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Clinical Librarianship (CL): A Historical Perspective

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Introduction

A number of previous studies [1,2] have collected data on a hospital's use of databases and the librarian's role in the process. These studies express common themes and suggest activities for librarians wishing to promote the use of new technologies.

The first theme: While it seems clear that some physicians are competent and satisfied users of new computer search systems, many more, unfortunately, are unaware of the potential time saving features and powerful search capabilities of their search systems. Health sciences librarians have been advocating the use of indexes and abstracts for as long as these products have been available. More than twenty years ago[3], the National Library of Medicine pioneered online access to the literature with the introduction of Medlars online (Medline) [4]. Medline initially consisted of a subset of 236 of the top medical journals indexed in Index Medicus and was viewed as an interesting supplement to manual searching; it now is used routinely as the preferred method of access by thousands of Librarians and health care professionals. Some faculty, though, still rely on the traditional methods of asking a colleague, scanning a personal copy of a journal and, of course, going to the library. Traditionally, CD-ROM systems were only available in the library and doctors and librarians met each other there to discuss problems for searching.

The results of a Canadian survey[5] indicated that physicians in Ontario made little use of Libraries because they had no time to search for information beyond that they could obtain quickly from colleagues or from reference material in their own collections. Other studies[6] found that the primary reason of a clear preference for hospital libraries, either medical school or medical society libraries where information was used for both clinical and research purposes, was that the library was the most important place of locating printed sources on which doctors still rely for browsing the literature.

Over the past few decades, the role of the medical librarian has become increasingly complex, due to the explosion of information, and the way information is now digitized,

libraries are increasingly virtual. Now the additional problem is that clinicians need information but not any information. They need evidence from high quality research. The information is available, but they may have not time to search effectively. To meet their needs, the librarian must adopt the role of going out of the library to meet the clinicians, themselves.

History of Clinical Librarianship (CL)

The concept of clinical librarianship, first introduced by Lamp[7] at the University of Missouri-Kansas City Medical Library was described at the 1973 MLA annual meeting, giving the new face to the medical libraries "we take the library to the user out of the walls."

Medical librarianship has evolved from the need of doctors to have access to their professional literature. Since 1961 and the development of the postgraduate medical education movement within the National Health Service (NHS) there has also been an increasing trend to extend library services to other members of the health care team. Throughout, the emphasis has been to ensure that the professional providers of health care were well trained and well informed on medical and related matters.

The 1980s was a decade of change in medical librarianship. A review of literature shows that clinical medical librarianship had not been analyzed from a historical perspective until the mid-1980s. This review describes the innovation of Clinical Librarianship and offers some initial evaluation.

Lamp established the first clinical-medical librarian (CML) program at the University of Missouri-Kansas. Cimpl[8] in 1985 illustrates the nature of the partnership required for programs, as well as the strategy of the library community to gain visibility for CL. The evolution of the clinical librarian, as documented by Cimpl, defines as a primary role of the Hospital librarian as one of immediate responses to information requests related to patient care. In addition, Cimpl summarized the reasons clinical library services were offered, "to provide information quickly to physicians and other members of the health care team." A previous article in 1978 by Claman[9] attempted to answer the question "what do these medical-clinical librarians do, and why?" Even though they were basically reference librarians in a medical school-hospital setting, there are two differences between traditional library-based reference work and the work of the CML:

- CML takes the library to the user
- CML often provide information before they have asked for it.

As a result of Lamp's pioneering efforts, many clinical-medical librarian programs, initially supported by grand funding from the National Library of Medicine (NLM),

were started during the next decades. Four programs had been created by 1974, 23 programs by 1985, and 29 programs were reported in the literature by 1993[A]. Several valuable reviews of CL are available, with the most comprehensive bibliography from the middle of 1970 to middle of 1980. Makowski covered the literature in the decade after Cimpl's review to discuss potential roles for the CL[10]. The theme was similar to that of earlier work:

- CML takes the library to the user either on the hospital ward, in the outpatient clinic, and in the medical School teaching areas.

Examples of evaluation based on the views of health professionals receiving the service, in the Guy's Hospital (U.K.) experiment that involved two as clinical librarians to the department of Surgery and Medicine between 1978-1980, recorded that information was not usually required urgently[11]. This evaluation queried whether the requirement of instant access was valid.

Clinical Librarians in the Harford Hospital program recorded in the diaries their observation of critical incidents related the acceptance of the librarian, changes in information seeking behavior, and impact on patient care[12]. This was another example of a more detailed evaluation.

In the most recent of these examples of evaluations, Kuller analyzed the similarity between selection of relevant clinical articles by librarians and physicians and found no significant difference in utility[13]. This evaluation attempted to access whether the assumption of effective searching by CML was valid.

Of all the activities in which librarians engage, CML programs may have the highest potential for demonstrating to clinicians that librarians are capable of managing information needs in a manner that cannot be duplicated or replaced by any other source. Librarians have to migrate into the clinical setting and to avoid doing that is likely to deny our future in the information age[14].

Today, given the significance of evidence-based practice, CL is given higher priority in many centers. Responses vary, but there seems to be a more towards "clinical information scientists"—"informationists" who might be educated in both clinical and information disciplines. The worth of the Cochrane Collaboration[15], for example, depends on people who have a good appreciation of the clinical area plus information retrieval skills. Unfortunately, they may not have specialist clinical skills plus an appreciation of information on health informatics.

Role of the Health Care Library

Since the mid-1980s, end-user searching has been offered in hospital libraries. In a hospital information needs arise twenty-four hours a day, seven days a week. With the average length of stay in a hospital declining, information must be retrieved as soon as the need arises so as to influence clinical decision-making and treatment. As a consequence, hospital libraries are accessible twenty-four hours a day, providing physicians and others with immediate access to urgently needed patient care information[16].

Although the need for patient-related information might seem the primary motivation for end user searching in the hospital setting, there are several other reasons for such searching[17]. First, some patrons are simply looking for citations. Second, some patrons have encountered problems using mediated search services such as turn around time, the time required to visit the library to initiate a search, poor quality of search results, and inconvenient location of the library[18]. From a pragmatic perspective librarian mediated searching should be more efficient and cost effective than physician searching. In addition, end users may ask the librarian to repeat a search, almost duplicating effort. The advent of end-user searching[19] has caused a re-examination of the role of clinical librarians, with more emphasis on instructional and consultative aspects. The existence of CML programs teaching computerized searching and bibliographic skills can make it possible for librarians to expand existing programs and enhance the role of the CML by adding a variety of educational experiences to CML services and creating a more worthwhile relationship with the clinical staff. The expanding role of end user searching and the ongoing use of librarian mediated searching indicate that there is a place for each type of searching within the hospital library[20].

A new role[21]for the librarian who supports end user searching is network administration. Librarians are usually assisted by the hospital's information systems and data processing personnel. Besides creating new roles for the hospital librarian, end user search services can enhance the library and its role within the hospital. The main question now is, "who needs evidence-based health care?"

An evidence-based culture can provide the opportunity for libraries to become Centers of Evidence and librarians to play a new, high profile, proactive role as educators and facilitators[22]. In this time of outgoing health care changes, consumers need to become better informed to actively participate in their health care decisions.

An intelligent information filtering system assists users in being notified of updates to new and relevant information. The Internet has dramatically increased the amount of electronically accessible medical information. The Internet enables the medical

profession and consumers to have more information to make decisions and this could lead to better medical decisions and outcomes. However, without the assistance from professional clinical-medical librarians, retrieving and filtering new and relevant information from databases and the Internet remains a challenge. The health care librarian can bring expertise in the selection, preparation, and dissemination of systematic reviews to the health care profession. Direct librarian involvement in Evidence-Based Medicine (EBM) during the past decade represents one of the most significant recent developments in health science librarianship.

Evidence-Based Medicine (EBM)

The EBM movement around the world has the potential at the beginning of this decade, to improve the quality of health information exchanged between countries.

Background of EBM

Historically clinical epidemiology can be traced back to the dawn of medicine, since scientific evidence or information and the communication of such information have always been linked to practice, as have the conflicts between research and statistical results on the one hand and their application to medical practice on the other.

EBM as we know it is, first and foremost, a response to the tremendous expansion in size and scope of scientific information. This response takes the form of:

- Specialization and standardization of the form in which medical information is published
- Development of new tools for indexing, abstracting, and evaluating source materials
- Computerized clinical decision support systems and problem-based learning which integrate specialized up-to-date information in practice, applied to individual patients or groups.

The classic definition of EBM shows that most of the criticism is biased or unfounded. According to Sackett et al[23] EBM is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of the individual patient by integrating individual clinical expertise with the best available external clinical evidence from systematic research[24]. It is not self-evidently practiced, as witnessed by the striking variations in clinical behavior in different centers, even within one country. It is not a "cost-cutter" as the most efficacious interventions for individual patients may increase rather than lower cost.

All these concepts of "what is and what isn't EBM, from the pen of its founders have been expressed slightly differently in an approach rejoicing in the catchy acronym POEM[25], standing for patient oriented evidence that matters." This concentrates slightly more narrowly on the importance of the evidence to the patient, with the question: does the information focus on an outcome that my patients care about?

Clearly, EBM should apply to decisions that have to be made for population, as well as for individual patients e.g. public health decisions, preventive medicine, screening purchasing. All of these involve resource to different types of values from those exercised in the practitioner patient relationship, although these decisions undoubtedly affect the care of patients.

Another definition aims to clarify this concept[26]: EBM attempts to fill the chasm by helping doctors find the information that will ensure they can provide optimum management for their patients. In essence, EBM is rooted in two linked ideas:

- Firstly, clinical decisions should be based on the best available scientific evidence
- Secondly, the clinical problem should be found appropriate answers for different types of questions

"As physicians, whether serving individual patients or populations, we always have to base our decisions and actions on the best possible evidence. The evidence gives the ability to establish the clinical bases for diagnosis, prognosis, and therapeutics. For its validity and usefulness, and incorporate this rapidly growing body of evidence into one's clinical practice has been named EBM. We see thus, that the focal point in the evolution of the concept of EBM is in fact, information[27]."

Evidence may come from research, audit, feedback from clients, and expertise. Doctors use both individual clinical expertise and the best available external evidence for the practice professional, providing care to clients for which there is evidence of clinical effectiveness, it may come as "doing the right thing in the right way for the right patient at the right time[28]."

Scientific methods: Randomized controlled trial (RCT)

Clinical effectiveness is measured by the extent to which those interventions achieve the intended outcome. The most objective method for establishing best medical practice is the randomized controlled trial (RCT). The RCT is regarded as a "gold standard" for effectiveness studies owing to its lack of systematic bias. The RCT is the most proper technique of wide applicability, but as with everything else there are snags[29]. Although the RCT is the best way of evaluating the effectiveness of an intervention, a different set of problems arises when treatment is on urgent matter. For example, in the

past medical consensus was largely implicit and spontaneous, nowadays it is increasingly explicit and formally derived.

The different techniques (RCT, Meta Analysis, Consensus) have different purposes and are useful in different ways, from sciences through decision to practice. These should be appropriately to inform clinical judgment.

The importance of an evidence base for health promotion is recognized. Also, much research is not well designed. We need to make best use of the available evidence. Systematic reviews therefore need to address the danger of understanding the literature evidence if it includes only that of a certain methodological quality. This would run the risk of missing the true message that the review is trying to identify. Indeed systematic review methodology is established, supported by General Guidance from the NHS Center for Reviews and Dissemination, and specific guidance from the Cochrane Review Groups[30]. The Cochrane collaboration is a network of health care professionals, consumers, and researchers whose major goals are to produce and distribute systematic reviews of the effects of health care interventions. The Cochrane Library Database of Systematic reviews is available online or on CD-ROM, and offers reference information. Linking evidence and clinical decisions, using RCT, epidemiological studies, expert opinion, and surveys of patient preferences should be the priority. Many doctors now recognize the need for reference information at the point of care. Doctors need clinical information to justify individual clinical decisions with explicit reference to evidence.

Information Systems for the Evidence

Medical knowledge databases and datasets are increasingly available in electronic form, particularly on the World Wide Web. The premise of this medium is that it offers a "world of knowledge at your fingertips." The reality however is somewhat different, as information systems are not well integrated into clinical practice, prove difficult to find specific information in, and contain content of varying quality. The continued evaluation of the medium in the future should be beneficial as evidence-based resources available and these resources are integrated[31] into electronic medical record systems (EMR).

How is research information stored and retrieved in the medical literature? Many data sets are now being defined to analyze health care. Data sets are not new to the health care industry but new needs have created needs for access to clinical data, outcome analysis, quality assessment, or other health benefits. Clinical data includes many electronic patient data systems, for example, laboratory systems, pharmacy systems, and analytic databases. Typically, all carry variables of interest, for example the most recent hemoglobulin value, whether the patient is anemic, and the number of units of

blood transfused (one record per observation). They are in contrast to bibliographic databases, e.g. MEDLINE, DIMDI, BIOSIS, COCHRANE, which record the published existence of journal articles, research reports, and monographs. There are problems for clinicians in relating the research data to questions about inadequate patient care.

The main issues in question are:

- Where does the information come from?
- For whom is it intended and for what purpose?
    - patients, primary care or secondary care setting
    - funding decisions
    - policy making and management
- How is if processed, interpreted and applied?
- By whom it is processed?
    - Clinicians or other health care workers, managers, policy makers, librarians, statisticians

Librarians have been involved in promoting EBM approaches in many settings, the best known of which is probably the Cochrane Collaboration[B], which exemplifies in depth and systematic collective information and can be targeted at a specific, perhaps immediate need. Sometimes the need is more complex, however, and it is difficult to formulate the search question from the current clinical problem.

The concept of a "clinical librarian" attending ward rounds and providing information on demand for the busy clinicians is more or less idealized and utopian. Partly that is a problem of relating the research evidence to immediate patient care[32] and coming up with an answer quickly enough. The other domain is cost.

Evidence-based Practice Librarianship

The recent policy statement of the Medical Library Association (MLA) takes the position that scientific evidence is the basis for improving the quality of information sciences now and in the future. Over a similar time period the quality movement, with its increasing demand for the collection and use of data, has been growing. Developments such as total quality management and continuous quality improvement reinforce the centrality of research and its relationship to efficient and effective information practice.

Librarian as Change Agent

The new role of the clinical librarian as an educator, using evidence as the basis of practice at the "point of care"[33], reflects the change in approach which has taken place

in medical practice. The increasing emphasis of EBM calls for the integration of clinical expertise with the best available external evidence. The evidence sought, the randomized controlled trials being the gold standard for therapeutic evidence, should be rapidly retrieved and directly relevant to the clinical problem. Getting research into the practice is not a straightforward exercise and as usual with research, a number of questions are raised:

- Can EBM work in practice?
- Does information make the difference?

As librarians and information specialists we know that "the clinical librarian goes closer to the physicians, providing a diagnosis profile for each case. We may not want to presume to judge the values of EBM in practice, as we are not directly involved in patient care[34]." Librarians are therefore involved in part of the progress of getting research into practice, getting evidence to the bedside that involves resolution of clinical problems, with best, available, up to date external evidence from systematic research, clinically relevant and applicable to the problem at hand.

But adaptation to change is not enough. Even as we have increased our roles in health environment as value-added educators and information providers, we need to continue training in different facets: conferences, short courses, seminars. Librarian's participation in EBM is rooted in past practices most notably in CML. Evidence-based medicine extends the librarian's role beyond identification of the literature to involvement in practicing and teaching quality filtering and critical appraisal of the literature. These activities require librarians to obtain expert knowledge of medical terminology etc. This is the only way to meet all these rapid changes.

Increasingly libraries need to seek the evidence from information science research of the effectiveness of these methods and interventions, whether for user education or information service provision.

Tasks and attitudes in Clinical Librarianship

The librarian's primary task is to facilitate the ideals are articulated in the Library Bill of the Rights, the Freedom to Read Statement, and the Freedom of Information Act[35].

A librarian is to provide current, accurate and relevant health information, and also must balance responsibility to serve the institution's best interests. The responsibilities may depend upon whom the librarian is serving. In dealing with a physician, the primary responsibility to that person is the provision of information. Different types of information have different effects on people[36].

Classically, a clinical librarian joins a hospital team as an information officer. He or she may attend rounds and conferences and consult directly with students and faculty in an effort to provide information support expeditiously and targeted to specific cases. After a session with the clinical team the librarian returns to the library and may do a MEDLINE search, online search etc., prepare a brief bibliography, produce photocopies of pertinent material, or locate specific facts related to an identified problem. Many clinical librarians also train residents and students to use information resources more efficiently. They often accumulate files of articles of recurring interest.

New profile of the Clinical Librarian (CL)

A clinical librarian must be able to interact effectively with other health professionals and have the ability to assess a need and respond quickly with relevant information support. The clinical librarian as chief information officer is gaining popularity, especially in the health care field. Librarians in CIO roles offer the ability to examine the nature of information, assess what information is needed and used by the organization, and discover why the information needed. According C. J. Jones[37] librarians function as "watching people" to understand and embrace the concept of the importance of using information to assist in decision making.

In addition, the CL has assumed an educator role by teaching other health care professionals or students how to search for EBM evidence themselves. How and why information is communicated among patients, health care providers, administrators, evaluators, and planners is also of importance to CL. The objectives of the clinical librarian now need to consider the appropriate level of information on evidence for the audience of importance to them.

Following the introduction of end-user searching, recent papers[38] have emphasized the CL role as adviser teacher to enable clinicians to search effectively for themselves.

The new profile as compiled from various recent writings[39] on clinical librarianship:

- Expert knowledge
- Be involved in a professional team as a part of their work
- Attend bedside rounds or clinical meetings where individual patients were discussed; maintain diaries
- Contribute to continuing education
- Make an impact on patient care
- Provide quality filtered, case specific information to the physician in support of clinical decision making
- May be critical in a time dependent nature

- May be a resource to assist physicians to improve the quality of healthcare service (especially in the Emergency Medicine, for example)
- Provide immediate responses to information requests at the "point of care"
- Define the clinical problem

Perspectives from Clinical Librarians and possible developments

If CLs are concerned with the nature of the information and its processes in the organization, they are more likely to assess its value and its effect on the institution's decision-makers. The main concerns[40,41] of clinical libraries are:

- To analyze the points of view of different professionals working with information in health sciences and needing to access information for their work, in order to reach a deeper understanding of their information needs.
- To achieve genuine integration of libraries and documentation centers in health information systems.
- To promote awareness of the need to produce and disseminate information with added value; playing an active role as a fundamental part of information systems in health sciences.
- To establish the basis for a guideline document, subject to continued revision, which will provide standards for the Hospital Libraries System, developed by qualified professionals and recognized by the corresponding official bodies.
- To promote the creation of consortia integrating all the organizations involved in the area of health sciences - universities, hospitals, the pharmaceutical industry, etc., in order to facilitate cooperation and the rational use of financial, technical, and human resources.

Current problems and possible development

While many of the objectives of the CL appear justified in policy terms, there are still several technical, logistical, and social obstacles to be overcome. These include:

- There are no standards for Hospital Libraries, which concern clinical librarians.
- Clinical Librarians may be invisible as librarians are slowly taking on new roles. That means, however, that growth in CL is hard to monitor.
- Hospitals budgets are usually very constricted and libraries receive the residue, making human resource management planning difficult.
- CL are required to have considerable skills and more technological expertise in the use of electronic information resources, to be able to create an electronic resource themselves, to produce teaching materials, and provide training for staff and users. This requires considerable commitment to staff development.

- Specific working stress: even if it is not possible to feel prepared to handle everything, a new service is still evaluated. There is little time for "organizational" or personal learning.
- Even if the users are not prepared to get better quality, filtered, updated information with the new technology by themselves, they may not accept the CL intermediary role in their reference work. Future developments seem to meet the needs of CL and provide the means of learning about the accessing relevant information resources. Hyperlinks within the courseware, for example, provide an interactive and flexible learning approach. Other observed trends are: the availability of full text to off-site users along with the integration of some information skills support into the courseware and curriculum.

Conclusions

Over the past few decades as technology transformed how information is accessed, stored, and disseminated; the concept of the library has changed as well. One of the most important transformations that will occur in medicine over the next ten years is the application of new information technologies to clinical practice. Already there is a considerable international literature in the hospital use of databases and the librarian's role in process. Because the expectations of users have changed, medical librarians have an opportunity to lead and promote change. They may now be considered a part of the health care team. The role of the medical librarian has become increasingly complex. The changing role of medical librarians provides physicians and others immediate access to urgently needed patient care information. This is the role the librarian should fulfill in appropriate ways.

Comparing the traditional current practice of information provision with the new concept of Clinical Librarianship, at last many doctors now recognize the need of evidence at the point of care. We have found that an evidence-based culture can provide the opportunity for libraries to become Centers of Evidence and librarians to play a new high profile, proactive role as educators and facilitators. This means that, as librarians and information specialists, we know that the CL must work more closely with health professionals.

Notes

[A] Bull Med Libr Assoc.2000;88: 393

[B] Cochrane's role is to prepare, maintain and disseminate the systematic reviews to the health care profession. Archie Cochrane was a British epidemiologist. Prior to his death in 1988, Cochrane drew the worldwide attention to the medical community to a collective lack at that time a readily accessible and reliable information about the effects of practical health care. He noted that those who wished to make informed decisions about health car did not have a reliable source of critical reviews or "evidence."

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