

Access to Knowledge-Based Health Information in Manitoba

A Position Paper
by the
Manitoba Health Libraries Association

Manitoba Health Libraries Association
Box 232
Winnipeg, MB R3M 3S7

February 1998

Table of Contents

Executive Summary & Recommendations	1
Part 1. Importance of Current Health Sciences Information	3
Quality information = quality care	3
Avoiding malpractice litigation	4
Canadian accreditation standards requirements	4
Lifelong learning essential	5
Information needs of health care consumers	5
Part 2. Access to health sciences information in Manitoba	6
Medical Library Extension Service	6
WHINET	7
MHINET	7
Library networks	7
Part 3. Continuing problems in the provision of health care information	8
Deficiencies in the resource base	9
Inequalities in access provision	9
Fragmentation of health care information delivery	10
Gaps in service	10
Financial obstacles	11
Lack of time	11
Part 4. Task Force Recommendations	12
References	13

Executive Summary

The Manitoba government has shown leadership and foresight in the development of a "health information network that is one of the most advanced in the world" (Manitoba Health, 1996). As planned the system will provide patient-related and statistical, *data-based*, information that is essential for effective health planning and decision-making. The other half of such a network is the provision of *knowledge-based* information—printed or electronic texts and other media comprising the body of knowledge in the health sciences. As the volume and complexity of both kinds of health information continue to grow exponentially, all participants in the health care system—consumers, clinicians, administrators and researchers—require easy, effective and facilitated access to these rich resources.

However, significant deficiencies and inequities exist in the availability of *knowledge-based* information to health care providers and consumers in Manitoba. The lack of sufficient health information specialists and the uneven distribution of library resources and services, particularly in rural and northern areas, lead to information gaps and unacceptable service delays. Health libraries vary greatly in collection quality, staffing, and technological capability. The emerging trend towards evidence-based practice has intensified the information needs of clinicians and administrators. Health care consumers want a greater role in decisions about their health care. All have faced various obstacles in finding the resources they need. Inefficiencies and poorer client outcomes are the result.

There is a marked need for improved province-wide coordination of health libraries and information agencies. Unfortunately, progress is hampered by the current diversity of mandate, governance and funding, and inadequate and uneven technological development. A well-planned and coordinated network of information resources and library services is indispensable for effective quality health care.

In response to the growing problem of providing proper access to the health knowledge base for all Manitobans, the Manitoba Health Libraries Association (MHLA) has prepared this position paper as a means to further discussion and debate. MHLA is committed to the continued provision of accurate and timely knowledge-based information for Manitoba's health professionals and consumers. The following recommendations are intended to contribute to the building of a comprehensive provincial health information network:

RECOMMENDATIONS

1. *That the existing resource base for the provision of knowledge-based health information services in Manitoba be reviewed and evaluated to identify those areas in which the needs of health care providers and consumers are not being adequately served.*
2. *That an appropriate agency with provincially mandated accountability and responsibility be designated and funded to develop the resources, systems and services required to ensure easy, equitable and facilitated access to knowledge-based health information.*
3. *That the design of provincial networks and technological infrastructures include provision for supporting and facilitating access to knowledge-based health information.*

The implementation of these recommendations would result in:

- ❖ "One-stop" access and swift response to health information requests regardless of location, professional affiliation, budget, facility size, or the format, content or depth of information required.
- ❖ Cost-effective, efficient organization of health library services in Manitoba with effective links to national and international information networks.
- ❖ Province-wide coordination and systematic development of knowledge-based health information resources and the required technological infrastructure.
- ❖ The introduction of cooperative licensing agreements for province-wide access to commercially produced health information resources, and the appropriate copyright clearances required to facilitate the delivery, distribution and dissemination of information.

Members of the Task Force

Sharon Allentuck
Library
Misericordia General Hospital

Judy Inglis
J.W. Crane Memorial Library
Deer Lodge Centre

Bill Poluha
Neil John Maclean Health Sciences Library
University of Manitoba

Mark Rabnett
Carolyn Sifton-Helene Fuld Library
St. Boniface General Hospital

PART 1. Importance of Current Health Sciences Information

The importance of easy and effective access to health information resources and services has been clearly demonstrated in a number of recent studies. Health libraries play an important role in health facility administration, clinical decision making, patient care, professional development, and education.

- Quality information=quality care. Improved quality and reduced costs result when information provided by a health sciences library is applied to patient care.
- In addition to enhancing the quality of care, searching the literature before treatment is a useful, strategic move in avoiding malpractice litigation.
- Canadian accreditation standards for health services require the provision of authoritative and up-to-date print and non-print information resources to facilitate clinical and managerial decision making.
- Lifelong learning is essential to the maintenance of continuing professional expertise as well as to licensing and certification requirements.
- Health care consumers are demanding more information.

Quality information = quality care. Improved quality and reduced costs when information provided by a health sciences library is applied to patient care.

Online searching of MEDLINE and other health sciences databases by clinicians is rapidly spreading. In a survey of clinical users of MEDLINE, reasons given for their preference for doing their own searches included better subject familiarity than an intermediary performing the search, getting the results faster, and enjoying doing their own searching (Wallingford, Selinger, Humphries, & Seigel, 1990). Three recent studies, however, have shown that searches done by clinicians retrieved just over half as many relevant citations as searches by librarians on the same topics (McKibbon, Haynes, Walker Dilks, et al., 1990; Hersh & Hickam, 1992; Haynes, Johnston, & McKibbon, 1993).

Improved access to the medical literature provides important benefits for clinicians and their patients. Covell and colleagues found that internists had two questions for every three patients they saw, but that 70% of these questions went unanswered (Covell, Uman, & Manning, 1985). Osherhoff and colleagues found that about a quarter of the questions arising in patient care in a teaching hospital could be addressed by a MEDLINE search, suggesting that MEDLINE could have a significant impact on patient care (Osherhoff, Forsythe, Buchanan, Bankowitz, Blumenfield, & Miller, 1991). A New Zealand survey of 372 physicians working in regional hospitals found that all respondents valued and used their local medical library regularly to assist with patient care (Burton, 1995).

In a Rochester, New York study Marshall (1992) measured the impact of physicians' use of the hospital library on clinical decision making. 80% of respondents handled some aspect of patient care differently after receiving information from the library. Physicians rated the information provided by the library more highly than that received from other information sources, including diagnostic imaging, laboratory tests and discussions with colleagues. They also reported changes in patient care management which significantly affected costs. Nearly all (96.5%) of the physicians said that information provided by their hospital librarians contributed to better-informed clinical decisions. These findings confirm a previous study of physicians in Chicago (King, 1987) in which 95% of the respondents said that information from the library contributed to higher quality care for their patients.

A study at the Ottawa General Hospital Library on the impact of literature searching on patient care (Michaud, et al., 1996) found that 52% of physicians said that searches reduced medical costs. 68% of physicians said that searches helped them select the most appropriate therapy or expanded their current knowledge on a subject. All physicians surveyed felt that the literature searches had an impact on their clinical practice.

A study by Klein (1994) demonstrated that information for patient care retrieved by librarians in a timely manner resulted in lower costs and shorter lengths of stay in hospital.

Searching the literature before treatment is a useful, strategic move in avoiding malpractice litigation.

Physicians are being held responsible for searching the current literature to seek, find, and apply the latest medical information when treating patients. The high costs of malpractice suits in today's more litigious health care environment make using current authoritative literature an inexpensive defensive measure (Curran, 1986).

Canadian accreditation standards require the provision of authoritative and up-to-date print and non-print information resources to facilitate clinical and managerial decision making.

The Canadian Council on Health Services Accreditation recently revised its standards (CCHSA, 1994). Libraries are seen as team-players in the coordination of organization-wide information management. Information systems must be managed "to facilitate clinical and managerial decision making throughout the organization."

Libraries provide *knowledge-based information*, that is, published, documented or electronically stored information that is quality filtered or peer reviewed, and based on accepted knowledge or current research. This is what differentiates library services from facility-based data obtained through management information systems or patient records. The standards published by the Canadian Health

Libraries Association (CHLA, 1995) draw upon the work of the Canadian Council on Health Services Accreditation. Health sciences libraries that put these standards into practice contribute to their institutions' quality assurance programs and play a key role in a coordinated Information Management program (Martin, 1996; Palmer, 1991).

The information resources and services provided by libraries support not only clinical care, but can also assist in indicator development and program evaluation, i.e., informational support of the overall accreditation effort.

Lifelong learning is essential to the maintenance of continuing professional expertise as well as to licensing and certification requirements.

Effective continuing education means that the results of medical research are more quickly applied to clinical practice (Manning, 1992). Growing emphasis is being placed on literature-based information tailored to individual clinical practice needs and on the use of electronic technology (McGowan, 1995). It has been estimated that to keep up with the health care literature one would have to read 6,000 articles a day. An effort to find, evaluate, and synthesize appropriate scientific articles for a particular medical topic requires special expertise (Graham, 1995). Most practitioners lack the tools, resources and time for such an undertaking.

The majority of direct patient care is provided by nurses, whose purpose is to improve the level of health and functioning of patients. Their ability to accomplish this task is influenced by how easily they can access recent information and research findings to apply to their practice. Nurses need accurate, concise reference sources in either printed material or computerized databases (Blythe & Royle, 1993; Casey, 1997). Mechanisms to remain competent in the face of advancing knowledge, techniques and methodologies must be in place even in the most isolated communities.

Health care consumers are demanding more information.

Manitobans need and deserve the best health care information. "People need information in order to be able to control their own lives. Ensuring that patients and their families have clear and accurate information about available health services and about the nature of common medical interventions is a key part of Manitoba's strategy to empower consumers" (Manitoba Health, 1992).

In a recent study assessing consumer health information needs in a community hospital, 91% of physicians said they would refer patients to a hospital-operated consumer health library, 88% said they would request materials from the consumer health library to give to their patients, and 90% said they would view such a service as a benefit for the hospital physicians. A majority of consumer respondents (69%) considered getting appropriate health information a problem, and 92% indicated they would use a consumer health library (Phillips, 1994).

“The most promising approach to the present health care crisis lies in educating consumers to improve their self care practices and reduce health risk factors . . . It bears repeating that educated, well-informed, and empowered consumers can do more for improving [health] than a massive investment in buildings and expensive medical technology” (Rees, 1993).

“Information should be widely available in a format that educates and informs the public and provides an incentive to be more active in the administration of care” (National Forum on Health, 1997).

PART 2. Access to health sciences information in Manitoba: past and present

For over 20 years the member institutions of the Manitoba Health Libraries Association have striven to improve access to information for health care professionals and the general public. Health libraries in this province have a long tradition of cooperation and collaboration. Resource sharing, document delivery services, reciprocal borrowing privileges, union catalogues of locally held journals, and recognized collection responsibilities provide access to resources far beyond the walls of an individual health facility.

While students and health care professionals across the province greatly benefit from these largely voluntary efforts, the work of libraries is not always highly visible to planners, administrators or funding bodies. Historical and geographical circumstances combined with a lack of necessary resources have prevented more integrated, coordinated and technologically progressive developments in Manitoba. Better coordination of health sciences information resources has also been hampered by the diversity of mandate, governance and funding amongst libraries. Nevertheless, MHLA institutions have cooperated effectively over the years. Important and productive programs have been developed to provide services that are required as part of the total health care strategy of the province.

Medical Library Extension Service

One such development was the establishment of the Medical Library Extension Service at the University of Manitoba Medical Library. In 1977 the College of Physicians and Surgeons of Manitoba provided funding for the hiring of a professional librarian to offer reference, literature searching and document delivery services to rural Manitoba physicians. These and other special services were offered at no charge and were heavily used. In 1991/1992, for example, the Extension Librarian performed 326 literature searches and supplied 2,884 photocopied articles.

Budgetary constraints led the College to withdraw funding for the extension position in 1994, and so the Medical Library was forced to begin charging for its outreach services. The Info-Rx program replaced the Extension Service. Info-Rx offers the same services on a non-profit, cost recovery basis, and is directed at the entire health care community, business, governments, researchers and the general public. Although the quality of the service has not declined, the imposition of charges has led to a drastic

reduction in use statistics. For example, in 1994/1995 the total number of literature searches dropped by 63% to 120. In the same period 500 photocopied articles were supplied, an 83% decline..

WHINET

In 1980 the Manitoba Health Libraries Association (MHLA) established a Task Force on Shared Services. Its mandate was to review the provision of health information in Manitoba and investigate ways in which this could be improved and expanded through the development of cooperative programs and shared services. The Task Force recommended the recruitment of an area coordinator who would maintain and develop existing shared services, identify and initiate new programs in response to members' needs, and provide back-up services and technical assistance for smaller libraries with few resources. For an 18-month period in 1983-1984 the Winnipeg Foundation funded a demonstration project called the Winnipeg Health Information Network (WHINET), whose objective was to help improve and expand the provision of library services to Winnipeg-area health care facilities. However, permanent funding could not be secured and the project was closed in 1985. Recognition of the need for this service by its former users led to the development of the Manitoba Health Information Network service, which expanded the concept province-wide.

MHINET

In 1990 the Manitoba Health Information Network (MHINET) was set up. MHINET began as a collaborative project of the Manitoba Association of Registered Nurses, Manitoba Health Organizations and the Health Sciences Centre. MHINET's scope was wider than the WHINET demonstration project, extending services to all health professionals in rural Manitoba. When financial constraints occasioned the withdrawal of funding by MHO, MHINET narrowed its focus to nurses only. Staffed by a full-time professional librarian and a part-time library technician, MHINET is based at the Neil John Maclean Health Sciences Library. It is currently funded entirely by the Manitoba Association of Registered Nurses (MARN).

MHINET successfully provides a full range of library services to nursing professionals in Manitoba. The service includes consultation, computerized literature searches, reference, current awareness, specialized bibliographies, and book and video loans free of charge to MARN members. The primary clientele is northern, rural and urban nurses who do not have access to on-site library services. Other health care professionals may access MHINET on a fee-for-service basis.

Library networks

Over the years efforts have been made to take advantage of technological developments to encourage automated library networking among post-secondary and research-oriented libraries in Manitoba. In February 1990, shortly before the implementation of the University of Manitoba Libraries' first automated system, the Ad Hoc Group on Resource Sharing produced a report entitled *Networking Libraries in Manitoba*. This committee of librarians recommended closer cooperation among Manitoba libraries and the development of a province-wide network centred on the automated online library system, BRIDGE, then being installed at the University of Manitoba and St. Boniface General Hospital.

In 1994 and 1995 directors of post-secondary libraries met to discuss forming a consortium to further a joint library automation project to replace the by then obsolete BRIDGE system. Consensus could not be reached, and the University of Manitoba Libraries proceeded to purchase a new automated system. BISON was installed in July 1995 and serves the two teaching hospitals as well as the University.

The following year, 1996, saw a proposal from the University of Manitoba Libraries to set up a common Internet gateway for the identification of available resources and services of Manitoba's post-secondary educational libraries and teaching hospital libraries. Called the Manitoba Academic Libraries Web (MALW), the project — assuming sufficient funding is provided — should make some progress in improving the delivery of health care information in the province.

The implementation of DOCLINE in 1998 marked an important watershed in the provision of health sciences information in Manitoba. Developed by the National Library of Medicine in Washington, DOCLINE is a system that uses the Internet for the electronic routing of requests for journal articles. It greatly reduces staff time and effort. DOCLINE represents a significant improvement in the information services offered by MHLA member institutions.

In a step beyond technological networking, the University of Manitoba Libraries also negotiated agreements with Winnipeg's two teaching hospitals, which resulted in the 1996 consolidation of Health Sciences Centre Library Services with the University's Medical Library in the newly built Brodie Centre. The consolidation of the Carolyn Sifton-Helene Fuld Library at St. Boniface General Hospital was planned for 1998. The University's newly formed Neil John Maclean Health Sciences Library is Manitoba's major resource for health information.

PART 3. Continuing problems in the provision of health care information

Despite the above-mentioned initiatives, health care professionals in Manitoba, especially those who are not affiliated with the University of Manitoba, continue to face problems in gaining equitable and cost-effective access to library services. The most urgent problems are the following:

1. Deficiencies in the resource base.
2. Inequalities in access provision.
3. Fragmentation of health care information delivery.
4. Gaps in service.
5. Financial obstacles.
6. Lack of time to develop the skills necessary for effective information retrieval.

1. Deficiencies in the resource base

Deficiencies in the resource base often hinder health care professionals in their search for information. Resources easily available in some libraries are absent in others. University of Manitoba faculty working in teaching hospitals, for example, have ready access free of charge to a variety of computerized resources including NETDOC, the University's network of bibliographic and reference databases providing comprehensive coverage of the published literature. This valuable resource is not available to staff working at Winnipeg's community hospitals.

Winnipeg community hospital libraries and other health sciences libraries are small and often understaffed. Their budgets have been cut. Staff hours are not always regular. These libraries vary greatly in collection quality, staff expertise, and technological capability. There is no overall coordination of health library services in Winnipeg or in greater Manitoba.

Consumer health information for the general public is scattered among many libraries. With a few exceptions, such as the Children's Hospital and Deer Lodge's Reading Room, there is a dearth of organized consumer health information in Manitoba.

Many individual health care professionals subscribe — at their own expense or with departmental funds — to a multitude of journals, CD-ROM databases, and online or Internet services. Much of this expense could be curtailed through the centralized provision of access through “the virtual library.”

2. Inequalities in access provision

Rural physicians are at a definite disadvantage when it comes to obtaining vital information to support clinical decisions (Dee & Blazek, 1993; Dorsch, 1997; Pifalo, 1994). Physiotherapists, psychologists, social workers, and family physicians in clinics (whether they work in an urban or a rural environment) have little or no access to health sciences information on a regular basis without paying user fees. In many libraries distinctions in academic status, institutional affiliation or the lack thereof determine levels of service, hours of access and whether charges are applied.

A nurse working in Flin Flon may request a free literature search through MHINET and have articles sent at 20 cents a page. A physician in the same location using the Neil John Maclean Health Sciences Library's *Info-Rx* must pay set fee of \$30 or more for a literature search and an additional charge for each article. Some libraries bring in locally available materials not held in their collections at no charge, while charging back to users the full cost of out-of-province items. Others apply a smaller fixed charge for every document delivery item, no matter where it comes from.

There are vast differences in the size and flexibility of health library acquisitions budgets across the province. Libraries with relatively healthy book budgets, for example, are able to provide their clients with basic medical and nursing textbooks and journals. Staff at less fortunate institutions have to make do with out-of-date materials, if they can find what they want at all. Although interlibrary loan and document delivery services go a long way towards coping with this problem, health care professionals need basic “bench tools” on site for quick consultation. What many resort to is purchasing materials on their departmental budgets. Textbooks and journals obtained this way are of course available only to a

few and often disappear since they are largely uncontrolled. Students and others who might be interested in these items have no knowledge of or access to them.

3. Fragmentation of health care information delivery

Given the number and geographic arrangement of health care facilities in Manitoba, discrepancies in facility size and staffing levels, and the different information requirements in each, it is neither possible nor feasible to establish library services of equal quality in each separate facility. A new concept of regional service must evolve, emphasizing access and delivery through policy coordination, shared technology and improved cooperation.

In Manitoba there are many scattered access points for health sciences information. Library regulations, hours of business, membership policies, etc. vary significantly. This can be confusing to clients, who must already deal with different collection qualities and diverse service standards. Recognizing this problem, health sciences libraries have attempted to cooperate in several areas. The Manitoba Health Libraries Association maintains a union list of periodicals and cooperates extensively in sharing resources through free and unobstructed interlibrary loan and document delivery. MHLA member institutions are in the process of implementing DOCLINE, an automated document delivery service provided by the National Library of Medicine. The *Union List of Selected Serials* is published annually with regular updates. A companion audiovisual catalogue is also produced through the contributions of MHLA members.

However, despite this spirit of cooperation, resources are spread too thinly; and facilities, policies and standards vary too much. Automated systems and many in-house databases are incompatible, technological capability and resources vary greatly from library to library; collection development, document delivery and other policies are not harmonized; staff job descriptions, position qualifications and training levels are dissimilar.

The previously mentioned departmental collections in some health care facilities hold rich resources that are largely uncatalogued and inaccessible to other health care professionals or the general public, thus adding to the perceived fragmentation of service delivery.

4. Gaps in service

Information systems workers, library technicians, librarians: it is often difficult for health care professionals or health care consumers to know whom to consult for assistance in obtaining the information they require. Professional reference librarians are not always available to meet the needs of library users. Some library technicians and other library staff are qualified to do reference work; others are not. Service is spotty and not highly organized. The overall lack of coordination of Manitoba libraries creates gaps in service of this kind.

Inconsistent and sometimes conflicting policies and procedures can hinder the process of acquiring information. Typical of this problem are the discrepancies in interlibrary loan/document delivery practices from institution to institution.

5. Financial obstacles

Libraries often lack the acquisitions budgets, staff, technological resources and professional development funds to provide continuously improving, state-of-the-art services. As mentioned above, fee-based services in some libraries create barriers to information. Without provincial coordination, current budgeting for health library services can only perpetuate the fragmented state of health care information delivery.

6. Lack of time to develop the skills necessary for effective information retrieval

Lack of time to develop the skills necessary for effective information retrieval makes it difficult for health care professionals to make the best use of resources such as computerized databases or the Internet. (Dee & Blazek, 1993). They rely on a dwindling stock of well-trained information professionals: librarians who provide specialized services that meet specific information needs of their clients.

With the current emphasis on evidence-based medicine (Michaud, McGowan, Van der Jagt, Dugan & Tugwell, 1996), timely and effective access to current information is extremely important. Practitioners who do their own database searching often find that their efforts are costly and time-consuming. They do not necessarily retrieve the most recent and the most accurate information, and worse, may not even be aware of a problem (McKibbon, Wilczynski, Hayward, Walker-Dilks & Haynes, 1995). Moreover, health care professionals are confronted with the daunting proliferation of new technologies and information resources, which is but an extension of the more general increase in the rate of scientific knowledge. Libraries and librarians represent a cost-effective institutional investment in the creation of an accessible collection of knowledge and services to meet the information needs of their clients.

PART 4. Task Force Recommendations

- 1. That the existing resource base for the provision of knowledge-based health information services in Manitoba be reviewed and evaluated to identify those areas in which the needs of health care providers and consumers are not being adequately served.*
- 2. That an appropriate agency with provincially mandated accountability and responsibility be designated and funded to develop the resources, systems and services required to ensure easy, equitable and facilitated access to knowledge-based health information.*
- 3. That the design of provincial networks and technological infrastructures include provision for supporting and facilitating access to knowledge-based health information.*

The implementation of these recommendations would result in:

- ❖ “One-stop” access and swift response to health information requests regardless of location, professional affiliation, budget, facility size, or the format, content or depth of information required.
- ❖ Cost-effective, efficient organization of health library services in Manitoba with effective links to national and international information networks.
- ❖ Province-wide coordination and systematic development of knowledge-based health information resources and the required technological infrastructure.
- ❖ The introduction of cooperative licensing agreements for province-wide access to commercially produced health information resources, and the appropriate copyright clearances required to facilitate the delivery, distribution and dissemination of information.

REFERENCES

- Blythe, J., & Royle, J.A. (1993). Assessing nurses' information needs in the work environment. Bulletin of the Medical Library Association, 81(4), 433-435.
- Burton, J.E. (1995). The impact of medical libraries and literature on patient care in New Zealand. Bulletin of the Medical Library Association, 83(4), 425-430.
- Canadian Council on Health Services Accreditation. (1994). Standards for acute care organizations: A client-centred approach - 1995. Ottawa: Author.
- Canadian Health Libraries Association. (1995). Standards for library & information services in Canadian healthcare facilities (2nd ed.). Toronto: Author.
- Casey, L. (1997). Are you a knowledgeable doer?: Nursing Standard launches a major campaign to improve access to libraries. Nursing Standard, 6(12), 24-29.
- Covell, D.G., Uman, G.C. & Manning, P.R. (1985). Information needs in office practice: Are they being met? Annals of Internal Medicine, 103(4), 596-599.
- Curran, W. (1986). Informed consent in malpractice cases: A turn toward reality. New England Journal of Medicine, 314, 430.
- Dee, C., & Blazek, R. (1993). Information needs of the rural physician: A descriptive study. Bulletin of the Medical Library Association, 81(3), 259-264.
- Dorsch, J.L. (1997). Equalizing rural health professionals' access to information: Lessons from a follow-up outreach project. Bulletin of the Medical Library Association, 85(1), 18-26.
- Dorsch, J.L., & Pifalo, V. (1997). Information needs of rural health professionals: A retrospective study. Bulletin of the Medical Library Association, 85(4), 341-347.
- Gorman, P.N. (1995). Information needs of physicians. Journal of the American Society for Information Science, 46(10), 729-736.
- Graham, N.O. (Ed.). (1995). Quality in health care: Theory, application, and evolution. Gaithersburg, MD: Aspen Publishers, 174.
- Haynes, R.B., Johnston, M.E., & McKibbin, K.A. (1993, May 11). A program to enhance clinical use of MEDLINE: A randomized controlled trial [39 paragraphs]. The Online Journal of Current Clinical Trials [On-line serial]. Available: Doc. No. 56.
- Hersh, W.R., & Hickman, D.H. (1992). A comparison of retrieval effectiveness for three methods of indexing medical literature. American Journal of the Medical Sciences, 303(5), 292-300.

- King, D.N. (1987). The contribution of hospital library information services to clinical care: A study in eight hospitals. Bulletin of the Medical Library Association, 75(4), 291-301.
- Klein, M.S., Ross, F.V., Adams, D.L., & Gilbert, C.M. (1994). Effect of online literature searching on length of stay and patient care costs. Academic Medicine, 69(6), 489-495.
- Manitoba Health. (1996). Next steps: Pathway to a healthy Manitoba. Winnipeg: Manitoba Health, 23.
- Manitoba Health. (1992). Quality health for Manitobans: The action plan. Winnipeg: Manitoba Health.
- Manning, P.R. (1992, Sep 2). Lifelong learning tailored to individual clinical practice. JAMA, 268(9), 1135-1136.
- Marshall, J.G. (1992). The impact of the hospital library on clinical decision making: The Rochester study. Bulletin of the Medical Library Association, 80(2), 169-178.
- Martin, C. (1996). CCHSA standards and the accreditation process from an information services perspective. Bibliotheca Medica Canadiana, 17(4), 131-135.
- McGowan, J.J. (1995). The role of health sciences librarians in the teaching and retention of the knowledge, skills, and attitudes of lifelong learning. Bulletin of the Medical Library Association, 83(2), 184-189.
- McKibbon, K.A., Haynes, R.B., Walker Dilks, C.J., et al. (1990). How good are clinical MEDLINE searches?: A comparative study of clinical end-user and librarian searches. Computers and Biomedical Research, 23(16), 583-593.
- McKibbon, K.A., Wilczynski, N., Hayward, R.S., Walker-Dilks, & C.J., Haynes, R.B. (1995). The medical literature as a resource for health care practice. Journal of the American Society for Information Science, 46(10), 737-742.
- Michaud, G.C., McGowan, J.L., Van der Jagt, R.H., Dugan, A.K., & Tugwell, P. (1996). The introduction of evidence-based medicine as a component of daily practice. Bulletin of the Medical Library Association, 84(4), 478-481.
- National Forum on Health. (1997). Canada health action: Building on the legacy. Ottawa: The Forum, 97.
- Osherhoff, J.A., Forsythe, D.E., Buchanan, B.G., Bankowitz, R.A., Blumenfield, B.H., & Miller, R.A. (1991). Physicians' information needs: Analysis of questions posed during clinical teaching. Annals of Internal Medicine, 114(1), 576-581.
- Palmer, R.A. (1991). The hospital library is crucial to quality healthcare. Hospital topics, 69(3), 20-25.
- Phillips, S.A., & Zorn, M.J. (1994). Assessing consumer health information needs in a community hospital. Bulletin of the Medical Library Association, 82(3), 288-293.

Pifalo, V. (1994). Outreach to health professionals in a rural area. Medical Reference Services Quarterly, 13(3), 19-26.

Rees, A.M. (1993). Communication in the physician-patient relationship. Bulletin of the Medical Library Association, 81(1), 1-10.

Urquhart, C.J., & Hepworth, J.B. (1996). Comparing and using assessments of the value of information to clinical decision making. Bulletin of the Medical Library Association, 84(4), 483-489.