries was introduced, which has facilitated better access to the repository of training materials. Early in the project, training of doctors was a priority. Strategies were developed for imparting key information in five or ten minute segments, given that this was often the maximum block of time that doctors could allocate to training. More recently, librarians have undertaken clinical librarian roles, the result of doctors' recognition of librarians as expert searchers across the full range of CKN resources. More comprehensive results have been demonstrated through the collaborative partnership of librarians and doctors, compared to results obtained by the doctors themselves. However, given staffing restrictions amongst the QH Libraries, the ongoing challenge to the library is to strike a balance.

To coincide with the launch of the new CKN Home Page in 2007, an online training manual was developed, to facilitate the provision of updated material whilst reducing printing costs. Tasks associated with maintenance, development, promotion and distribution of these materials reside with the newly created position of Project Officer – Clinical Knowledge Resources, who also has overall responsibility for the co-ordination of training activities.

Training and support from Queensland Health Librarians

Initially, QH Library staff had little involvement in the CKN project, given its placement within ID. Nonetheless, they offered support and training, primarily for the citation, full-text and e-journal databases. Over time, and in line with expanded clinical librarian duties, this support expanded to include the point-of-care resources.

Ongoing marketing and promotion activities were undertaken to raise awareness amongst clinicians of the extent and variety of resources, and to encourage their use in daily practice.

The libraries supporting Queensland Health are varied and disparate, involving:

- contracted solutions at some teaching hospitals, e.g. the University of Queensland (UQ) services QH staff at Herston, the Mater and PA Hospitals;
- provision of some centralised services, e.g. Central Library, which manages consortium licensing and supports Health Service Areas that are without a library; and
- specialist libraries, e.g. Alcohol and Drugs, The Park (which specialises in Mental Health) and Pathology and Scientific Services.

Staffing numbers and levels vary considerably across the QH Libraries, challenging development of a strategically-aligned and consistent service statewide. A significant step was taken to address this situation at a strategic planning workshop held in May 2007, which saw the formation of a Queensland Health Libraries Consultative Committee. Since then, a constitution has been drafted and the committee elected.

FUTURE DIRECTIONS

A major recurrent argument driving the development of statewide ECKRs is that of equity of access (Keppel, 2001; Perks, 2002; Bacic, 2004). In spite of major improvement regarding offsite and dial-up access as a result of the implementation of the RPS and the purchase of additional licences for NGOs, the broader equity of access issue is still to be addressed. Exclusion of private hospitals continues to be an issue of concern, given that these constitute 42% of all hospitals in Australia (Australian Hospitals Directory, 2006). Even within Queensland Health, there are substantial categories of users excluded from the existing contracts, because they are not directly employed by Queensland Health. Given the broad, multidisciplinary nature of health services and the increasing emphasis on research (involving a wide variety of organisations and individuals), there is a mismatch between groups requiring access to the CKN resources and licences based solely on organisational employment. During the renewal process for 2008, Central Library negotiated with a number of suppliers of CKN products to include additional categories of users, such as Visiting Medical Officers, Contractors, students on work placement etc., within the existing license agreements. In addition, improved management and monitoring options using ATHENS and/or the RPS has seen a complementary subscription model considered that would provide 'enabled users' (e.g. Queensland Complaints Commission, Queensland Nursing Council) with access to the resources they require at a reduced cost through recognition of their relationship with QH.

Restricted access to the Internet, and hence to the various statewide ECKRs, has also been an ongoing problem (Bacic, 2004). For example, until recently, nursing staff employed by QH only had access through the QH Libraries and computers placed in hospital wards. A policy change (in line with recommendation 12.2 in the Queensland Health Systems Review – Final Report) ensures all QH staff members have Internet access from July 2007. In conjunction with the implementation of the RPS, access to the CKN can now be considered unencumbered.

Remote Access and Usage Statistics

To date, obtaining meaningful statistics has been difficult, largely due to security constraints around authentication, firewalls and proxy servers within Queensland Health. Resource usage at the individual Health Service District and Hospital level remains unrecorded due to the IP authentication through proxy servers providing only aggregated statistics to the vendor servers. Vendor statistics are generally limited to total hits, total downloads and, in the case of concurrent user licences, exceeded licence reports. Consequently, the ability to interrogate these statistics to better identify users of particular resources is impossible.

The need to adequately address the equity of access issue, particularly in rural and remote areas, has long been recognised. In late 2006, DotSec.com was commissioned to develop a 'proof of concept' for a RPS. This resulted in approval for them to host the CKN site from October 2007. As a result, reliable and secure access became available at locations remote from the intranet, including, very importantly, from home. The need for system access from home computers was recognised in a survey undertaken in July 2002, when 55% indicated that this was one of the most important locations from which to access the system. Similar results have been recorded with other statewide ECKRs e.g. Westbrook, Gosling and Westbrook (2005), who found senior doctors accessed CIAP more frequently from home than did junior doctors (46% compared to 38.9%).

A self-registration program has been designed to register all eligible users on the RPS. The legitimacy of applicants accessing the scripts is confirmed by the Project Officer – Clinical Knowledge Resources, in order to ensure QH is abiding by its licence agreements. Registration details at the individual, site and/or Health Service District level will facilitate the statistical analysis needed to inform quality decision making. Such information will act as a catalyst for proactive discussion between stakeholders regarding cancellations and/or cost-sharing, where price increases exceed CKN budget projections. In addition, it will enable further research to be undertaken, as recommended in the 2002 survey i.e. there is a need to “conduct research into the main reasons for which each professional group is using CKN. The research should also document specific examples of how clinicians are using CKN to improve patient care”. (Perks 2002)

Analysis of available data from QH and the various vendors confirmed the findings of Meginess (2006), in her evaluation of the uptake of CROC in the Northern Territory, that “there was a lack of homogeneity, uniformity and as a consequence, difficulty in comparing and merging data originated from different sources.” She further concluded that there was high staff overhead involved in the manual manipulation process, with the end result providing “little value for analysis for service improvement”. Deficiencies with current data collection and analysis for the CKN resources have prompted an investigation of monitoring tools/services such as *Scholarly Statistics*, as possible options to internal compilation and manipulation of data. Improved management data is also necessary in order to manage ECKRs with optimal quality assurance and accountability. In communications with vendors, this requirement has been stressed as an important element aligned to a philosophy within the QH Libraries of evidence-based management.

Changes over time affect the extent to which a particular resource is utilised statewide. There is a major issue of users being “time poor” and therefore less likely to explore new products that are added to the CKN (unless these are associated with a concerted marketing and publicity campaign). Further complicating the situation is the constant addition and removal of titles as this makes comparisons, and therefore the ability to choose the best product, very difficult. This is especially prevalent within aggregated services, as they do not own the rights to the content. In considering the national licensing initiative discussed later in this paper, the situation is also complicated by the increased number of resources registered across all the statewide services, some 87 unique products in total. (Parker, 2007)

Limitations in CKN Coverage

Evaluation of the CKN to date, albeit with less detailed statistics than desirable due to the constraints of QH IP authentication, has nonetheless indicated ongoing satisfaction with the current suite of products. Weaknesses exist in particular areas, e.g. Nursing and Allied Health, as well as in specialisations such as Dentistry. In proposing products for these areas, a different rate of uptake may be expected to that of other clinicians. Previous reports on the slow adoption of online evidence by allied health professionals concluded that “general training aimed at improving computer skills appears more important in encouraging use of an online evidence system, than specific system-based training” (Gosling and Westbrook, 2004). It remains to be seen whether the passage of time and the increasing penetration of computers and the Internet have changed this situation.

Trials

In considering new and alternative products for the CKN, vendors have been encouraged to provide trials of likely products. Furthermore, some have arranged to collect statistics and feedback by linking survey forms and comment sheets directly from the trial site. This approach benefits the QH Libraries, whilst the producers of the product(s) gain direct market intelligence in their preferred format. Agreements are in place to ensure that comments provided during these trials are treated as confidential and not used for promotional purposes.

At a recent statewide teleconference of QH Library managers a discussion of trials agreed on the need for sufficient duration to allow librarians to familiarise themselves with the trialled products, before promoting and marketing them to the target audience(s). Sixty days was identified as a viable time for a trial.

Clinical Librarianship

Bacic (2004) noted that, in the development of a number of the statewide ECKRs, the “impact of value-added services libraries provide on the promotional and training activities” is often understated in programme reports. By contrast, the role of the QH Libraries was explicitly recognised in the 2006 Annual Review of CKN (Perks, 2006). The experience gained, coupled with greater involvement in clinical librarianship and

evidence based practice (EBP) by QH Librarians, as well as the maturing of CKN, were major reasons for CKN responsibilities shifting from ID to the Library Services Unit in April 2007. In addition, the increased profile and exposure of the QH Libraries associated with the move of the CKN has seen increased recognition amongst clinicians of the searching expertise skills amongst librarians, with a commensurate increase in database search requests, particularly on complex clinical topics. Promulgation of clinical librarianship offers the potential to address one of the most common reasons for under-utilisation of clinical knowledge resources, i.e. lack of time (Gosling and Westbrook 2004; Perks, 2002). The recent identification of areas of strategic importance within QH Libraries has seen emphasis given to explicit support for, and development of, clinical librarianship. This will involve both an increase in online searching of ECKRs and complementary expansion of ward-based support and training.

QH Internal Processes

As the CKN was only allocated a half-time support position in 2007, priority was given to reducing administrative tasks, to allow this staff member to concentrate on marketing, training and education. To achieve this goal, the Library Services Unit has examined its internal processes, investigated and purchased electronic management tools, and undertaken targeted outsourcing.

Electronic Management Tools

Investigation of e-journal management software, combined with a review of library journal subscriptions, offered the potential to improve access and reduce staff overheads. This included associated eJournal maintenance activities, such as hyperlink and password changes, as well as claiming. Products considered included Serials Solutions, EBSCO A-to-Z and SWETS Swetswise, before the decision was taken to purchase the EBSCO A-to-Z product.

Selection and implementation of link checking software on the RPS has resulted in early identification and resolution of changed URLs.

ATHENS was considered as a possible option to the RPS for CKN. However, given that approval had already been granted for the RPS, revisiting the decision within QH would have resulted in considerable delays. This saw ATHENS relegated to dealing with site-specific access to electronic journals. A successful trial at The Prince Charles Hospital (TPCH) revealed the potential of ATHENS as a mechanism for managing 'enabled user' licensing (if vendors agree to negotiate these licences). Such access is essential to addressing situations where a single QH Library has a specialised collection of journal titles but the collection is unavailable to the clinical specialist who, often for reasons of transfer or promotion, is located at a different hospital. Electronic access can easily resolve this problem, provided the current licensing constraints are addressed. For example, within Queensland Health, TPCH

specialises in cardiology resources; however, other sites also have cardiac specialists, although the numbers per site are too few to justify subscriptions at these libraries. Current arrangements based solely on site affiliation restrict specialists from other sites from accessing key resources they need to stay abreast of the latest developments in their discipline.

Assigning usernames and passwords for the reverse proxy and ATHENS offers potential for improved statistics that can provide the evidence base for management decision making. Complementary endeavours between QH Libraries and the respective vendors would be ideal; however, as previously mentioned, the inadequacy of such statistics has been a long-standing problem (Meginess, 2006; Westbrook and Gosling, 2003).

Outsourcing

The approval to outsource the RPS to DotSec.com recognised the ongoing limitation of network IP authentication, as being in conflict with the aim of having the CKN as a pervasive base from which to support EBP.

As mentioned in the discussion on electronic management tools, negotiations have been undertaken with journal subscription agents who offer maintenance to electronic journal links within their services.

Internal Relationship Management

Within QH, each Health Service District is primarily responsible for the funding of its own Health Libraries services. This has resulted in a variety of service models, and has challenged cooperative endeavours. Given the varied reporting lines, there has been a lack of a broader strategic focus, which has consequences in providing a consistency of services across Queensland. The need for closer cooperation between the QH Libraries was identified at the Strategic Planning Workshop in May 2007. In response, the libraries set up the Queensland Health Libraries Consultative Committee.

Partnerships and Alliances

The Strategic Planning Workshop identified the need for improved communication and cooperation between the libraries of the universities in Queensland that teach in health-related disciplines and the QH Libraries as a priority from 2007. Complex areas, such as rationalised provision of library services, must be addressed to assist students to negotiate the transition from university to the hospital workforce. Expanding research within these universities and QH, and the impact this has on the

respective library services, is another area of focus. In June 2007, a proposal was accepted by the University Librarians in Queensland that a Queensland University Librarians Office of Cooperation (QULOC) Working Party be constituted, with representatives from Queensland Health and from universities offering health-related courses.

Other partnerships are being identified and actioned. The University of Queensland is of primary importance, largely because of the library services they provide to the three QH teaching hospitals in Brisbane, i.e. the Mater, the Princess Alexandra and the Royal Brisbane and Women's Hospital. The possibility of constituting a high-level Committee, comprising Faculty of UQ, Hospital, UQ Library and QH Library representatives, to address collaborative resource acquisition is being explored.

QH Library is also exploring the possibility of sharing regular health information products with other specialist health libraries; for example, the provision of specific current awareness services has been discussed with the Department of Health and Aging Library. If successful, such endeavours offer the potential for reduced duplication and workloads for one or both parties, thereby allowing additional current awareness topics to be produced within existing staffing levels.

National Licensing

In May 2007, the National Health Information Management Principal Committee (NHIMPC) received from Valintus Pty Ltd a commissioned inventory of ECKRs, as the first phase in the development of a business case for a national approach to the provision of clinical decision support (CDS) tools.

The inventory identified and ranked the ECKRs purchased by the statewide services identified in Table 1, with a view to prioritising current and potential resources. Results were analysed to inform the business case for improved procurement opportunities and/or wider access, along the lines of the successful implementation of a national licence for the Cochrane Library.

Analysis of satisfaction levels conducted for the inventory rated "highly both the comprehensiveness and clinical value of their current suite of ECKRs", although none rated their offerings as "Optimal". This mirrored previous survey results for CKN that found clinicians surveyed rated 94% of the content as good or better (Perks, 2002). Both results reiterate problems in obtaining the reliable usage statistics necessary to refine the product selection process.

CONCLUSION

The wide range of topics discussed in this paper is indicative of the complex nature of the health service environment, especially where ECKRs are concerned. Since the separate statewide services were established, each has secured long-term commitment, as evidenced by the NHIMPC initiative on national licensing. Within QH, an e-health initiative is under way that should seek to integrate appropriate clinical decision support tools, in line with the National E-Health Transition Authority

forecast of significant increases in benefits “when both a) more sophisticated CDS tools are used and b) when these are integrated in an online environment with shared access (i.e. across care settings) to consumer clinically-relevant data via electronic health records and/or interoperable clinical information systems.” (Parker, 2007). Such integration is under development by various suppliers. Micromedex, for example, has developed its proprietary *Infobutton* technology. (Barry, 2006) Announcements of similar integration initiatives by major companies, such as Google and Microsoft, focus on increasing an individual's control over their own health records, whilst providing reliable consumer health information. This redefines the doctor as a “knowledge navigator” and foreshadows that “health care will be a much more collaborative process between patients and doctors”. (Lohr, 2007). Such changes will guide the QH Libraries in conceptualising its “Knowledge Centres” that will support the three new hospitals currently under way (Gold Coast University Hospital, Queensland Children’s Hospital and Sunshine Coast Hospital). Balancing the cost and availability of physical space within these structures with the opportunity for interaction with a wider community through well-designed and easily accessible virtual spaces is a major challenge.

CKN is well established as a critical resource, playing a major role in improving patient outcomes in Queensland Hospitals and health care facilities. Further positive outcomes can be expected given the improved and expanded access as a result of the RPS. Commitment to this strategic direction will see its resource base further developed and integrated within the QH e-Health strategy. This is a massive information technology project that commenced in mid-2006 and will evolve over the next 10 years. Its aim is to develop and deliver innovative technologies that assist in advancing the quality of health care in Queensland.

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