Clinical medical librarian: the last unicorn?

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In the information age of the 1990s, the clinical medical librarian (CML) concept, like many other personalized library services, is often criticized as being too labor-intensive and expensive; others praise its advantages. To determine the attitudes of medical school library directors and clinical department heads toward implementation and feasibility of a CML program, forty randomly selected medical schools were surveyed. A double-blind procedure was used to sample department heads in internal medicine, pediatrics, and surgery, as well as health sciences library directors identified by the Association of Academic Health Sciences Library Directors (AAHSLD) annual statistics [1].

The survey instrument was designed to measure responses to the following attitudinal variables: acceptance and nonacceptance of a CML program; importance to patient care, education, and research; influence on information-seeking patterns of health care professionals; ethical issues; CML extension services; and costs. Seventy-nine usable questionnaires out of a total of 120 (66%) were obtained from clinical medical personnel, and 30 usable questionnaires out of a total of 40 (75%) were obtained from medical school library directors. Survey results indicated significant differences between clinical medical personnel and library personnel regarding attitudes toward CML influence on information-seeking patterns, ethics, alternative CML services, and costs. Survey results also indicated a continuing strong support for CML programs in the medical school setting; however, differences of opinion existed toward defining the role of the CML and determining responsibility for funding.

INTRODUCTION

The clinical medical librarian (CML) is defined as a health sciences librarian who participates on clinical rounds. The CML was a concept heard about exten-

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sively in the 1970s and early 1980s, but is it a viable commodity for the automation age of the 1990s? Who wants it and who needs it?

The CML program's original concept grew from a need observed by Gertrude Lamb when attending rounds at the University of Missouri–Kansas City (UMKC) School of Medicine to observe teaching patterns. Questions arose during rounds, and since the

librarian's specialty is in accessing the current literature, the idea was born to add a librarian to the health care team [2].

The CML would serve to provide visibility and credence to the health sciences library as an integral entity in the health care environment. Also, as the team witnessed the ability of the librarian to use acquired skills to retrieve information, teaching and sharing those skills would be accomplished by example.

The first CML project began in 1971 at UMKC under Lamb's direction and was funded by a National Library of Medicine (NLM) grant from May 1972 to April 1975. In 1973 Lamb moved to Hartford Hospital in Connecticut and obtained a two-year grant from the U.S. Public Health Service to maintain two CML's at the University of Connecticut Health Center Hospitals [3]. Soon other formats of the initial CML program followed in various types of hospitals and academic surroundings.

Lamb recognized the need to bridge the gap between the volumes of literature available and its relevance to the health care professional. By physically being at the source of the query, Lamb saw the CML as a link between medical education and the library. The CML would serve to provide visibility and credence to the health sciences library as an integral entity in the health care environment. Also, as the team witnessed the ability of the librarian to use acquired skills to retrieve information, teaching and sharing those skills would be accomplished by example.

The program was designed to provide a communicative service to physicians, nurses, medical students, and patients in addressing their informational needs with conciseness and precision. Usually a CML was assigned to attend morning rounds on a chosen medical service with teams of physicians, medical students, nursing staff, social workers, therapists, and clinical pharmacists. During discussion the librarian made notes of questions asked by all members of the team and assessed the value of searching for appropriate material [4]. At the completion of these interactions, the CML returned to the library and initiated online searching techniques to query databases for the necessary literature. Based on the criteria of timeliness, diagnosis, treatment modalities, and abstract or review articles, a bibliography with or without abstracts was prepared and related articles were photocopied for rapid delivery to the team, usually within twenty-four hours [5].

To acknowledge informational needs, the librarian typically spent sixty to ninety minutes on rounds and normally assembled three to eight questions for review. The CML may have spent up to two hours searching the literature and gathering all pertinent articles. It was important to choose citations and abstracts that were comprehensive and specific to the questions generated during the bedside or conference discussions. Photocopying an average of three articles for each search usually required less than one hour; materials were delivered to requesters shortly thereafter [6].

In further assisting the provision of patient care information, several innovative programs have been developed as adjuncts to the CML concept. LATCH (Literature Attached to the CHarts) is defined as packets of pertinent articles obtained from searches for a particular patient problem that are attached to the admitted individual's medical chart [7]. This allowed easy accessibility to all professionals involved in the case. A LATCH was requested by a member of the teaching team, and the CML gave priority to these searches, especially if they concerned acute cases. When the patient was discharged, the LATCH was returned to the library and was filed for possible future use of its bibliographical content.

The CML program was developed as an additional reference service of the health sciences library. Medical care facilities answer to the needs of the ill by providing diagnostic testing and evaluation for good health management. In most instances, information dealing with prevention, diagnosis, and treatment of human disease is sought by the health care professional via the biomedical library, which has emerged as a principal provider of that requirement.

Nevertheless, the question remains as to what extent the library is responsible for personalized services to clinical medicine. CML concepts have succeeded and have been abandoned in a myriad of health care settings, usually due to lack of adequate funding [8]. The CML has played a role in research, patient care, and medical education; many evaluative studies of programs have been published [9-14]. Each of these studies was designed to measure perceptions of a program by user clientele after a CML service had been in operation for a period of time. Reactions were all highly favorable and positive, but many programs were discontinued due to costs. Other objections included overcrowding the patient's room, questioning the librarian as a source of information, and the possible decline of traditional reference services within the library itself [15].

PURPOSE OF STUDY

A comprehensive review of the literature did not reveal any previous studies employing attitudinal

surveys before a program was begun. The authors hypothesized that a CML would be acceptable to the medical profession as an information source on the health care team and that given the significance of clinicians' input, library directors might consider implementing a CML program as an adjunct reference service of the library.

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This study was initiated to determine the desirability and needs of the medical profession for the implementation of a CML program, specifically in the medical school setting. Also under investigation was the attitude of library directors toward initiating a program as a reference service of the health sciences library and to identify possible role differences of the CML today.

RESEARCH METHOD

The researchers wished to sample medical schools with libraries that did not offer a CML outreach service, since the parameters of the study were predicated on the possibility of program implementation rather than program evaluation. The elimination of schools with in-house CML programs was necessary to prevent any bias in the responses of key participants and to ensure validity in the research. The *Annual Statistics of Medical School Libraries in the United States and Canada* indicated that eighty medical schools did not have a CML program in place [16]. From this population, forty medical schools were selected using a table of random numbers [17]. Two groups of individuals from each medical school were chosen as elements of the sample: library directors of the biomedical library serving the medical center clientele, and the department heads of three medical specialties: internal medicine, pediatrics, and surgery.

Because the research design studied two different groups queried in a double-blind procedure, two survey instruments consisting of related items were devised.† The questionnaires consisted of twenty-five

† The survey instruments are available upon request from the authors.

statements, each including two open-ended questions. Six variables were examined to elicit responses from each group according to a Likert scale (5 = "strongly agree," 4 = "mildly agree," 3 = "neither agree or disagree," 2 = "mildly disagree," and 1 = "strongly disagree"):

■ acceptance and attitudes toward a CML program
■ importance of a CML in patient care, medical education, and research
■ influence on information-seeking patterns of health care professionals
■ ethical issues: librarian's rights to choose relevant articles, patient's rights, implications of LATCH
■ desirability of CML extensions: user education and end-user searching, database access on hospital floors
■ cost considerations

Clinical department heads and library directors were each sent a survey packet containing a detailed description of the CML's role. A cover letter explained that each questionnaire was numerically coded by name of medical school affiliation so that a second letter could be sent to nonrespondents. Confidentiality was ensured to the respondents but not anonymity to the researchers.

RESULTS

Within the sample of forty medical schools, a total of 79 out of 120 (66%) usable and completed questionnaires were returned: 28 from internal medicine, 26 from pediatrics, and 25 from surgery. A total of forty questionnaires were sent to library directors with an overall return response rate of 30 out of 40 (75%). An ANOVA (analysis of variance) using a standard statistical software package was performed with the data, testing the responses of the two groups to each survey item. The results revealed significant differences ($p = <.01$) between the means in 6 out of 25 of the item responses, specifically within four variables: information-seeking patterns of health care professionals, ethical issues, CML extension services, and costs. The results were highly supportive of CML programs in the medical school setting, with the most evident difference emerging in the question of responsibility for funding.

Acceptance and attitudes toward a CML program

The survey instrument included two open-ended questions, one concerning negative thoughts on LATCH and an "additional comments" item at the end of the survey. Forty-five of a possible 79 (57%) responses from key medical personnel gave informative and overwhelmingly positive comments on both the concept of a CML program and the nature of the study (Figure 1). Ten out of a possible 30 (33%)

Figure 1
Acceptance and attitudes toward a CML program
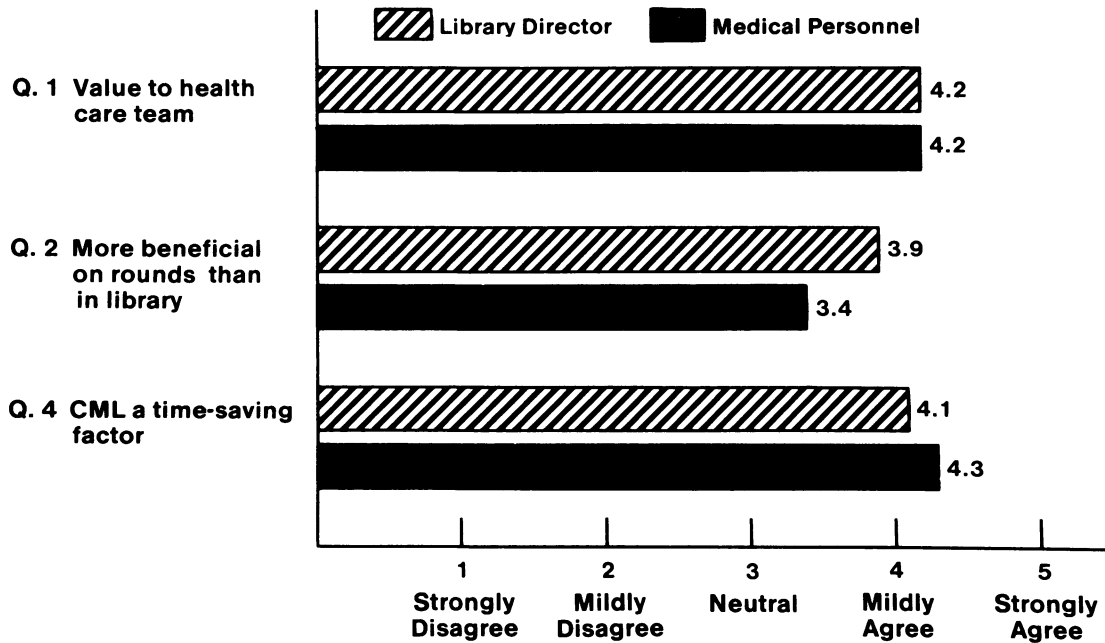
library directors gave primarily negative responses regarding the CML concept, even though both groups agreed that a CML could be a valuable addition to the health care team.

The clinicians were intrigued by the idea of a librarian on rounds and indicated an acceptance of the CML's presence on the health care team. Only one respondent cited the CML as "a terrible idea"; a genuine feeling of respect for the librarian's information-seeking skills was evident. The clinical department heads indicated they would prefer to have documented literature presented to them and their students by the CML rather than receiving information from other sources. Many indicated that the CML needed to be well-versed in medical terminology to thoroughly understand specific conversations on rounds or at conferences. Respondents also felt that the librarian serving the team should be energetic and have an empathetic nature and a friendly personality—essentially that the "right" CML could make all the difference.

In a question about rounds, 32 (41%) physicians felt the CML should attend rounds, and 27 (34%) favored morning rounds, with the librarian's presence requested three times per week. Respondents felt that residents and students would then have a frequent opportunity to acquaint themselves with the librarian assigned to their team and would seek out the CML on their own time in the library. Individual medical schools may have a different composition of person-

nel at these specific round times; however, attending rounds (i.e., with the attending doctor leading discussion and initiating questions) appeared to be the most opportune time for the CML to interact with the team.

Many of the clinicians were eager to review the study's findings and requested copies of the final analysis. Responses ranged from "a great idea" to "how can I get one?"; one large medical center faculty member invited the authors to join the medical team on rounds as a field test. Overall responses by the medical personnel were extremely favorable, with departments of pediatrics generating the most positive responses, followed by surgery and internal medicine. One possible explanation for the nature of these responses might be that pediatrics encompasses a specific patient age-group with particular needs that could be more conducive to the CML's services on a single rounding team. On the other hand, surgery and internal medicine deal with a wider age range of patients and a myriad of subspecialities of disease states, treatment protocols, and modalities. In these departments where there is often more than one rounding team, physicians may have questioned the provision of quality service by a single CML for all teams.

Importance of a CML in patient care, education, and research

Participants in the study were asked if the literature supplied by the CML could play a significant role in

Figure 2
Importance of CML in patient care, education, and research
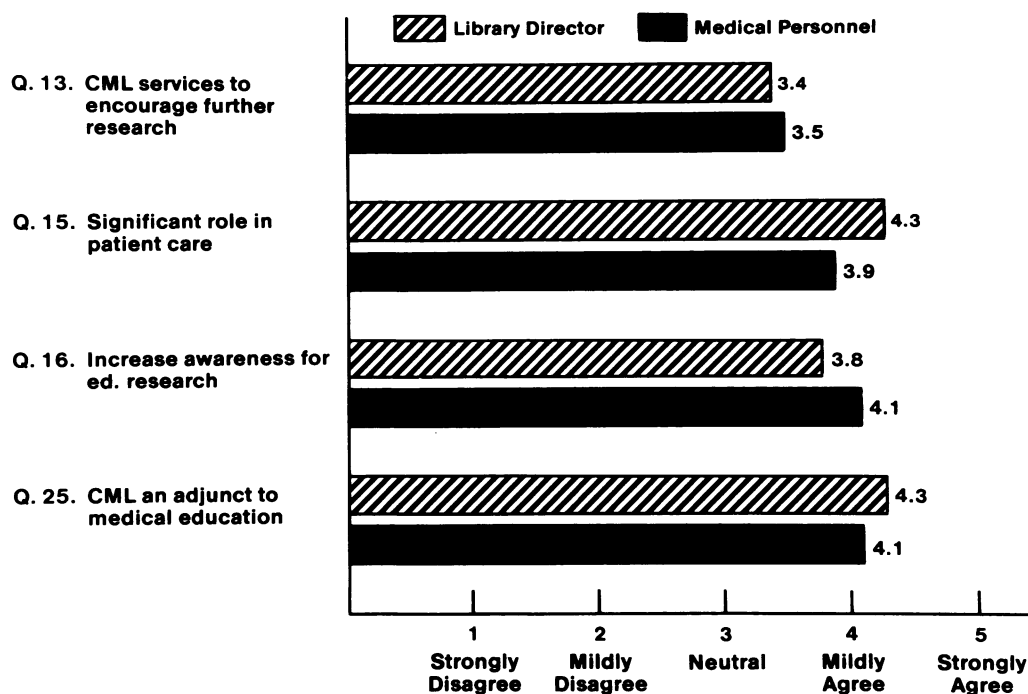
If information were supplied to the health care professionals by a CML, patient care could possibly be affected indirectly by that provision. Members of the team could review the findings in the current literature and use those conclusions in determining methods of case management based on the information received from the librarian.

patient care, medical school education, and personal research. For patient care (question 15), differences among the means for the six variables tested were not found within each of the two groups; however, library directors approached strong agreement, while medical personnel indicated mild agreement (Figure 2). Several statements by library directors implied that if information were supplied to the health care professionals by a CML, patient care could possibly be affected indirectly by that provision. Members of the team could review the findings in the current literature and use those conclusions in determining methods of case management based on the information received from the librarian.

Although physicians favored the CML concept, many expressed reservations concerning anyone oth-

er than medical professionals giving information directly to the patient or the family. Physicians accepted the CML's role in providing relevant articles and materials for the team's review; however, many felt that only general patient libraries should be accessible to the patient, since the technical nature of the medical literature might only confuse or frighten the individual.

Both library directors and clinicians mildly agreed (means of 3.8 and 4.1, respectively) that the CML could increase an awareness for educational research (question 16); both groups commented that while a CML could be an adjunct to personal research, professionals would continue to review the body of medical knowledge for data regardless of how it was obtained. With reference to the medical education of residents and students (question 25), library directors (mean of 4.3) and medical staff (mean of 4.1) agreed that the CML would be a positive factor and might encourage them to search for information on their own.

CML influence on information-seeking patterns of health care professionals

Library directors and medical department heads were in high agreement that medical students and residents should be encouraged to seek current in-

Figure 3
Influence on information seeking patterns of health care
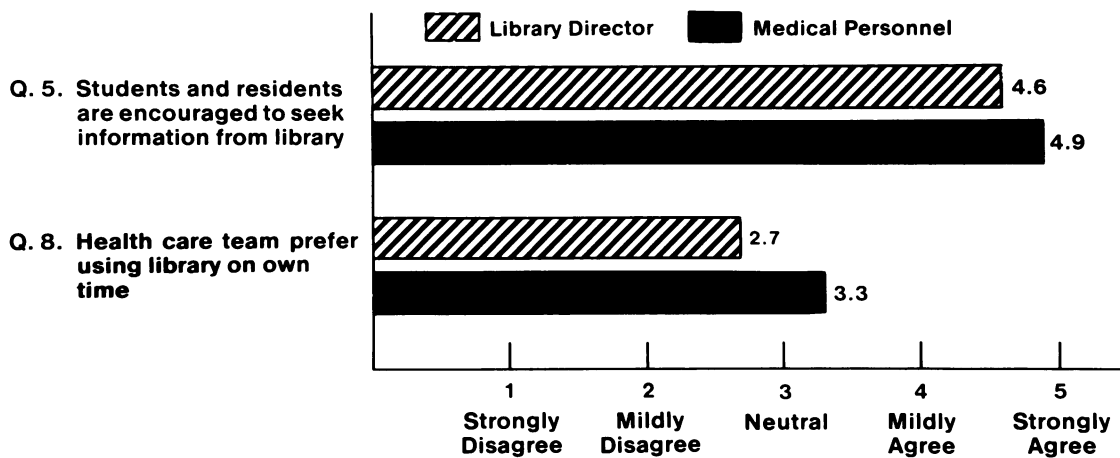
formation from the library (means of 4.6 and 4.9, respectively; question 5). However, when asked if medical personnel preferred using the library on their own time without the services of a CML (question 8), library directors disagreed (mean of 2.7); open-ended comments stated that the medical profession would welcome a CML as a time-saving factor for them alone. Medical personnel were uncertain (mean of 3.3) as to whether team members would have time to seek pertinent information on their own time if a CML were not available.

Responses by library directors to these items may have been somewhat ambiguous because answers may have been based on the use of nonstandard internal statistics tabulated to determine how the health care community uses the library for its informational needs. Library personnel generalized that students and residents would view a CML as a photocopy fetch-and-carry service and that the time spent by the librarian would far outweigh the benefits.

Clinical department heads felt that the right CML could act as an additional docent to the health care team, teaching students how to access information by using available innovative techniques. These respondents felt the librarian's presence on the health care team and the provision of relevant articles answering queries on a particular subject would create a thirst in students to pursue further research.
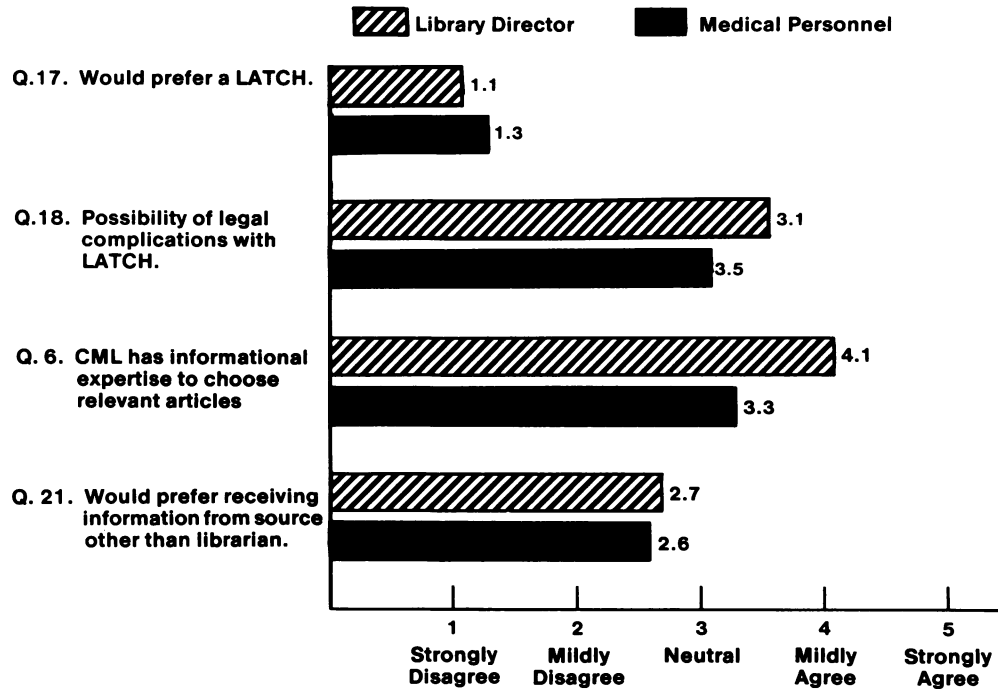
Ethical issues

Significant differences arose in response to the question concerning the librarian's right to choose relevant articles for review with respect to professional informational expertise. Library directors showed support (mean of 4.1) for the decisions of the librarian (question 6), while the medical personnel response was neutral (mean of 3.3). Directors expressed the thought that most physicians do not believe librarians have the subject knowledge base to credit them with information selection. Library directors indicated that a strong amount of trust was needed between the librarian and the physician to develop a successful relationship. When asked if members of the health care team would prefer receiving information from another source other than the librarian (question 21), both medical personnel and library directors listed the librarian as the preferred source of information. Medical personnel reiterated that the librarian has the expertise to access the body of knowledge; however, final judgment of relevancy should be reserved for the clinician alone.

Neither group felt that the rights of the patient were violated by the inclusion of an additional member to the team. Protocol should be established initially with the proper introduction of the CML to the patient and a brief explanation relating the librarian's responsibilities.

LATCH drew negative responses from both groups (questions 17 and 18). Library directors (mean of 1.1) cited this practice as negating any form of library user interaction; medical personnel (mean of 1.3) were concerned about multiple conflicting viewpoints concerning patient care. Since the medical chart is a legal document, problems could arise if records were subpoenaed for a malpractice suit and decisions for treatment differed from research as documented in the current literature. Several physicians suggested articles be placed in a designated area for easy team member accessibility or be attached to the outside of the chart for definite removal upon discharge.

Figure 4
Ethical issues

| | Library Director | | Medical Personnel |

Q.17. Would prefer a LATCH.

Library Director 1.1
Medical Personnel 1.3

Q.18. Possibility of legal complications with LATCH.

Library Director 3.1
Medical Personnel 3.5

Q. 6. CML has informational expertise to choose relevant articles

Library Director 4.1
Medical Personnel 3.3

Q. 21. Would prefer receiving information from source other than librarian.

Library Director 2.7
Medical Personnel 2.6

| 1 | 2 | 3 | 4 | 5 |
| Strongly Disagree | Mildly Disagree | Neutral | Mildly Agree | Strongly Agree |

Desirability of CML extensions

Significant differences occurred between the responses of the two groups to the items relating to end-user searching. When asked if literature-searching techniques should be taught to medical students, residents, and faculty (question 12), library directors responded with very strong agreement (mean of 4.8). A related question presented to the clinicians with regard to their interest in learning how to do their own literature searching showed less agreement (mean of 4.1). The general consensus of library directors was that while end-user searching does not provide as much depth as does a search by a CML, a choice between the two would favor the librarian in the library teaching through various forms of bibliographic instruction versus spending time on rounds. Further, success in any end-user system depends on the software's friendliness and the searcher's proficiency.

A surgery department head indicated some frustration in being unable to retrieve relevant documents while searching. The clinician stated that even though expert in the diagnosis and treatment of disease states, accessing the necessary current literature to satisfy informational needs might be better accomplished by the librarian trained in methods of information retrieval. Bibliographic instruction, therefore, is a necessity for proficiency among end-user searchers; librarians must teach these classes.

Clinical department heads concluded that residents and students should be encouraged to do their own searching. Nevertheless, the intensity and volume of material for which they are responsible in the medical educational curriculum may prohibit in-depth searching. Other comments noted that using controlled MeSH vocabulary in formulating search strategy components gave students an additional process to learn. Short lecture demonstrations were suggested for teaching end-user systems, while detailed aspects of literature searching techniques should be conducted by the trained search analyst.

Library directors predicted automation would sprout electronic work stations on the ward floors, with the CML being replaced by automated means. Interestingly, in this study only six (8%) of the clinicians said that they had access to database searching on hospital floors, and some stated that there was not room at the stations for another terminal.

Cost considerations

The greatest significance in attitudinal differences emerged in the area of funding for a CML program (Figure 6). Library directors strongly agreed (mean of 4.3) that departments in medical specialties should

Figure 5
Desirability of CML extensions
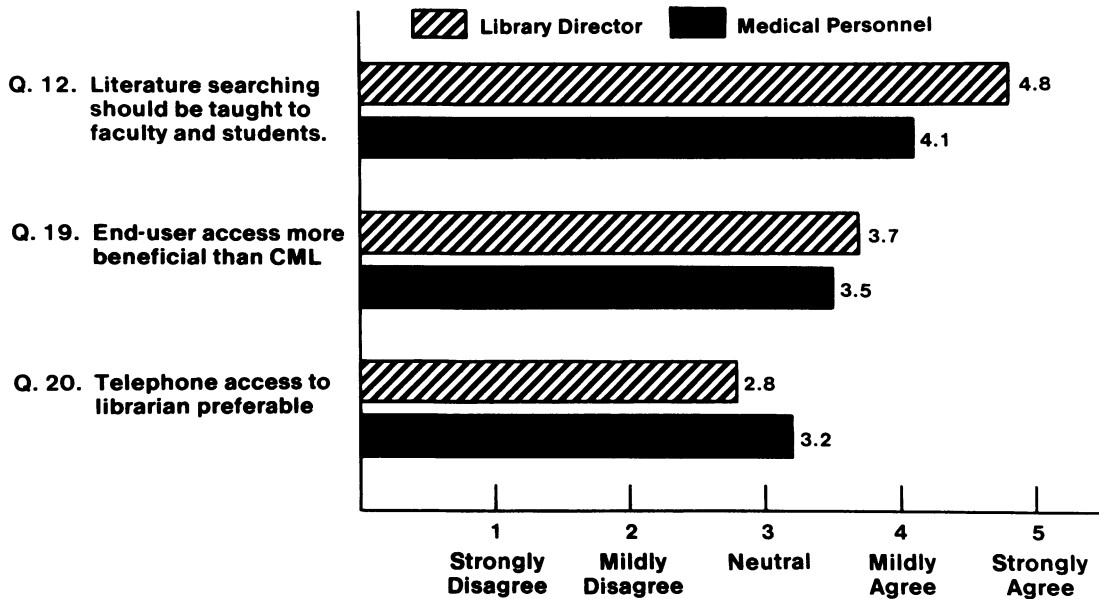
consider paying a portion of the costs for CML services (question 22), while medical personnel responded with mild disagreement (mean of 2.7). Further, library directors mildly disagreed (mean of 1.8) with the item that designated the library in total financial support of the CML (question 23), while clinical personnel were generally neutral (mean of 3.4). Re-

sponses to whether special outreach services should be factored into educational tuition (question 24) ranged from neutral (mean of 3.0) for medical personnel to mild disagreement (mean of 2.2) for library directors. Several department heads cited the hospital budget as the proper appropriating source.

Library directors eagerly offered negative com-

Figure 6
Cost considerations
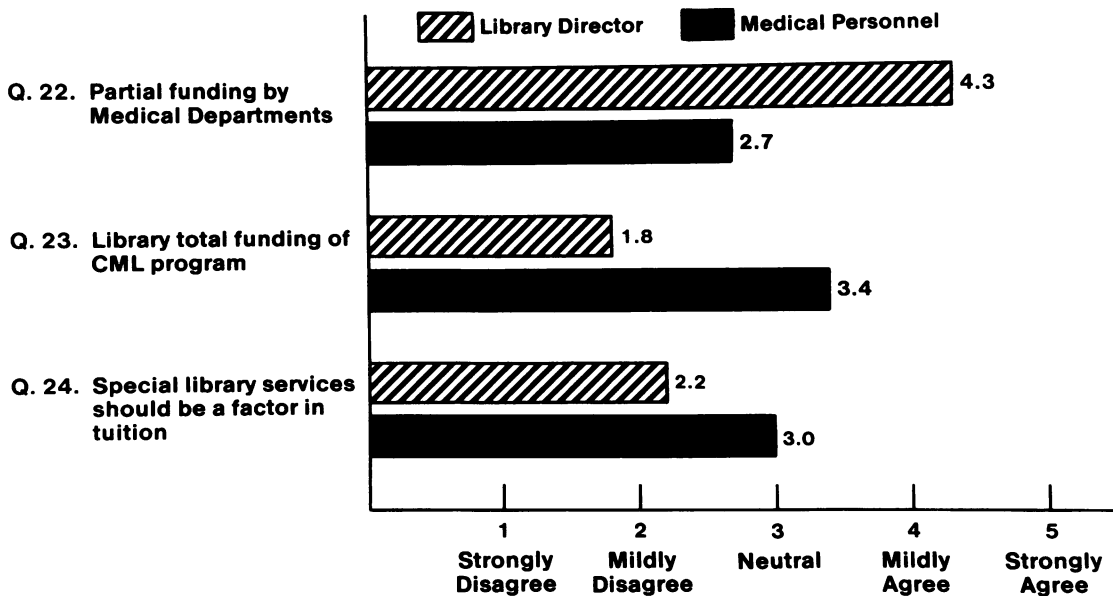
ments about budgeting for a CML. The CML was viewed as a luxury reference service that serves only a few departments; it is fine in theory and in graduate library school, but not in the "real world" of diminishing budgets. The CML program was cited as being labor-intensive, time-consuming, and a "fraud" unless there is shared support from the benefiting departments. Medical personnel seemed uncertain about cost allocations. They were more concerned about how to pay for the service, rather than who should pay for it. Clinical departments that previously had a CML noted that it was a rewarding educational experience for all concerned. Medical personnel were uncertain about the library funding an entire program and questioned what their department's responsibility toward costs might be.

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SUMMARY AND CONCLUSIONS

The unicorn is frequently depicted as a mythical animal that symbolizes purity, gentleness, and concern for the individual. It is often compared to the strong and aggressive lion, suggesting rivalry between the two beasts. Is the CML, like other such personalized library services, a unicorn? Are automated end-user methods the lion? Do they compete or coexist?

Medicine teaches excellent patient care, with the health care team as the sole provider of that service. Information science teaches expertise in the access and dissemination of the knowledge, with the librarian as the primary source of that requirement. Therefore, why shouldn't the two unite, with end-user modes as a gateway?

In the information age of the 1990s, some librarians perceive their roles as being more didactic; end-user searching finds the librarian instructing clients in computer hardware and software operations. Kolner et al. cited impediments to library instructional programs; these included negative perceptions by students due to the medical faculty members not stressing the relevance of information-seeking skills, and the lack of time to learn information retrieval due to the extensiveness of the medical educational curriculum [18]. Librarians need to find ways to enhance the student's desire to use the resources available

through the library. The CML in the teaching role could accomplish this.

Structured teaching is a relatively new aspect of the librarian's job; with the advent of a multitude of new systems, the creation of formal instructional programs in the library has become necessary. Moore discovered that librarians can be uncomfortable serving as teachers; continuing education courses are necessary to augment this new role [19]. Graduate library schools should include specific courses to help future librarians learn to convey their basic skills to others.

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Teaching health professionals to retrieve information on their own allows the librarian to reserve expert skills for more detailed queries. The CML could serve to distinguish between questions searchable by students and those needing mediated computer literature searching; user/librarian interaction is enhanced by personal contact. Subsequently, when presenting information for the team to review, teaching can continue as the CML relates methods of information retrieval and sources consulted to accomplish stated goals.

End-user searching will continue to grow, and many individuals will be satisfied with the quality of their information retrieval. Nevertheless, librarians observe users who are content even though their skills do not afford maximum use of the system. This can be frustrating to the health sciences librarian; herein lies a responsibility to discover better ways to instruct clients.

Efficient use of any automated system depends upon educational programs offered by the library. In this study, only six medical school clinical department heads reported an awareness of the availability of database searching through a user-friendly system. Also, AAHSLD statistics listed the mean number of educational programs offered by health sciences libraries at fifty-six for 1987-1988, approximately one class offering per week [20]. In large medical schools, more classes are needed to accommodate all students in graduate education studies. If libraries are planning to promote end-user searching, then librarians have a responsibility to educate their clientele.

Medical educators recognize the importance of the health sciences library to the overall learning experiences of the student. *Physicians for the Twenty-First Century: The GPEP Report* identified medical infor-

mation science skills as fundamental to the education of new physicians and stated that

on a selective basis, the student uses computer tools in areas of individual interest, such as online bibliographic searches and generation of new files for personal research and learning [21].

The report also recommended the reduction of time scheduled in class and lecture and encouraged more independent learning for the student. The CML could help in accomplishing this objective through cognizance and familiarity to the health care team.

As evidenced by this research, the medical community would more than welcome the presence of a CML; however, such a labor-intensive and, consequently, expensive service needs careful evaluation. Since libraries are providing the service, it is their responsibility to state the salient points of a CML program to the various clinical department heads who might benefit from these services. An open communication between these two groups and the consideration of a shared funding agreement could equalize budgeting to make the CML program a viable commodity in the health care setting.

In an era of shrinking budgets, the question "Who pays for what?" is the norm rather than the exception. Clinical departments that desire CML services need to have cost factors explained. Before a program could be implemented, library directors must provide a detailed cost analysis to medical personnel interested in this service. The sample studied here was receptive to considering cost sharing, but before a program is begun, guidelines determining responsibility for funding should be formulated.

Communication and interactive decision making is the key to distributing monies for these types of programs. In this study, medical personnel desired a CML working with them in the quest for current information and were willing to fund portions of a program. Library directors may find it necessary to initiate detailed proposals outlining salary figures, average online search costs, clerical costs, and CML benefits to the health care team. In addition, clinicians need to delineate individual student needs and how much their departments are willing to fund on an ongoing basis as an adjunct to the medical education process. Clear objectives and purposes of a CML program should be outlined in detail with a cost analysis for each group.

Librarians must market the library and its visible accomplishments. Libraries need to aggressively negotiate funding with hospital administrators for library services and attend decision-making meetings [22]. An effective CML on rounds, at conferences, on hospital floors, and in the library can truly be referred to as the information specialist—trained to address the informational needs of other health care professionals. If libraries can deliver what they promise, the library's worth to medical centers will be realized, and budget approval for programs could consistently be a positive consideration.

The lion (automated end-user methods) and the unicorn (personalized library services) exist in an era when every service is competing with others for attention and funding. Increased informational needs assure the presence of end-user provisions in the future; however, the question remains as to whether diminishing budgets will force a choice between direct patron service or self-service. The degree of library responsibility for personalized services to various medical specialities is a topic that merits more discussion than it has received. The serene and noble unicorn was the only mythical animal in the *Physiologus* that survived through the Renaissance [23]. Can the lion and unicorn coexist, or is the CML indeed the last unicorn?

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FROM THE *BULLETIN*—25 YEARS AGO

Topics in library technology: copying techniques

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The Xerox 914 control mechanism is designed for making one through fifteen copies. At 5¢ a copy, fifteen copies would cost 75¢. The implication of the 914, it seems to me, is that fifteen copies is the break-even point between copying and offset printing. If sixteen or more copies are required, it should be more economical to use a printing press. If 75¢ is to be expanded, an offset master can be prepared on the 914 or other equipment, depending on the quality required, and the printing press put to work.

From this point of view, one can understand the impact of the new Xerox office model 2400, with its production capacity of 2,400 cycles an hour, 40 units a minute. It is suggested that this equipment considerably extends the break-even point between copying and printing beyond the 15 to 20 copies of the 914 model. What can one say in the face of this technological advance, except, perhaps, "Buy Xerox and sell A.B. Dick and Addressograph-Multigraph."

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