

Variation in the use of online clinical evidence: a qualitative analysis

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Abstract

Objective: To investigate factors influencing variations in clinicians' use of an online evidence retrieval system. **Setting:** Public hospitals in New South Wales, Australia. **Method:** Web log analysis demonstrated considerable variation in rates of evidence use by clinicians at different hospitals. Focus groups and interviews were held with 61 staff from three hospitals, two with high rates of use and one with a low rate of use, to explore variation in evidence use. **Results:** Differences between hospitals' and professional groups' (doctors, nurses and allied health) use of online evidence could be explained by organizational, professional and cultural factors. These included the presence of champions, organizational cultures which supported evidence-based practice (EBP), and database searching skills of individual clinicians. Staff shortages, ease of access and time taken to use the online evidence system were cited as barriers to use at the low use site, but no objective differences in these measures were found between the high and low use sites. **Conclusion:** Social and cultural factors were found to be better discriminators of high and low evidence use than technical factors.

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1. Introduction

One strategy to encourage evidence-based practice (EBP) among clinicians is the provision of online access to knowledge resources. In 1997, the state Health Department of New South Wales (NSW), Australia, developed the

Clinical Information Access Program (CIAP) [1], which provides approximately 55 000 clinicians (doctors, nurses and allied health staff) with access to a wide range of bibliographic and other clinical information resources (Table 1) at the point-of-clinical care [2]. Staff access the website using an organizational password. Staff can also use the password to access the website from other places such as home.

A web log analysis of CIAP use demonstrated considerable variation in the rates of

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Table 1
Resources available on CIAP

Bibliographic databases	Decision support resources
Medline	Harrison's Online
Psycinfo	Cochrane
CINAHL	Micromedex
EMBASE	Interactive ECG tutorials
Healthstar	Therapeutic guidelines
38 full text journals	Medweaver
	Local resources (protocols and documents)
	MIMS (pharmaceutical resource)+CMI (consumer medicines information)

use for individual hospitals across the state and also differences in rates of use by professional groups (see Fig. 1) [3]. The study provided the first population-based data regarding clinicians' use of evidence but left questions regarding why such variation in rates of evidence use exists.

Online clinical databases have been shown to contain the answers to clinicians' questions [4], and physicians report the benefits of using resources such as MEDLINE [5–7]. However, past studies have shown low rates of actual

use by clinicians [8–10]. Physicians appear more likely than other clinical groups to utilize online bibliographic resources [11]. Very little is known about the use of online evidence by nurses or other health professionals.

Previous studies investigating barriers to the use of online resources have identified a range of factors including insufficient training, both in database searching and general IT skills [12–15], problems with access to computers [16], and excessive amounts of information retrieved [12]. Organizational and social factors such as communication channels that promote discussion within the organization and the existence of 'champions' (people who enthusiastically support an innovation) have also been shown to be important predictors of online literature searching [17,18] and the use of point-of-care clinical information systems [19,20]. Reasons for professional differences in online evidence use, or the role of organizational factors in influencing its use have received little attention by researchers. In summary, the existing research literature only goes some way to suggesting possible

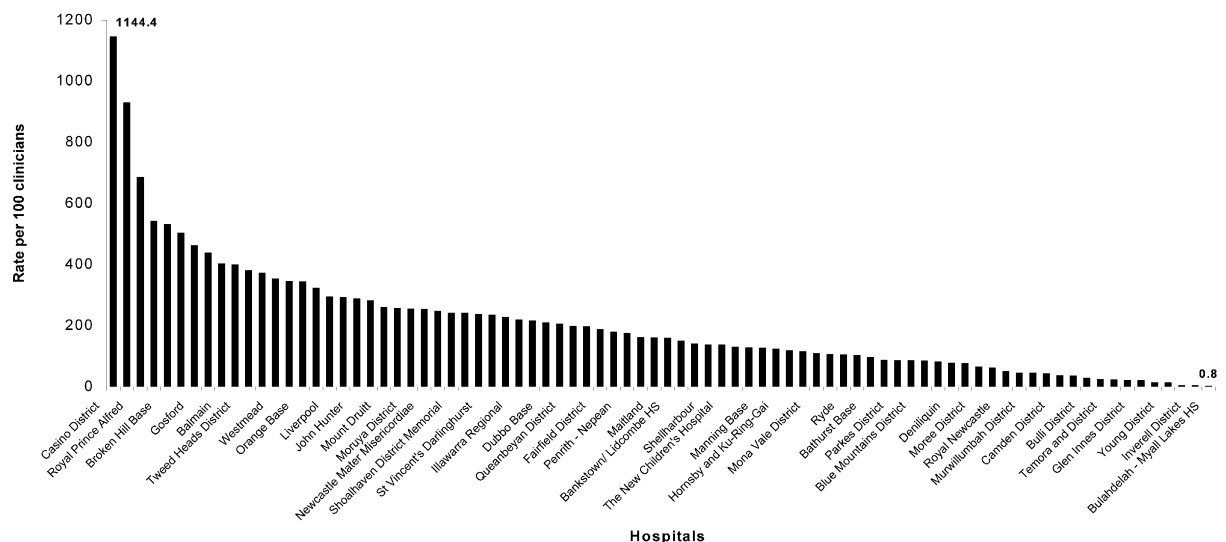


Fig. 1. Monthly text hits to single source databases per 100 clinicians for 81 hospitals across New South Wales ($N = 619\,545$).

reasons for variation in use of online knowledge resources. Organizational, social and professional factors have been hypothesized to be at least as important as technical and practical factors [17,19,20].

We undertook a study to investigate whether such factors differentiate high and low use CIAP hospitals and/or explain differences in evidence use by professional groups. The approach taken was to talk with professionals at both high and low use CIAP hospitals to gain an understanding of how they saw CIAP use in the context of their clinical work and to identify specific factors which are enablers or barriers to CIAP use.

The study sought specifically to investigate the following questions.

- 1) What factors explain differences between professional groups' use of CIAP?
- 2) What factors explain differences between high use and low use hospitals?
- 3) What are the main purposes clinicians report for using CIAP? Do these differ between professional groups or hospitals?

2. Method

2.1. Sample

Three hospitals in the state of NSW were selected as case study sites. One high-use hospital from a rural area ('high rural') and one high-use hospital from a metropolitan area ('high metro') were chosen to contrast geographical location whilst keeping rates of utilization matched. A low use hospital ('low rural') from the same Area Health Service as the high-use rural hospital was also selected. This enabled broad organizational factors to be controlled for when making comparisons between the high and low use rural hospitals.

Both high use hospitals were amongst the most frequent users of CIAP in the state (upper quartile), with monthly rates of bibliographic sessions of 104 and 102 per 100 clinicians. A session is defined as a period of resource use (e.g. MEDLINE) demarcated by a login and logout. The low use hospital had a rate of 25 sessions per 100 clinicians [21]. Access to CIAP at the point of care was available in both rural hospitals and on most wards in the metropolitan hospital. Medical staff also had access to CIAP in their offices.

Both rural hospitals had Emergency, Intensive Care Units and surgical facilities. The metropolitan hospital was a specialized center, and had a full range of general and specialized facilities. All hospitals had medical students on rotation.

2.2. Procedure

Focus groups and interviews were conducted with 61 staff (Table 2) to gather information regarding health professionals' use and views of CIAP. A qualitative design was considered as most appropriate to examine contextual issues that could not be readily answered by a quantitative study design [22]. Groups were divided according to profession; medical staff, nurses and allied health. Eight groups and 11 interviews were conducted. In the low-use hospital two nurses were interviewed directly; two others were interviewed by telephone. Six directors of nursing and medicine were interviewed individually.

All focus groups and interviews were conducted on hospital premises. A semi-structured interview format was used. The main questions posed in the discussions were.

- a) Experiences of using CIAP: which databases were used, purpose of use, specific

Table 2
Sample distribution across hospitals and professional groups

Hospital	Nurses	Medical staff	Allied health staff	Managers
High rural	6	6	7	2
Low rural	(Four interviews)	3 (+1 interview)	4	2
High metro	6	7	11	2

examples of use, ease/difficulty of use, success of searches conducted.

- b) Relationship between use of CIAP and patient care: to what extent CIAP was integrated into clinical practice, impact on care given.
- c) Views on the success of CIAP.

If other issues arose these were pursued if relevant. Transcripts were reviewed and topics that arose from early groups were fed into later groups [23].

2.3. Analysis

All interviews and focus groups were audio taped and transcribed by the moderator. Non-verbal communication, group dynamics and striking themes were noted.

The transcripts were coded and analyzed using grounded theory [23,24] as the underlying theoretical framework. N-VIVO, [25] a qualitative software analysis tool, was used to facilitate analysis. For each respondent, profession and hospital were used as discriminating factors. For each question asked (e.g. reasons for using CIAP, integration into patient care) responses were coded. Factors discussed that were influencing use were coded into theme categories. Other themes that emerged in the discussion were also coded. Coding was refined and arranged in hierarchies as conceptual themes were identified. Each theme was systematically examined according to respondent, professional group and hospital to discover discriminating fac-

tors. The number of times a theme was discussed, who discussed it, links between talk about different factors and the type of comments made (e.g. positive, negative, enabling, barrier) were examined. The number of category references (i.e. number of times the category was discussed), and the number of characters coded (i.e. volume of discussion in each category) were used as relative (not absolute) measures to compare the discussion of professional groups and hospital staff.

3. Results

3.1. Main factors influencing health professionals' use of CIAP

The major categories of discussion generated from the textual analysis were:

- 1) Reasons for use:
 - a) Clinical (use for clinical practice).
 - b) Professional development (use for professional development-studying, teaching others).
- 2) Factors influencing use:
 - a) EBP (attitudes towards seeking best evidence for clinical practice).
 - b) Training and information retrieval skills (amount of training received in using CIAP, confidence in database searching skills, success in finding information required).

- c) Access, speed of PCs (access to PCs and the internet, perceptions of speed of information retrieval).
- d) Time consumed (perceptions of the time consumed finding information on CIAP).
- e) Information-seeking attitudes (the extent to which information seeking was perceived as a legitimate part of work, changes in attitudes).
- f) Champions (perceptions of promotion, encouragement and support from individuals and/or management for staff to use CIAP).

For each of the professional groups discriminating factors affecting use of CIAP were identified. Differences between staff’s views at the high and low use hospitals were analyzed. Figs. 2 and 3 illustrate the main variations in discussion between the different professional groups, measured by the number of category references and the number of characters coded.

3.1.1. Medical staff

Doctors predominately talked about using CIAP to answer clinical questions arising from diagnosis and treatment of individual patients. This was driven by a belief in the need to use the best evidence to support practice. The majority of doctors expressed

confidence in their ability to find information and did not report difficulties in searching databases.

High metro doctors also used CIAP for research and education purposes. Although some of the senior staff preferred to use the University databases to which they also had access, having more full-text journals online from that source, they reported accessing Cochrane, therapeutic guidelines and MIMS (a pharmaceutical resource) through CIAP, as these were unavailable elsewhere.

Dr12: “I have to say particularly given the line of my work [rheumatology] every day or every second day I have to look up a drug or how to treat something”

Dr 11: “in particular the MIMS and the Therapeutic guidelines its excellent when you have a terminal in Emergency on the ward, and that’s my day to day use has increased because of that, I still use it a lot for MEDLINE, Cochrane and other databases occasionally” (high metro)

High metro registrars and resident medical officers (RMOs) valued CIAP, and some reported an increase in their use of information resources as a result of ease of online access in wards and their offices. Ease of access was also a positive factor in enabling

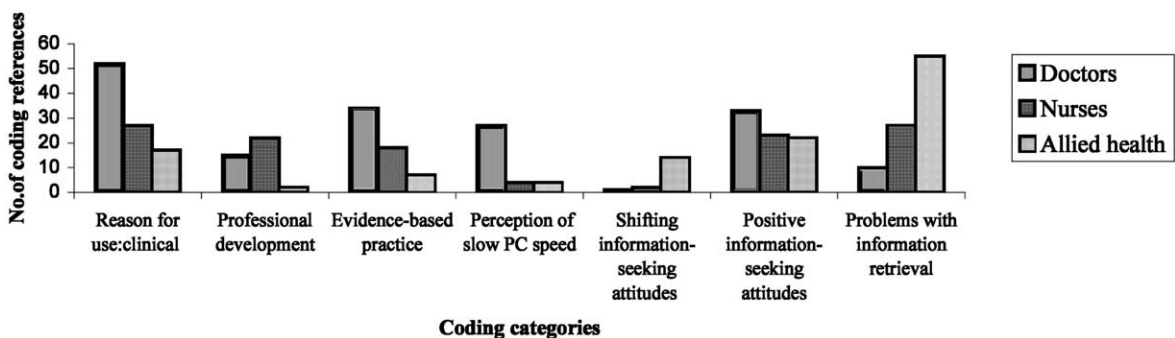


Fig. 2. Professional differences in category references.

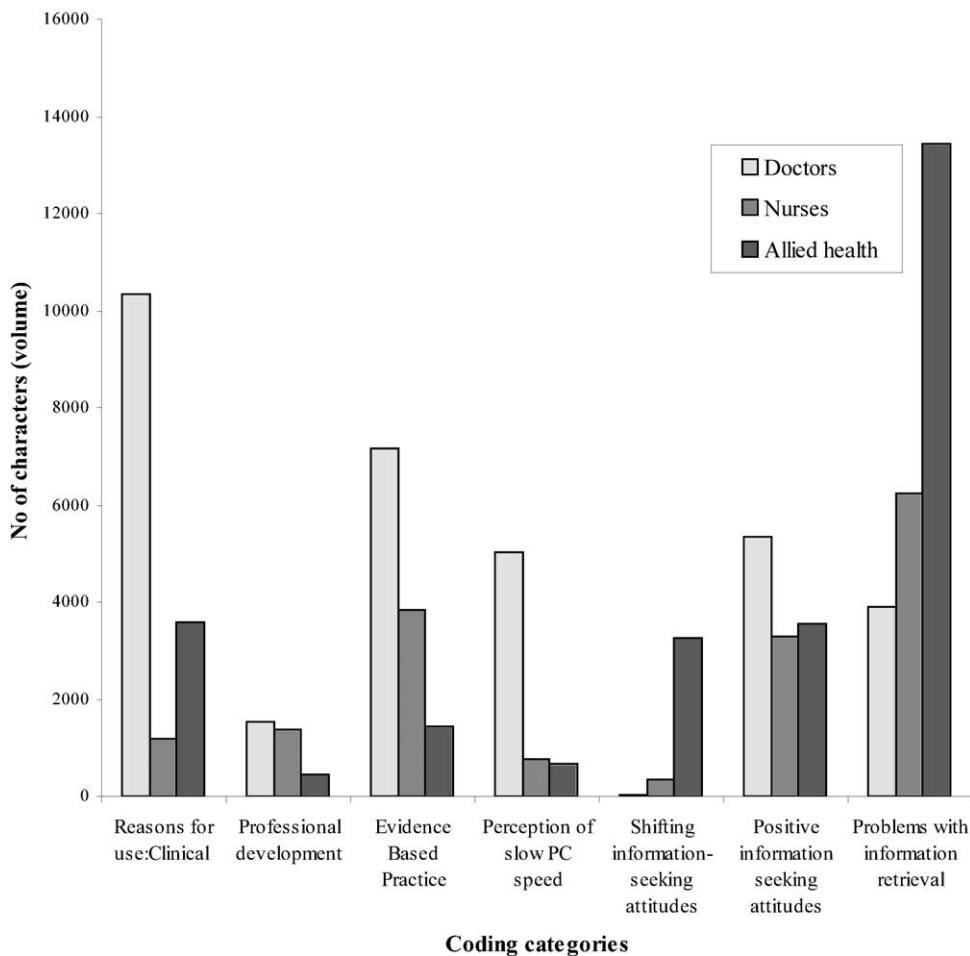


Fig. 3. Professional differences in volume of discussion in each category.

use at the high rural hospital. CIAP was the homepage on the wards' computers, which appeared to increase ease of use. Two senior doctors had adopted the role of 'champions' and had facilitated this initiative. These champions were senior clinicians who were explicit about encouraging information seeking in their departments.

Dr1: "I think the other benefit all round is creating a thoughtful, problem solving

workforce, that's all levels of clinician-ship [sic]"

Dr5: "we are pushing a bit of an information culture"

Dr6: "Here [at this hospital] [CIAP] is great it's the first thing you get to its there [on the homepage]" (high rural)

Dr 17: “the immediacy of the access is very important to the integration with patient care” (high metro)

3.1.1.1. Differences between doctors in high and low use sites. The champions in the high rural hospital appeared to have been more effective in promoting CIAP use than in the low rural hospital. There was less evidence of clear champions in the high metro hospital, perhaps being a larger organization promotion had been more diffuse and so individuals heard about the system from work colleagues and by word of mouth.

Doctors at both high rural and high metro hospitals were generally more positive about EBP, and reported more use of CIAP during a care episode. In the high metro hospital, the need for information was taken for granted as being part of the job and CIAP was seen as an accessible resource that was useful for meeting some aspects of that need. Junior doctors in the low rural hospital were more negative about the challenges of absorbing and applying information in their work, and were cynical about its value, as illustrated by these comments.

Dr7: “there’s so many of these things that you could look up and find more exact data on it and whatever, but you’re never going to for every patient there’s a hundred of those things.”

Dr8: “You could give them [x] rather than [y] and it wouldn’t make a difference”

Dr8: “why would you bother looking it up as a junior? You’re very much a sheep to your consultant’s quirks” (low rural)

Time consumed using CIAP and slow PC speed were cited as barriers to ‘real-time’ use. The speed of PCs was perceived as more problematic in the low rural hospital, even though objectively the speed to download information from the CIAP website was the same in both rural hospitals. Three identical searches were timed in each rural site. There were no differences in speed. PCs were perceived to be too slow at both rural hospitals, but doctors at the high rural hospital tended to persevere or used it at times when connection time was faster. The high metro doctors did not raise speed of PCs as a concern.

3.1.2. Nurses

In the rural hospitals nurses primarily talked about using CIAP for their own study purposes and professional development. To some extent they used it for in-service training, and the development of policies and protocols. In addition to this use, nurses in the high metro hospital also talked about using CIAP to influence clinical practice through specific changes in guidelines and policies, and used MIMS to inform themselves about drugs prescribed. In the rural hospitals nurses talked hypothetically about using CIAP to answer clinical questions, or reported seeing medical staff using it in this way. EBP was a driving force for clinical nurse consultants (CNCs) and nurse educators in the high use hospitals.

N3: “I suppose the ideal would be a patient would come into CAS [casualty] with some weird and wonderful pediatric syndrome or disease that is uncommon”

N6: “I think it’s seen more as a study research type thing [others agree] I don’t think its seen by nurses as a clinical type thing”

N2: “that’s certainly part of our agenda is to get on there and find the information we need” (high rural)

N8: “One of the doctors was looking up a new medication that wasn’t in the MIMS book...We looked up side effects”. (low rural)

N16: “I’ve seen some evidence of changes in practice we’ve changed our approach to fevers. Our tracheotomy policy which is highly contentious and controversial was changed through information found through CIAP because what we were doing wasn’t evidence based” (high metro)

There was also discussion about whether doctors were the ultimate decision-makers and whether it was the nurse’s role to initiate information seeking related to patient care. Nurses expressed a dilemma about whether information seeking was part of their everyday role.

N6: “At the end of the day in reality even if the nurse finds something in CIAP, ultimately the doctors are the ones that are prescribing”

N4: “Well, yeah, I think in our area [Intensive Care] the nurses will put their two cents in if they’ve looked it up and they’re found something that’s quite interesting” (high rural site)

N12: “it doesn’t seem right to be spending so much time at work and then having to go home and be up to date with the literature”

N16: “we do not make it professionally legitimate to research information in

work time and that’s a huge culture shift” (high metro)

Nurses expressed lack of confidence in their searching skills and ability to find the relevant information even if they had received training.

N2: “I tried to get something on case studies and didn’t get what I wanted; it’s hard to get specifics”

N4: “It’s frustrating; I start searching and then give up.” (high rural)

N7: “if I was going back to use the database to search for information I would probably have to ask for help”

N9: “It was scary,.. but when you’re searching you’ve got to think about what you want. ...I have improved.” (low rural)

Professional champions in the rural high use site played key roles in promoting information-seeking and teaching searching skills.

The ability to access CIAP from home was enthusiastically welcomed by most nurses, and for some this was their main point of access. This was linked to the lack of time to search databases at work, and because the use of CIAP was often related to their own studies. However, some nurses also reported using CIAP at work.

3.1.2.1. Differences between nurses in high and low use sites. Nurses in the low rural hospital talked about staff shortages and low overall awareness of CIAP as possible reasons for the low rates of use. Staff shortages were not mentioned in the high use rural hospital. As an indicator of staff shortages the numbers of casual nurses were obtained for each hospital. There were no differences in the proportions

of casual staff or hours they worked between the hospitals. There was no champion amongst the nurses in the low rural hospital; promotion of EBP was in the early stages. In contrast, the nurse educator in the high rural hospital was a keen promoter, even trying to use the discussion group as a forum to increase his colleagues' knowledge and skills. The high metro nurses used CIAP more directly for patient-related information than the rural nurses.

3.1.3. *Allied health*

Allied health staff discussed using CIAP for researching conditions, planning services and reviewing treatments and therapy.

A1: “most of us here are clinically based so the driving force for me would be improved outcomes... a better understanding of the condition or looking at research of treatment methods and what's worked best” (high rural)

A22: “I could definitely say if I have a referral come in that I know nothing about ...I'll quickly do a search to prep me up ...it's been very handy for when that happens”

A14: “it's always to check the current dietary management and what to do” (high metro)

A8: “diagnostic type things... but it didn't have many specific information on specific therapeutic ideas on speech therapy” (low rural)

Attitudes towards information seeking were the most diverse of all the professional groups. Some expressed dilemmas about whether information-seeking should be a part of their job, some had shifting attitudes towards a

more positive position, and there were some negative attitudes in relation to the support received from their organization to integrate information-seeking into their work.

A11: “if it's not considered to be necessary for other people to have easy access to CIAP ...then it's obviously not considered to be important.”

A8: “I know I could be a little bit more dedicated and spend a little bit more time doing it”

A9: “its the mindset do you have the workday doing clinical work and you do your research in your own time or do you refuse to take home work and allow some research time during your day” (low rural)

Others talked about the increasing use of up-to-date information to inform interventions, and the need for this to become part of the way they approached their work.

A1: “it's a bit of mind shift”

A2: “its heaps more current than any book you can get”

A3: “wasn't really aware of it until I was forced into it to do this thing” (high rural)

A15: “There's a strong push on us all to get more and more evidence based practice” (high metro)

Allied health staff felt inadequately skilled to search databases effectively despite training. There was a perception that the relevant information for their professions was not always available on CIAP. Therefore, they

perceived that unsuccessful searches could be due to ineffective skills or unavailability of information. Some talked about using paper journals, books and expert opinions instead.

3.1.3.1. Differences between allied health in high and low use sites. A number of barriers were evident in the low rural hospital. There was no PC with Internet access to CIAP at the allied health staff's base, a satellite of the hospital. This led staff to feel that using information in their work was not supported or legitimized by management and so they reported being less inclined to do so. All perceived themselves as having poor searching skills and were not confident that relevant information could be found in CIAP. Barriers to training were greater in the low rural hospital, such as traveling and low prioritization by managers. In the high rural hospital attitudes were shifting and there was more encouragement to use information. There was also a perception that CIAP had driven a more positive approach to using the latest information.

A3: "if we didn't have CIAP there we wouldn't have bothered, we wouldn't have done it to the extent we did because of the accessibility we had through CIAP" (high rural)

In the high metro hospital, both PC availability and PC speed to access CIAP was adequate. Seeking information appeared to be viewed as legitimate and part of the expected work for many staff. Some departments had incorporated CIAP orientation into their induction program for new staff.

3.1.4. Impact of management views on support for CIAP use

The directors of clinical and nursing services were interviewed in all three sites. In the

high use hospitals, strong support was voiced for EBP. Use was encouraged amongst medical and nursing staff; the importance of information in providing high quality patient care was emphasized.

"The more access people have to the latest evidence and not necessarily something that they have to go off and find out if it is good evidence... you know in the end if you make information easily accessible the patients are going to be the winners" (Director of Medical Services, high rural)

"all clinical practice should wherever possible be based on available evidence and there's a lot of tools being produced to make evidence more accessible" (Director of Medical Services, high metro)

In the low rural hospital the clinical director was recently in post, so less able to comment on local factors. His comments were more specific to CIAP itself, and were in the context of his previous post in a more remote area where reliable access and connection to the Internet were more problematic. The low rural director of nursing predicted use would be infrequent.

"I don't [use CIAP] quite frankly but I would think its not used routinely, I would think it's used to find information on unusual syndromes, or unusual drug interactions or side effects" (Director of Nursing, low rural)

In the high use hospitals, the Directors of Nursing perceived CIAP as a potential time saver, whereas in the low rural hospital the presence of the Internet in the hospital was seen as a possible time consumer.

“I know that people do look up used car prices and things, I’m sure they look up lots of other things as well” (Director of Nursing, low rural)

Other barriers were perceived in the low rural hospital such as poor computer skills and a low level of integration of information-seeking into everyday work amongst nurses.

3.2. Summary

The main differences between professional groups and between high and low use hospitals are shown in Tables 3 and 4. Figs. 4 and 5 summarize the variation between high and low use hospitals in terms of the type and volume of discussions.

The high rural hospital had a stronger presence of champions except amongst allied health staff. Access (i.e. speed of PCs and number of PC terminals) was perceived to be poor in both high rural hospitals, although this was of greater concern to staff in the low rural hospital. Objectively, there was little difference. Reported information-seeking behavior was greater in both high use hospitals.

More staff had received training in the rural hospitals, yet this appeared to have had little impact, with low reported confidence amongst the nurses and allied health at all hospitals. Doctors in both high use hospitals were more positive about using CIAP for patient care and more likely to do so. In the low rural

hospital, the junior doctors expressed some ambivalence about the merits of supplementing their knowledge base.

There was low awareness of CIAP’s existence amongst nurses in the low rural hospital, and a perception that lack of time and staff shortages reduced use, despite similar proportions of casual nurses in both hospitals. In the low rural hospital, there was a pocket of relatively high use in the Emergency Department, driven by the medical director, who instigated and encouraged reviewing patient treatment.

4. Discussion

4.1. Professional factors

A key finding was that there are marked differences in the way the different professional groups talked about seeking and applying clinical information in their work. Whereas medical staff used CIAP to enhance their knowledge and to improve patient care, nurses and allied health staff were in a state of flux and were grappling with the idea of incorporating up-to-date information into their everyday clinical practice. Nurses showed a desire and need to be better informed, but also a dilemma in how best to express this knowledge in their work setting. As such, knowledge was imparted using in-service training, policy and procedure updates

Table 3
Summary of professional group differences

Key differences	Doctors	Nurses	Allied health
Searching skills	Confident	Poor	Poor
Evidence based practice	Integrated	Potential	Partially integrated
Reasons for use	Clinical questions (related to individual patient care)	Professional development	Clinical questions (related to clinical populations)
Information seeking in clinical practice	Legitimized and integrated	Hypothetical	Shifting towards integration

Table 4
Differences between high and low use hospitals

High rural	High metro	Low rural
Strong champions	High awareness	Low awareness (nurses)
Used despite perception of slow PC speed	Access satisfactory	Poor access for allied health, perception of slow PC speed
Information used for patient care	Information used for patient care and research	Ambivalent information seeking attitudes
Contemporaneous use of information	Contemporaneous use of information	Retrospective use of information

and informally through distribution of journal articles to ward staff. Other studies have found that professional differences exist between nurses and medical staff in their pre-

ference for information on which to base decisions. Nurses place greater value on policies and procedures [26] and have a preference for custom and precedent as a

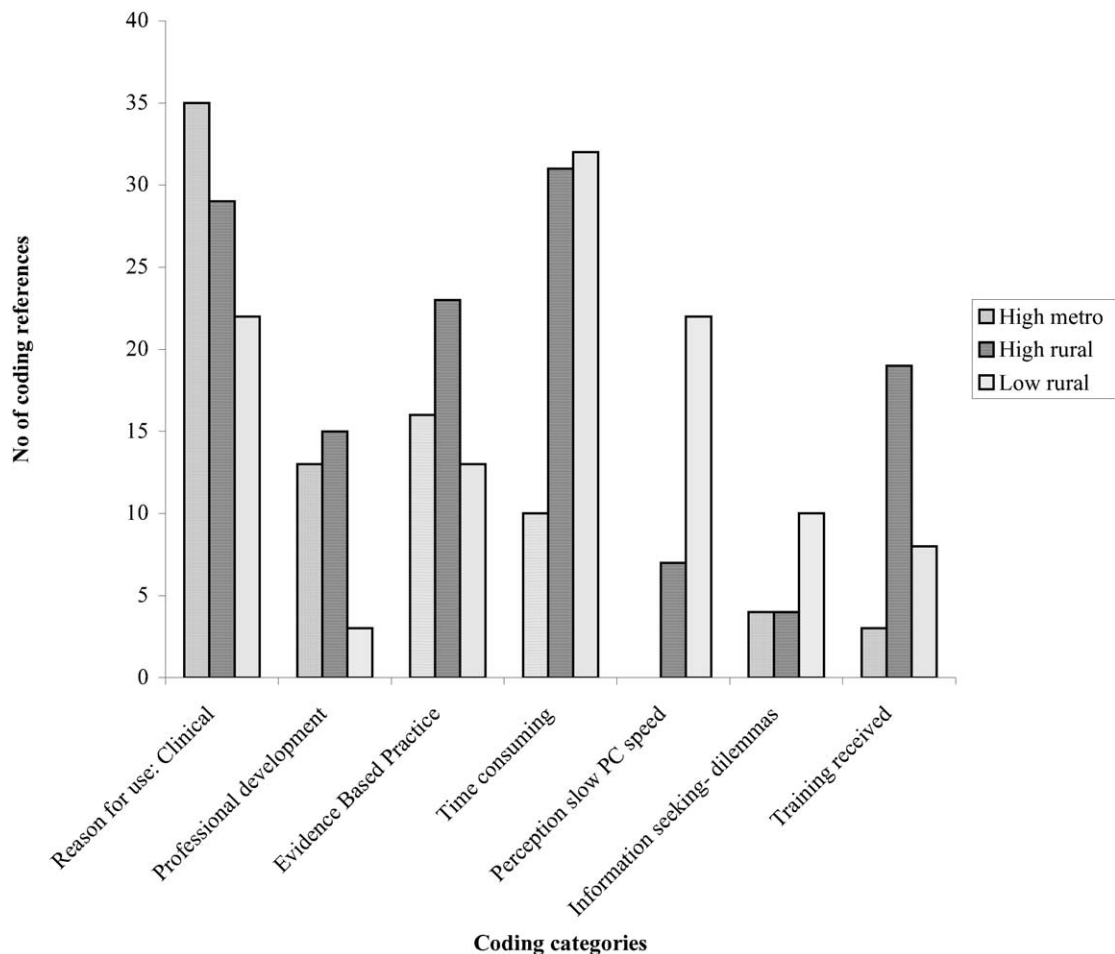


Fig. 4. Hospital site differences in category references.

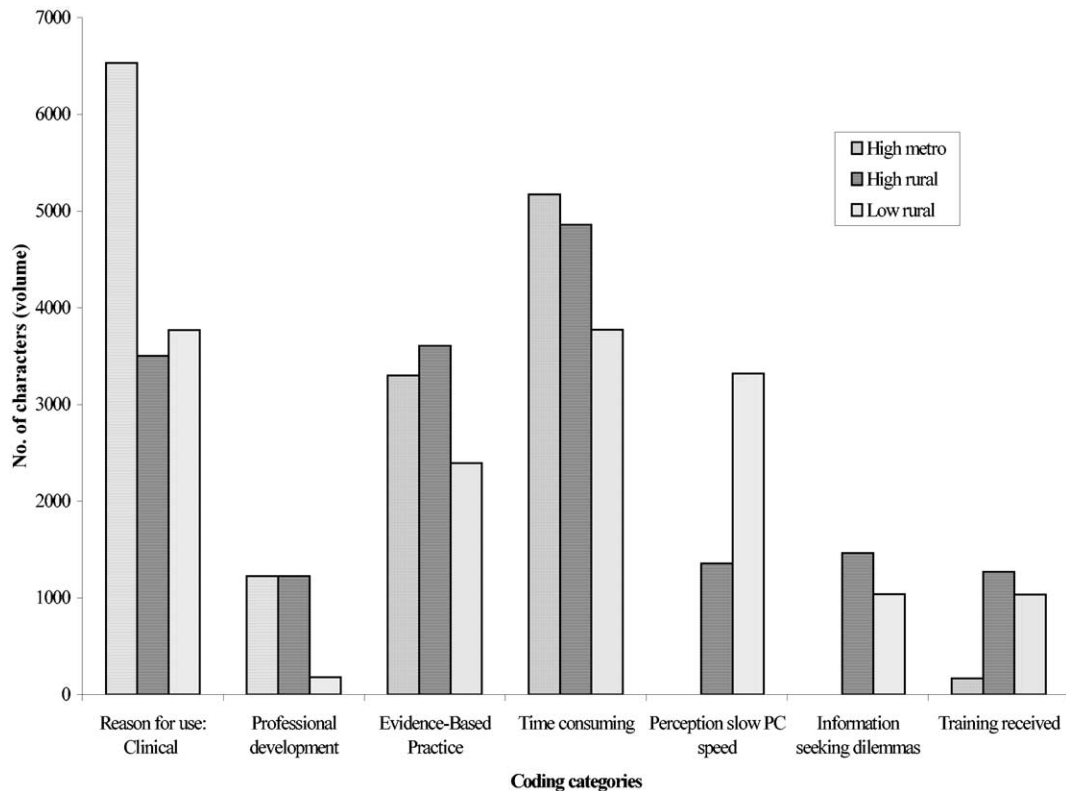


Fig. 5. Hospital site differences in volume of discussion in each category.

basis for decision-making [27] compared with doctors.

When nurses did use CIAP for clinical practice they primarily sought information to develop policies and protocols in small teams. In a study of critical care nurses [26], it was found that nurses used policies and protocol to authenticate their decisions and to bring weight to their encounters with registrar and RMO. However, it was also found that this information constrained nurses' knowledge by limiting the kinds of knowledge that nurses used in their practice. The preference for nursing procedures and routines even led to neonatal nurses continuing practices they knew to be potentially harmful [28]. This may also be related to nursing culture and professional status within the healthcare system. Other studies have

found that lack of organizational support was a barrier to using EBP [29,30].

Allied health professionals were also in a transitional phase, reporting use of CIAP for broad treatment issues and to keep up-to-date, yet still feeling that EBP was a relatively new concept within their work. Wiles and Barnard, [31] found that physiotherapists in the UK supported EBP but that its implementation was partly driven by a perceived threat to the profession and a desire to increase their status. Although this was not explicit in the talk of physiotherapists' in the current study, the perception of a drive in the direction of EBP was greater in the high use hospitals.

Perceptions of database searching skills were also quite different amongst doctors compared with nurses and allied health staff.

Doctors rarely talked about finding searching difficult or reported received training, whereas the other staff groups raised these issues early in discussions as major factors influencing their use. Whether doctors regarded searching databases as part of their necessary skill-base, or whether they did not want to discuss lack of skills was not clear from the discussions. Other studies have found that doctors report a small proportion of unsuccessful searches [6].

4.2. Organizational factors

Lack of support for technological infrastructure was perceived to be impeding CIAP use for allied health staff in the low use site. Support for promoting CIAP use and training in searching skills was also seen as an organizational issue, linked with staffing shortages and work load priorities. If CIAP use is to be legitimized among staff, support for training may be one practical way of showing this.

Although the perception was of poorer access (e.g. slower computers) in the low rural hospital, there were similar connection speeds and terminal numbers in both rural sites. Staff in the high rural hospital used the system despite frustrations with the speed. This indicates other cultural and organizational factors associated with CIAP use were more discriminating than physical barriers such as speed of searching time. This view is supported by the finding that staff at both rural hospitals reported lack of time to use CIAP. In contrast to Wyatt [32] time consumed was equally concerning in both rural hospitals, yet use in one was far greater than the other, indicating that it was at best a secondary barrier to use. CIAP was perceived as a time saver in the high metro hospital by both clinicians and management. Senior hospital managers' general views about EBP and the role of CIAP were clearly reflected in their clinical staff's use of CIAP. This was particu-

larly true for nursing staff. This finding provides support for a socio-technical view of the integration of technology into organizations, which emphasizes the important role organizational culture has on uptake of technology [22].

4.3. Champions

Innovation research has supported the view that enthusiastic promoters facilitate the uptake of new ideas and practice [33]. In the current study champions from each professional group could be identified with the exception of allied health, and librarians were also found to play a role in promotion of use through providing training in database searching skills. Future components of the evaluation will examine the impact of support for innovation and the relationship with the uptake of CIAP amongst clinical teams.

5. Conclusion

The qualitative design enabled an understanding of contextual issues influencing CIAP use that would not have been uncovered using quantitative methods such as a randomized controlled trial (RCT). The results compliment our quantitative study of web log analysis in helping to understand why uptake of CIAP is considerable in one setting yet poor in another. Many of the factors identified will influence equally the use of other new point-of-care clinical systems. The results support the argument that investment in clinical information systems must go beyond the technical systems to encompass a focus on organizational and culture change.

Positive views of CIAP by senior staff and the existence of clinical champions highlighted the importance of social relationships in influencing the use of new technology regard-

less of the specific characteristics of the technology. Factors such as the ‘fit’ of technology with professional values and norms and the organizational culture are important [22]. Doctors appeared comfortable with the model of information retrieval provided by CIAP, giving them choice and freedom to make decisions through use of a range of resources. In contrast, nurses and allied health staff were still finding ways of integrating information seeking into their clinical work and were using the resource more as an electronic library. In teams where information seeking was supported, nurses’ use of CIAP for clinical decisions was enabled.

The next stage of the evaluation will examine the impact of team functioning and support for innovation on CIAP use, and a large-scale survey will be conducted across the public health system in NSW to further test hypotheses generated in this study.

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