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Changes in information behavior in clinical teams after introduction of a clinical librarian service

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Highlights

- With a clinical librarian working in their team, clinicians reported that they were more willing to spend time searching for information related to patient care.
- Clinicians in the current project were willing to delegate a range of queries, particularly the urgent and important queries, to a clinical librarian.
- Reactions to a clinical librarian service varied considerably between different teams.

Implications

- Clinical librarian services need to be flexible and targeted carefully to maximize the educational and clinical care benefits.
- The success of a clinical librarian service with a particular team is hard to predict in advance.
- Services should be balanced between supporting health staff via mediated searching and empowering them to do their own searching effectively.
- Structured skills support in journal clubs is valued by clinical staff.

Abstract

Objectives

The 18-month evaluation of a clinical librarian project (October 2003-March 2005) conducted in North Wales, United Kingdom (UK) assessed the benefits of clinical librarian support to clinical teams, the impact of mediated searching services, and the effectiveness of information skills training, including journal club support.

Methods

The evaluation assessed changes in teams' information seeking behavior and their willingness to delegate searching to a clinical librarian. Baseline (n=69 responses, 73% response rate) and final questionnaire (n=57, 77% response rate) surveys were complemented by telephone and face-to-face interviews (n=33) among three sites served. Those attending information skills training sessions (n=130) completed evaluations at the session and were surveyed one month after training (n=24 questionnaire responses, n=12 interviews).

Results

Health professionals in clinical teams reported that they were more willing to undertake their own searching, but also more willing to delegate some literature searching than at the start of the project. The extent of change depended on the team and the type of information required. Information skills training was particularly effective when organized around journal clubs.

Conclusions

Clinical librarian services increased clinician willingness to seek information. Clinical librarians should leverage the structured training opportunities in journal clubs.

Introduction

Clinical medical librarian programs as special projects may require evidence of their effectiveness, and this type of data has been difficult to obtain. One systematic review [1] of evaluations of clinical librarian services noted the lack of rigorous comparative research methods, and another systematic review [2] noted the lack of data on cost-effectiveness. The main impact of clinical librarian services appeared to be the perceived usefulness and quality of the information resources provided by the clinical librarians, with some studies suggesting that their impact on patient care is positive. A later study of the impact on patient care of clinical librarian services again echoed the need for higher quality evaluation designs, noting that some studies suggested that time savings (in terms of health professional time) and improved patient outcomes should be possible to demonstrate [3].

In the UK, the scope of clinical librarian activities varies considerably [4-5]. Government policy advocates evidence-based practice, and national policy for clinical governance describes the framework used to ensure that UK healthcare organizations can demonstrate that their services are continuously striving for high quality care. As interpretations of the clinical governance requirements vary among hospitals and departments within each hospital, it is not surprising that clinical librarians find getting recognition difficult despite the likely positive contribution that clinical librarians could make to clinical governance [6].

The current paper describes the development and initial evaluation of the North Wales Clinical Librarian service, including assessment of changes in clinical team information behavior and information searching skills.

Background

The clinical librarian project encompassed activities across three National Health Service (NHS) Hospital Trusts (about 60 miles, or 100 km apart at the farthest points) in North Wales, UK (Table 1). NHS Trusts are non-profit, public sector health organizations. Clinical librarian services varied somewhat among the three Trusts and included information skills outreach training (North West Wales), working with five clinical teams (Conwy and Denbighshire) and working with one large multidisciplinary team (North East Wales) The clinical librarian serving these three locations (JR) worked closely with the evaluation team from the University of Wales Aberystwyth (JD, JT, CU). The evaluation objectives were to:

- Assess which aspects of the clinical librarian services were used
- Estimate the effect of information skills training on staff searching patterns and time taken to search
- Examine the benefits to clinical practice in terms of clinical governance activities and policies
- Examine whether information skills training affected staff skills and confidence
- Explore factors affecting librarian collaboration with multidisciplinary teams and attitudes towards the clinical librarian.

The nature of clinical librarian support was determined in collaboration with each of the clinical teams and evolved throughout the project. Initially the clinical librarian attended team meetings and dealt with requests for literature searches. In some teams, the focus of support activities changed to the journal club for the team. The journal club was restructured with more intensive skills training sessions to prepare the junior doctors for their presentations at particular meetings. The information skills training sessions for one Trust varied in scope and content, and developed into journal club support for occupational therapists. Table 1 describes the types of services provided within each of the groups served.

Methods

The formal evaluation plans were established shortly after the clinical librarian started in the position in September 2003, but formal ethical approval was not obtained until March 2004. Several methods were used to provide in-depth longitudinal evaluation. The clinical librarian kept a reflective practice diary throughout the period of the evaluation (November 2003 – January 2005). A reflective diary aims to provide a record of the feelings, actions, reflections, and outcomes of reflections on professional development [7]. The diary entries were sent to one of the evaluation team who entered the text documents into qualitative data analysis software to help analyze librarian perceptions regarding changes in attitudes within each team. Informed consent forms were distributed with the baseline questionnaire (and by arrangement later).

North East Wales and Conwy & Denbighshire evaluation components

The evaluation for teams in North East Wales and Conwy & Denbighshire comprised baseline and final questionnaire surveys, with interviews conducted between the questionnaire surveys. An initial baseline questionnaire survey in April 2004, six months after the service started, assessed attitudes towards searching electronically (Internet and clinical knowledge databases) and willingness to spend time searching on various types of tasks (Appendix 2). Questions on attitudes and perceived skills were based on the questions used in the INFORMS survey [8], originally developed for information literacy assessment among undergraduates in the UK. One of the questions for the evaluation examined the change in profile of the searching patterns, as it could be important for the clinical librarian to concentrate on the searches that might take longer. Respondents addressed questions about searching that accounted for need parameters (e.g. question 4 was prefaced by the explanation, “You may sometimes have to check some information about patient care. You may require the information URGENTLY and SPECIFICALLY for the care of an individual patient but that information may not be GENERALLY IMPORTANT for the care of other patients. Sometimes the information is of PERSONAL INTEREST to you as you need it for course work, CPD or research”). The differentiation of the categories was based on evidence that the urgency of a patient problem may govern the decision to search for information [9-10], and that education and research reasons are often intertwined very closely with reasons for seeking information for patient care [11].

The evaluation team also conducted interviews (face-to-face: n= 7; telephone: n = 26) with members of the teams to gather additional data regarding the effects on clinical

practice of information provided by the librarian. The interviews were carried out between July and October 2004 and their duration varied between 20 and 45 minutes. A random sample was taken of the members of the teams who had access to the clinical librarian services (n=94), stratified by team with proportionally more in the sample for the larger teams than the smaller teams. After obtaining informed consent from interviewees, the interviewer employed a script (Appendix 3). The interviewer (JT) had previous experience in health service research and recent experience of interviewing higher and further education staff and students. The interviews complemented the information obtained from the feedback forms returned with the questionnaires. The questions (on the feedback form and in the interviews) on the impact on clinical knowledge and decision making were based closely on those used in the Value project [11-12], which have been used in other clinical librarian evaluations in the UK [13].

The final questionnaire survey in December 2004 (Appendix 4) was the same as the baseline questionnaire, but omitted one general question about Internet use, and added questions concerned with willingness to delegate searching to the clinical librarian and perceived priorities for various library services, including services offered by the clinical librarian. In addition, the evaluation team analyzed feedback from clinical staff on the literature searches conducted by the clinical librarian for them (a feedback form was included with each set of search results; see Appendix 5).

North West Wales evaluation components

Evaluation of the information skills outreach training sessions in North West Wales involved informal pre- and post-session skills assessment conducted by the clinical librarian. The evaluation team also conducted interviews with 12 training participants to assess the impact of training on practice; these interviews employed questions similar to a questionnaire sent out one month after training (Appendix 1). A convenience sample of 12 was taken from a list of participants who had agreed to be interviewed.

Statistical analysis

The questionnaire data were entered into an Excel spreadsheet for simple descriptive statistical analysis. The interview data were entered into a qualitative data analysis software package (QSR N6). The qualitative analysis aimed to identify and explain the reasons for changes in team member attitudes towards searching for the evidence, use of the clinical librarian, the time spent on various types of clinical questions, and any impact clinical librarian services may have had on clinical practice.

Results

Response rate

As indicated in Table 2, the response rate to most of the questionnaire surveys varied from 69-82%, with the exception of the post-training questionnaire (n=24, 32% response rate). Interviews revealed that some of those trained had not put their skills into practice. If so, that might explain the poor response as questionnaire recipients might believe they could not contribute usefully. Few staff returned the feedback forms included with the

literature search results (response rate 15.6%, 34/218); this data was supplemented by questions on the impact on clinical practice included in the interviews.

Overview: realizing benefits while changing practice

Interviews in all sites revealed the problem of balance between the clinical librarian doing searches for clinicians, but also making clinical staff more effective independent searchers. The changes in information seeking behavior, and attitudes towards search delegation, illuminate this dilemma, but it is important to emphasize that the service evolved during the evaluation and that lessons learned at one of the sites were used to solve problems at another.

Reflective practice diary

The reflective diary data recorded how the clinical librarian's activities gradually changed according to the demands and needs of clinical staff, particularly in the community. As she gained their trust, her role evolved from "not yet thought of as an 'integral' member of the team" to her feelings that she was "making a positive impact with this team."

As the clinical librarian role developed, the administrative elements (e.g. time spent scheduling meetings) were reduced, or at least streamlined, with far more time spent on literature searching and training towards the end of the evaluation, and less time spent on administration or attendance at clinical meetings.

North East Wales and Conwy & Denbighshire findings

Literature searching feedback

All the teams (apart from the Community/Training team in North West Wales) initially asked the clinical librarian to carry out individual searches. The number of searches requested by different teams varied. The total number of searches (Sep 2003-Dec 2004) was 218 (13.6 per month), but the average rate per month in the last six months of the project was 15 to 16 per month. The impact of the clinical librarian services was derived partly from the 34 literature searching feedback forms and supplemented by details obtained from the other questionnaire instruments and the interviews. The immediate cognitive impact was reflected in responses indicating that some of the information supplied was new, although some confirmed what was suspected and refreshed the memory of particular details (Table 3). Some of the information was in most cases immediately applicable, and participants indicated that the results would almost always be shared with colleagues. The impact on clinical decision making was most commonly associated with checking that a proposed therapy or treatment plan was the best choice, and just over 50% of the searches resulted, or might in the future result, in changes to the treatment plan (Table 4).

Questionnaire findings: changes in information behavior

The final survey was answered by 57 participants, though respondents did not answer all questions. In the final survey, 70.7% of the medical staff (n=41) reported using NHS and library Web sites, a higher proportion than in the baseline survey (59.4%, n=69). A higher proportion felt overwhelmed by the amount of information retrieved (68.3%) than at baseline (60.9%, n=69). Although only 26.8% reported having received library skills

training on the final questionnaire, this is much higher than the baseline figure of 10.9% (Figure 1). There was a slight shift upwards in Internet searching skills, with nobody in the final survey reporting no experience. It should be stressed that the composition of the baseline and final groups was not the same, because many of the junior doctors at the baseline stage had moved to other posts by the time the final phase started. The changes in information resource use among nurses and other non-medical staff (n =23 baseline, n=12 final) were less pronounced.

At baseline, medical staff were unwilling to spend a long time searching for information, and most searches were expected to last fewer than ten minutes. If the search was of personal interest, more doctors indicated that they were prepared to spend a relatively longer time searching. After introduction of the clinical librarian service, doctors (the largest group of staff surveyed) were prepared to spend more time searching for specific, urgent queries concerning patient care. At baseline, the modal search duration was less than ten minutes (48%, 22/46) whereas in the final phase the modal search duration was between ten and 30 minutes (44%, 18/41), and doctors were also prepared to spend more time searching for queries of general importance for patient care. For example, 54% (25/46) were prepared to spend less than ten minutes at baseline for searches that were of general importance but not of personal interest, but the corresponding percentage at the final stage was 36% (15/41). The patterns make sense if it can be assumed that searches of personal interest are likely to be sustained longer than searches that are not of personal interest.

The presence of the clinical librarian also appeared to affect personal searching behavior as doctors were also prepared to spend longer on searches of personal interest, a finding that was not expected. At baseline, 13% (6/48) of doctors were prepared to spend more than an hour searching for personal interest only, while in the final phase, 27% (11/41) were prepared to spend that time searching.

The final questionnaire also asked the teams how willing the respondents (n=57) would be to delegate searches to a clinical librarian. The type of search was categorized according to urgency, importance and personal interest. Results (Figure 2) show that nearly half of the respondents had already delegated searches that were specifically urgent (for an individual patient) and important for patient care in general. However, over 50% (n=30) might consider delegating searches that are important for patient care in general, but not urgent. Team members were less willing to delegate searches that were of some personal interest to them, and fewer had in fact delegated searches of this nature. Over 50% (n=31) might consider delegating such searches if they were also of importance to patient care in general, indicating a considerable potential demand for such searching.

Interview findings: changes in clinical practice

Interviews with clinical teams (n=33) provided examples of changes in practice, beyond the immediate cognitive impact indicated from the literature searching feedback forms. In the interviews with the teams, 85% (n=28) of the interviewees stated they shared the information found by the clinical librarian with colleagues, 12% (n=4) reported that the information was shared widely with other staff, and 10% (n=3) shared with patients.

Interviews confirmed that the main impact on clinical practice was on patient management and therapy. None of the interviewees considered that the information found aided diagnosis, but most of the searches contributed towards patient management and/or therapy (76% (n=25) indicated effects on patient management, and 55% (n=18) on therapy), partly by providing confidence that clinical decisions were correct and based on the best evidence available at the time. One interviewee, an occupational therapist, identified benefit of librarian-provided information as:

“enabling us to be more effective and more concise in the report that we're creating at the moment. But also in the future from a perspective of using the most recent information available so that we're doing the most up-to-date therapy with clients, and providing the most up-to-date information material with clients.”

Seven interviewees (21%) thought that the information found would contribute towards a publication (in the CAP (Community Assessment Partnership), Lung, Nutrition and Psychiatry groups). The CAP, ICU, Nutrition and Psychiatry groups in particular had used or were intending to use the information for presentations (in all, 55% (n=18) of those interviewed). Almost all the interviewees in the CAP, Nutrition and Psychiatry groups commented that the information found would contribute towards continuing professional development (CPD) and more than half in the Lung and Urology groups (in all, 79%(n=26) of interviewees).

In one instance, cost savings were identified by a consultant, in the avoidance of unjustified expenditure.

“one piece of information that we were looking at was on looking at a new method of airway control in the anaesthetized patient. And it was quite an expensive way, an expensive piece of equipment...we decided that it probably wasn't something that needed to be for every patient and that there were training

issues involved in it and there was more work that needed to be done before we could actually introduce it. So it stopped us buying something straight away that we might have bought and not utilized to the full.”

Interviews: changes in information behavior

Fifteen (45%) of the team members interviewed (n=33) stated that their searching skills had improved since using the services of the clinical librarian. The clinical librarian service may or may not have been responsible for the changes, but the interviews helped to explain the observations, and suggested that there had been a change in team culture in some teams. As one consultant noted regarding the influence of the clinical librarian: “She hasn't saved us time, she's actually increased our education time, no, she's made better use of the educational time that we already had.”

With the journal clubs in the clinical teams, the clinical librarian served as a liaison with the consultant in charge to develop structured training sessions for the junior doctors (to be carried out in advance of their journal club presentations). Junior doctors commented favorably on this support. One junior ICU doctor commented: “Yes, my searching skills have dramatically improved! Drastically improved I would say!”

Interview feedback also indicated that the journal clubs were transformed into sessions that were more worthwhile to attend. One ICU consultant noted that the librarian's collaboration aided

“Hugely, because now meetings which we didn't particularly like going to before, now are a sell-out. They're very well attended. People talk very frankly and they talk from facts, rather than from opinion, and they learn.”

North West Wales findings

Outreach training

The outreach training sessions were rated highly immediately after the sessions, with almost all (99%) session respondents (n=130) agreeing that the objectives were clear and that the clinical librarian presented the material effectively. The expectations were clear for 72.2% (n=94) of the respondents, and comments indicated that the content and balance was appropriate. Particularly helpful aspects were the practical, hands-on element, and learning how to search effectively and efficiently. The sessions left 88.9% (n=116) of the respondents more confident, and an equal percentage had had their expectations of the course met. The main demand remaining after the training was for more follow-up sessions, with hands-on practice.

The post-training questionnaire one month later indicated that 54.2% of respondents (13/24) believed their searching skills had improved. Interviews (n=12) over one month later confirmed that initial enthusiasm had usually tapered off, and interviewees were unsure whether they were more efficient or effective in their searching. Attitudes had improved overall, however (Table 5). Representative comments included:

“I do spend more time searching. Previously I used to do one search and then perhaps I wouldn't be able to get what I wanted so I had to go to my librarian.” (physical therapist commenting on persisting changes in information behavior)

“Oh a difficult one, I don't know really. I'd have to think about that. Because although you might spend more time searching, you might just be widening the net a bit mightn't you, so it's a difficult one really. I'm not sure.” (senior nurse commenting on uncertainty regarding efficiency and effectiveness)

Among the training group, eight of the 12 interviewees (66.7%) noted instances of improved searching following training. Towards the end of the project, the clinical

librarian was asked to start journal clubs for some of the therapists in the area served by outreach training. An occupational therapist whose main contact with the clinical librarian was through a journal club commented that her confidence had increased particularly because of the regular contact:

“...unless you have a regular way of using the information that you've gleaned through a one-off course, your ability to use the information atrophies. And that's one of the brilliant things about working with [the librarian] is because it's a regular thing, because it's regular support and you're developing skills that she's teaching or you're developing something that you learnt before. It's the opportunity to apply the information.”

However, this type of journal club support was an activity that may be temporary, with the clinical librarian helping to establish and structure the way of working, and then moving on to other activities. In this case, another journal club for palliative care was established. The focus later changed, after the evaluation, to helping to produce a resource pack for preventing patient falls as part of a fall prevention strategy for the hospital Trust.

Perceptions of future development of the clinical librarian service

All interviewees from the clinical teams (NE Wales and Conwy & Denbighshire) were asked how they would like to see the service develop in the future. The responses were fairly evenly split between making the service more accessible to others, providing more searching skills training for staff (to lessen dependence on the clinical librarian), and keeping the service as it was. Some team members commented on the fine balance between being more skilled themselves in searching and knowing when to delegate searches to the clinical librarian:

“...in a way it would make more sense if she could teach us to do some things ourselves, you know like the simple things. And then use her time for the more complex things because that might be a better use of her time, you know, with the sort of dinosaurs like me and probably other consultants. But I've always found her very available and speedy so I can't think of any criticisms. I can't think of any improvements.” (consultant psychiatrist)

At the start of the project, the librarian support given to the journal clubs within clinical teams and the training sessions held in Northwest Wales were viewed as completely separate type of activities. Towards the end of the project, both sets of activities were becoming similar.

Discussion

One of the aims of this evaluation was to indicate how clinical librarians could be used within health library services within Wales. The clinical librarian served around 100 staff within the clinical teams, with more staff reached during the formal training sessions. The evaluation findings indicate changes in information behavior among the teams, as well as the effectiveness of the journal club support.

The original plan envisaged a baseline survey at the start of the project but delays in obtaining ethical approval meant that the baseline survey was conducted four months later than planned. However, there were changes in team behavior observed from the quantitative surveys (baseline to final). Although some of the changes observed might have been the result of changes in composition of the staff teams, the qualitative analysis supports the quantitative findings. Interviews were held with around a randomly selected third of the staff in the clinical teams during the middle to final stages of the project; nearly all those selected for interview agreed to be interviewed, likely reducing the

possibility of response bias in this portion of the evaluation. A controlled before and after type of study, following clinical teams with and without a clinical librarian would have helped to clarify the type and scale of impact the clinical librarian made on searching attitudes and skills.

Several clinical librarian projects have focused on mediated searching, but this research indicates that the substitution of a clinical librarian for health professionals in executing searches is only part of the picture. The results show that including a clinical librarian on a team appears to increase the willingness of staff to spend time spent searching themselves. Willingness to spend more time searching may be governed by the likelihood of finding a good answer [12], and the clinical librarian may have demonstrated that good answers can be found. On the other hand, having the clinical librarian on the team also increases the willingness to delegate searching. Perhaps there is a block of “reading time” that health professionals view as inelastic. This reflects the findings of Tenopir [14] that the time spent by medical faculty on journal reading has changed slightly but not as much as the number of readings. There may be a limit to the possible benefits in terms of time savings that a clinical librarian service based on the mediated literature searching model might achieve, as the current results indicate that doctors may spend more time reading themselves, as well as delegating some searches.

However, the outputs of searches by clinical librarians and health professionals may differ. The qualitative findings indicate that the searches done by the clinical librarian were generally more comprehensive, in the opinion of the interviewees. The evaluation

could not examine objectively how much less time, or more time, the clinical librarian spent on a search versus a health professional doing the same search, but the interviews revealed that health professionals believe that the clinical librarian searches were usually as effective and performed far more efficiently, and probably more comprehensively than clinician-executed searches.

One problem in clinical practice is that there are usually far more clinical questions to be pursued than are actually pursued [15]. A qualitative study of residents' experience in answering clinical questions indicated a complex mix of individual and organizational barriers that may lead junior doctors to abandon searches [16]. Not surprisingly, there is no consensus on the number of clinical questions that, on average, should be pursued in different types of clinical practice, and a highly pressured working environment is neither likely to provide opportunities to pursue clinical questions, nor the time to reflect on the answers that a clinical librarian could provide. This implies that clinical librarian services must be tailored carefully to the opportunities that arise for more effective user education or clinical questions that really matter to health service delivery.

Journal clubs offer the opportunity for structured support by providing teaching that is integrated into clinical practice. A systematic review also confirms that such structured support is more effective than stand-alone, non-integrated teaching in postgraduate education [17]. This type of active intervention by the clinical librarian differs from the supporter role in literature searching. A review of strategies for answering clinical questions in primary care suggests that clinical librarian services could be web-based,

with the clinical librarian acting in response to a question by a primary care physician [18] – a remote support role for literature searching but which could offer added synthesis value over the traditional reference service, and provided at the speed required. The setting is different but the dilemma is traditional – should the clinical librarian’s effort be devoted to the synthesis, or to structured education of the clinician in finding the evidence, or to a mixture of both?

Generalizing the results of this evaluation to other settings may be difficult, as the scope of the activities was probably much larger than in other clinical librarian projects in the UK [5] and the geographic area covered certainly more extensive. This made it possible to detect some patterns in which strategies worked and which were less effective. The changes that occurred within the teams [19] were reflected in the different searching patterns and attitudes from the questionnaires and the team culture changes could be potentially reflected in the willingness to spend time searching. However the scope of the clinical librarian’s work changed during the evaluation, and there may have been insufficient time to develop some aspects of the work fully.

Conclusion

The North Wales evaluation illustrated how information behavior and professional practice were changing among the teams served, and the findings, although they cannot be conclusive, suggest that the presence of the clinical librarian increased the willingness of staff to search for information, as well as encouraging them to delegate searches to the clinical librarian. These findings have implications for cost benefit analyses of clinical

librarian projects. The findings suggest that structured support, through journal clubs and training support that is linked directly to clinical and educational needs, does enhance journal club or team discussions about improvements to health service delivery. Future research may need to assess any long-term changes in attitudes among staff who had participated in this type of journal club, compared with those who had participated in journal clubs without clinical librarian support.

For health library managers, the study indicates that health library services can be targeted effectively at particular groups, and that there is an impact on patient care that can be measured, qualitatively if not quantitatively. More research is necessary to characterize the particular attributes of clinical teams that make them more likely to benefit from clinical librarian support.

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Conwy & Denbighshire	North West Wales	North East Wales
ICU (n=around 20)	Information Skills training sessions offered to staff working in the community (n=130)	Psychiatry Journal Club Psychiatry evidence-based practice groups (n=around 50 staff served in NE Wales in total)
Urology MDT (multidisciplinary team) (n=around10)	OT (Occupational Therapy) Journal Club (n=around 10)	
Lung MDT (n=around 10)	Palliative Care Journal Club (n=around 15)	
Nutrition Support Team (n=around 7)		
Community Assessment Partnership (CAP) (n=around 10)		

Table 1 Location and size of teams

	Number distributed	Number returns	Response rate
QUESTIONNAIRES (clinical teams in NE Wales and Conwy & Denbighshire)			
Baseline questionnaire	95	69	72.6%
Final questionnaire	74	57	77.0%
QUESTIONNAIRES (NW Wales)			
Immediate outreach training feedback forms	130	90	69.2%
Post-training (outreach) questionnaire	75	24	32.0%
INTERVIEWS	NW Wales (training)	Conwy & Denbighshire (teams)	NE Wales (team)
	12	22	11

Table 2 Evaluation survey response

The information...(n=34)	Agree (%)	Disagree	Not applicable / no answer
Refreshed memory of details, facts	24 (70.6%)	4	6
Provided some new information	30 (88.2%)	2	2
Substantiated what was known or suspected	28 (82.4%)	2	4
Some could be used immediately	26 (76.5%)	5	3
More information will need to be obtained on topic	24 (70.6%)	7	3
Expected to find something else	9 (26.5%)	17	8
Will be shared with colleagues	32 (94.1%)	0	2
Will be added to my personal collection	32 (94.1%)	0	2

Table 3 Immediate cognitive impact of information supplied in literature searches (data extracted from feedback forms for individual searches, n=34)

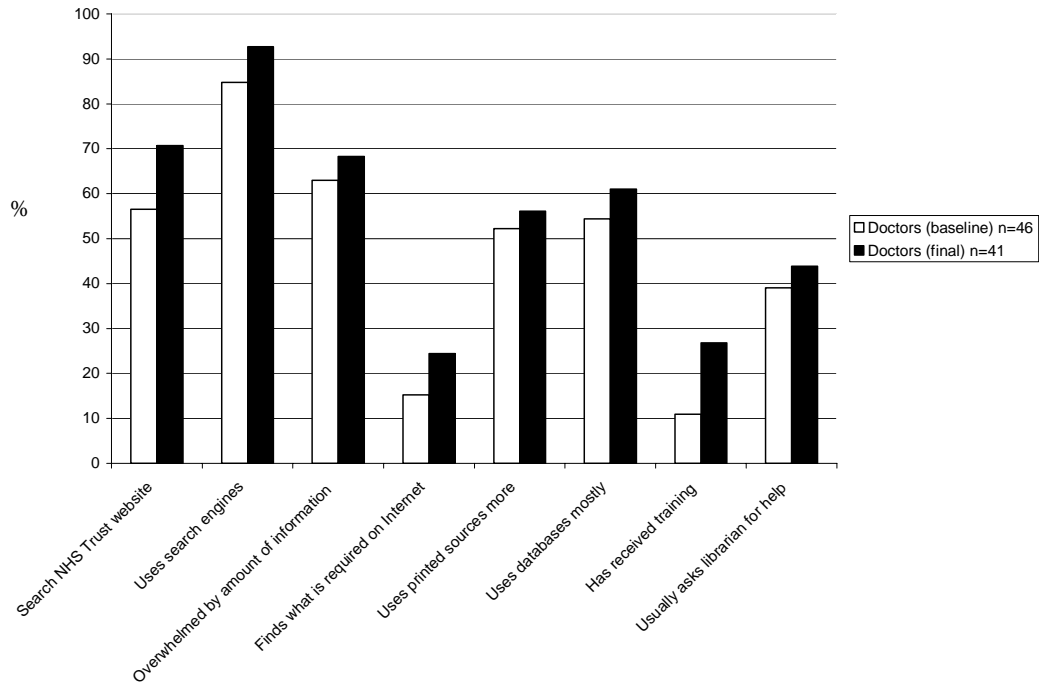
The information supplied contributed, or will contribute to	Yes (%)	No	Not applicable / no response
Choice of diagnostic test	6 (17.6%)	7	21
Recognition of abnormal/ normal condition	11 (32.4%)	7	16
Differential diagnosis	7 (20.6%)	9	18
Confirmation of proposed therapy	21 (61.8%)	5	8
Identification/evaluation of alternative therapies	16 (47.1%)	4	14
Minimisation of risks of treatment	16 (47.1%)	6	12
Revision of treatment plan	18 (52.9%)	3	13
Audit or standards of care	18 (52.9%)	6	10
Improved quality of life for patient	19 (55.9%)	3	12
Legal/ethical issues	17 (50.0%)	6	11

Table 4 Impact on clinical decision making of information supplied in literature searches (data extracted from feedback forms for individual searches, n=34)

<i>Respondents perceptions that</i>	Increased	Decreased	Stayed the same
Number of literature searches they made...	4		5
Browsing for current developments/research...	6	1	3
Their confidence in finding library resources...	8		2
Speed in finding required published information...	8		
Confidence in finding quality information...	5		1
Ability to find the information they needed...	7		

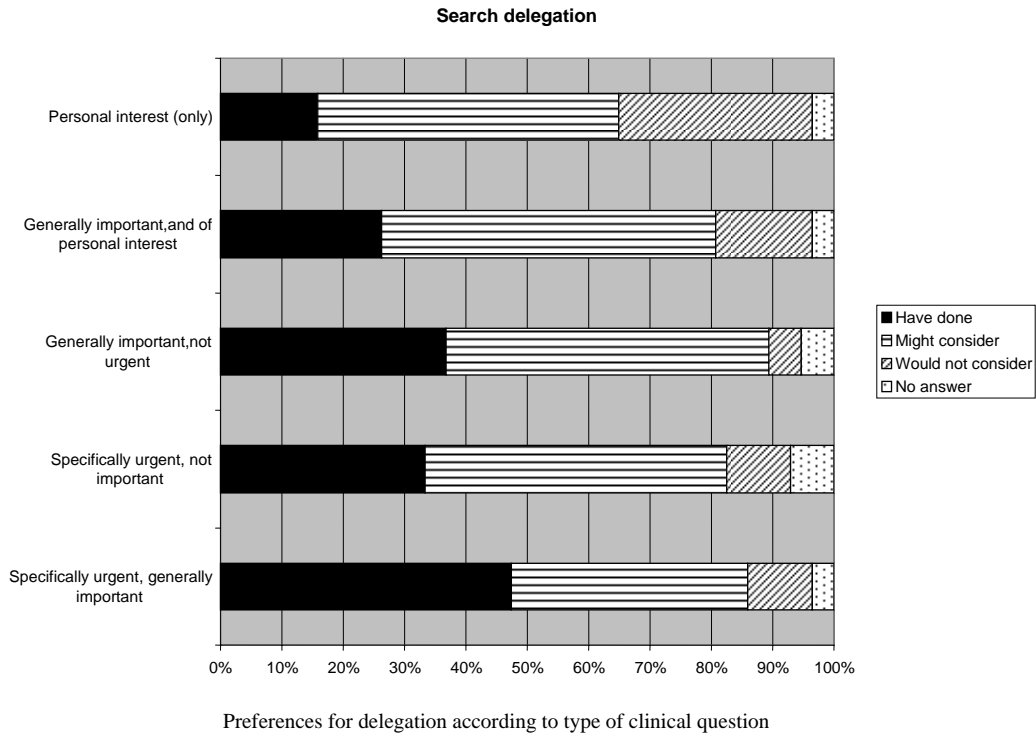
Table 5 Changes in searching habits reported by interviewees (n=12) one month post training in North West Wales

Figure 1 Baseline and final attitudes of doctors towards searching (clinical teams, NE Wales and Conwy & Denbighshire)



Note: the respondent pool for the baseline and final questionnaires differed due to changes in team composition during the evaluation period

Figure 2 Willingness to delegate searches to a clinical librarian (n=57, final questionnaire, NE Wales and Conwy & Denbighshire)



Appendix 1 Post training questionnaire used by evaluation team, NW Wales

Editor's note: will be included as online supplement to print article

1. How would you rate your internet / database searching skills after receiving training?
(beginner = Google searching; intermediate = can use MEDLINE or CINAHL to find articles ; advanced = devising complex search strategies, using Boolean searching)

Beginner [] Intermediate [] Advanced []

2. Have your searching skills improved? Y [] N []

a. *Please explain how they have – or have not - improved:*

3. Have you performed an online search since receiving training?

Yes [] No []

a). *If Yes, where have you searched? Please list sources used :*

b). *If No, please go to question no 8*

4. What did you do with the information you obtained ? *(please answer yes or no):*

- | | | |
|--|-------|-------|
| a. <i>Did you share it with your colleagues?</i> | Y [] | N [] |
| b. <i>Did you share it with the patient?</i> | Y [] | N [] |
| c. <i>Was the information found in good time?</i> | Y [] | N [] |
| d. <i>Was it needed urgently?</i> | Y [] | N [] |
| e. <i>Did it contribute to therapy?</i> | Y [] | N [] |
| f. <i>Did it improve inpatient/outpatient management?</i> | Y [] | N [] |
| g. <i>Did it contribute towards a publication or presentation?</i> | Y [] | N [] |
| h. <i>Did it contribute towards CPD?</i> | Y [] | N [] |

5. After the training received, what changes (if any) have you and/or your team observed in the following:

		More	Less	Same
a	Number of literature searches you make			
b	Browsing for current developments/research			
c	Your confidence in finding library resources			
d	Speed in finding required published information			
e	Confidence in finding quality information			
f	Finding the information you need			

6. Thinking of a recent Internet/database search you have done **after** the training, what would you have done if you had not had the training?

a	Nothing		e	Do other Internet search myself	
b	Gone to a library		f	Consult own books, journals	
c	Ask someone else to obtain the information		g	Consult books, journals in workplace	
d	Ask someone else for help with searching		h	Other	

7. For searches you do **now, after the training**, and including any travel time for consulting resources elsewhere, time for practising your skills, do you, **on average, per week**

a	spend more time searching		e	spend less time searching	.
b	... but less than two hours more?		f	...under two hours less?	
c	...two or more, but less than five hours more?		g	...two or more, but not as much as five hours less	
d	....more than five more?		h	....more than five hours less	

8. If you have **not** undertaken a search since training – please explain why not:

9. Would you like further training ?

Y [] N []

a. Please suggest training topics or areas you would like covered :

10. Are you: Doctor Nurse PAM Admin. HCA
Other

Appendix 2 Baseline questionnaire, NE Wales and Conwy & Denbighshire
Editor's note: will be included as online supplement to print article

**NORTH WALES CLINICAL LIBRARIAN PROJECT
QUESTIONNAIRE**

1. **Do you currently use the Internet in connection with work, CPD or research?** yes no

Please look at the following options and select the statements which match your experience. If none of these do please provide your own statement in the space below.

- I search the NHS Trust website** true false
I use a search engine like Google or Yahoo true false
I find I am overwhelmed by the amount of information I retrieve true false
I always find what I want on the Internet true false
I use printed sources more than the Internet true false
I find most of my electronic information from databases such as MEDLINE, CINAHL, the Cochrane Library, and the NeLH true false
I have received library skills training within the last 12 months true false
I usually ask a librarian for help true false

If none of the above match your experience, please give details here:

2. **How would you describe your internet searching skill level?**

- no experience beginner intermediate
 good advanced

3. You may sometimes have to check some information about patient care. You may require the information **URGENTLY** and **SPECIFICALLY** for the care of an individual patient but that information may not be **GENERALLY IMPORTANT** for the care of other patients. Sometimes the information is of **PERSONAL INTEREST** to you as you need it for course work, CPD or research.

On average, how much time did you spend last week searching for information to answer queries which were:

SPECIFICALLY URGENT and GENERALLY IMPORTANT?

- less than 10 mins more than 10 mins but less than 30 mins
 more than 30 mins but less than 60 mins more than 60 mins

SPECIFICALLY URGENT but not GENERALLY IMPORTANT?

- less than 10 mins more than 10 mins but less than 30 mins
 more than 30 mins but less than 60 mins more than 60 mins

GENERALLY IMPORTANT but not URGENT, not of PERSONAL INTEREST?

- less than 10 mins more than 10 mins but less than 30 mins
 more than 30 mins but less than 60 mins more than 60 mins

GENERALLY IMPORTANT and of PERSONAL INTEREST?

- less than 10 mins more than 10 mins but less than 30 mins
 more than 30 mins but less than 60 mins more than 60 mins

PERSONAL INTEREST (to you)?

- less than 10 mins more than 10 mins but less than 30 mins
 more than 30 mins but less than 60 mins more than 60 mins

Thank you for your cooperation

NORTH WALES CLINICAL LIBRARIAN PROJECT

TELEPHONE INTERVIEW

1. Have you used the services of the clinical librarian?
2. If yes, can we discuss one recent example?
 - *If no, go to question 10.*
3. What happened, and what did you do with the information supplied by the clinical librarian - how valuable was it?
 - *Did you share it with your colleagues?*
 - *Did you share it with the patient?*
 - *Was the information found in good time?*
 - *Was it needed urgently?*
 - *Did it aid diagnosis? **How?***
 - *Did it contribute to therapy? **How?***
 - *Did it improve patient management? (In-patient or out-patient?) **How?***
 - *Did it contribute towards a publication or presentation? **How?***
 - *Did it contribute towards CPD? **How?***
4. What would you have done if the clinical librarian had not done the search?
What are the alternatives to using the services of the clinical librarian?
 - *Would you have to search for the information yourself?*
 - *If yes, approximately how much time per week would you spend searching for information?*
 - *If not, what other means do you have of finding find the information (without using the clinical librarian services)?*
5. Can you give an assessment of the time saved on that occasion?
6. How valuable was it to the rest of your team?
 - *Do you think it was beneficial to the working of the team?*
 - *Were there any drawbacks in using these services?*
 - *Can you give an approximation of the time the use of these services may have saved the team?*
7. Do you think that as a result of these services being available, you (and/or your team):
 - a) are requesting more literature searches?

- *If so, approximately how many more per week than before these services were available?*
- b) are more aware of current developments and research?
- *If so, has this influenced your clinical practice?*
- c) feel more confident in using library information sources yourself?
- *Have your searching skills improved? (Please explain)*
 - *Are you able to access more accurate information quicker than before?*
- d) You may require information URGENTLY and SPECIFICALLY for the care of an individual patient but that information may not be GENERALLY IMPORTANT for the care of other patients. Sometimes the information is of PERSONAL INTEREST to you as you need it for course work, CPD or research.
- *Approximately, how much time did you spend **last week** searching for information to answer queries which are:*
 - i) specifically urgent for the care of a patient*
 - ii) generally important for the care of other patients (but not urgent)*
 - iii) of personal interest to you (for coursework, CPD or research)*
- e) Do you generally find what you need?
8. What is your overall impression of the service?
9. How would you like the service to develop in the future?
-
10. Why didn't you use the service?
11. Have any of your team used the services of the clinical librarian?
12. If yes, what are your team's perceptions of the services?
- *Do you think that these services were beneficial to the working of the team?*
 - *Were there any drawbacks in using these services?*
 - *Can you give an approximation of the time the use of these services may have saved the team?*

Thank you for your time

Appendix 4 Final questionnaire to clinical teams (NE Wales and Conwy & Denbighshire)

Editor's note: will be included as online supplement to print article

1. **Please look at the following options and select the statements which match your experience.**

- I search the NHS Trust website true false
- I use a search engine like Google or Yahoo true false
- I find I am overwhelmed by the amount of information I retrieve true false
- I always find what I want on the Internet true false
- I use printed sources more than the Internet true false
- I find most of my electronic information from databases such as MEDLINE, etc
 true false
- I have received library skills training within the last 12 months true false
- I usually ask a librarian for help true false

If none of the above match your experience, please give details here:

3. **How would you describe your internet searching skill level?**

- no experience beginner intermediate good advanced

4. **You may sometimes have to check some information about patient care.** You may require the information **URGENTLY and SPECIFICALLY** for the care of **an individual patient** but that information may not be **GENERALLY IMPORTANT** for the care of **other patients**. Sometimes the information is of **PERSONAL INTEREST** to you as you need it for course work, CPD or research. Some searches you may delegate to the **clinical librarian**.

On average, how much time do you usually spend searching for information to answer queries which are:

a) SPECIFICALLY URGENT and GENERALLY IMPORTANT?

- less than 10 mins more than 10 mins but less than 30 mins
 more than 30 mins but less than 60 mins more than 60 mins

Have you delegated, or would you consider delegating such searches to the clinical librarian?

- have done might consider would not consider

b) SPECIFICALLY URGENT but not GENERALLY IMPORTANT?

- less than 10 mins more than 10 mins but less than 30 mins
 more than 30 mins but less than 60 mins more than 60 mins

Have you delegated, or would you consider delegating such searches to the clinical librarian?

- have done might consider would not consider

c) GENERALLY IMPORTANT but not URGENT, not of PERSONAL INTEREST?

- less than 10 mins more than 10 mins but less than 30 mins
 more than 30 mins but less than 60 mins more than 60 mins

Have you delegated, or would you consider delegating such searches to the clinical librarian?

- have done might consider would not consider

d) GENERALLY IMPORTANT and of PERSONAL INTEREST?

- less than 10 mins more than 10 mins but less than 30 mins
 more than 30 mins but less than 60 mins more than 60 mins

Have you delegated, or would you consider delegating such searches to the clinical librarian?

- have done might consider would not consider

e) PERSONAL INTEREST (to you)?

- less than 10 mins more than 10 mins but less than 30 mins
 more than 30 mins but less than 60 mins more than 60 mins

Have you delegated, or would you consider delegating such searches to the clinical librarian?

- have done might consider would not consider

4. Would you recommend a clinical librarian service to other departments or colleagues (assuming that there would be no difference in the quality of service your department receives)?

- yes no unsure

5. The clinical librarian service has developed in different ways in different departments. Which of the following services do you, or would you, find useful or very useful?

	very useful	useful	not very useful
Information skills training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Critical appraisal training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Informal critical appraisal support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Journal club support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Team meeting support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Synthesis of search summaries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Search support for guideline development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Search support for best EBP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify)			

6. The clinical librarian service is at present offered as an 'extra' to the existing library service. If you had up to 20 units of currency to allocate to the following library services, including the clinical librarian service, how would you allocate the 'money' to suit your needs?

No. of units of currency

Bookstock and Journals (hardcopy)	.....
Journals (online/electronic)	.....
Databases (through HOWIS)	.....
Inter-library loans/document delivery	.....
Information skills support (one to one)	.....
Information skills training with clinical librarian	.....
Information skills training (other)	.....

Critical appraisal skills training (clinical librarian)
Journal club support (clinical librarian)
Other clinical librarian services
Other service(s) (please specify)

7. Can you estimate what **percentage** of your information needs are related to :

Research %
Education %
Patient Care %
Audit %
Other (please state)

Thank you for your cooperation

(Please indicate your profession)

Doctor

Nurse

PAM

Other

Appendix 5: Literature search feedback form (NE Wales and Conwy and Denbighshire)
(to be sent by co-author)

Editor's note: will be included as online supplement to print article