

Value of Libraries Planning Study  
References

Vaughn CJ. Evaluation of a new clinical librarian service. *Med Ref Serv Q*. 2009 Summer;28(2):143-53.

In order to evaluate a new Clinical Medical Librarian (CML) service at Preston Medical Library in Knoxville, Tennessee, the three departments participating in the service were surveyed and interviewed. Participants in the study shed light on how much impact the attendance of a librarian at rounds and other meetings has had on their patient care decisions as well as their use of the library. Overall, the CML service has been well received by residents and faculty and will continue to serve at least these three departments.

Weightman A, Urquhart C, Spink S, Thomas R; National Library for Health Library Services Development Group. The value and impact of information provided through library services for patient care: developing guidance for best practice. *Health Info Libr J*. 2009 Mar;26(1):63-71. Collaborators: Bingham H, Peacock D.

INTRODUCTION: Previous impact tool-kits for UK health libraries required updating to reflect recent evidence and changes in library services. The National Knowledge Service funded development of updated guidance. METHODS: Survey tools were developed based on previous impact studies and a systematic review. The resulting draft questionnaire survey was tested at four sites, and the interview schedule was investigated in a fifth area. A literature search in ASSIA, Google Scholar, INTUTE, LISA, LISTA, SCIRUS, Social Sciences Citation Index (Web of Knowledge), and the major UK University and National Libraries Catalogue (COPAC), identified ways to improve response rates. Other expert advice contributed to the guidance. RESULTS: The resulting guidance contains evidence-based advice and a planning pathway for conducting an impact survey as a service audit. The survey tools (critical incident questionnaire and interview schedule) are available online. The evidence-based advice recommends personalizing the request, assuring confidentiality, and using follow-up reminders. Questionnaires should be brief, and small incentives, such as a lottery draw should be considered. Bias is minimized if the survey is conducted and analysed by independent researchers. CONCLUSION: The guidance is a starting point for a pragmatic survey to assess the impact of health library services.

McGowan J, Hogg W, Campbell C, Rowan M. Just-in-time information improved decision-making in primary care: a randomized controlled trial. *PLoS One*. 2008;3(11):e3785. Epub 2008 Nov 21.

BACKGROUND: The "Just-in-time Information" (JIT) librarian consultation service was designed to provide rapid information to answer primary care clinical questions during patient hours. This study evaluated whether information provided by librarians to answer clinical questions positively impacted time, decision-making, cost savings and satisfaction. METHODS AND FINDING: A randomized controlled trial (RCT) was conducted between October 2005 and April 2006. A total of 1,889 questions were sent to the service by 88 participants. The object of the randomization was a clinical question. Each participant had clinical questions randomly allocated to both intervention (librarian information) and control (no librarian information) groups. Participants were trained to send clinical questions via a

hand-held device. The impact of the information provided by the service (or not provided by the service), additional resources and time required for both groups was assessed using a survey sent 24 hours after a question was submitted. The average time for JIT librarians to respond to all questions was 13.68 minutes/question (95% CI, 13.38 to 13.98). The average time for participants to respond their control questions was 20.29 minutes/question (95% CI, 18.72 to 21.86). Using an impact assessment scale rating cognitive impact, participants rated 62.9% of information provided to intervention group questions as having a highly positive cognitive impact. They rated 14.8% of their own answers to control question as having a highly positive cognitive impact, 44.9% has having a negative cognitive impact, and 24.8% with no cognitive impact at all. In an exit survey measuring satisfaction, 86% (62/72 responses) of participants scored the service as having a positive impact on care and 72% (52/72) indicated that they would use the service frequently if it were continued.

**CONCLUSIONS:** In this study, providing timely information to clinical questions had a highly positive impact on decision-making and a high approval rating from participants. Using a librarian to respond to clinical questions may allow primary care professionals to have more time in their day, thus potentially increasing patient access to care. Such services may reduce costs through decreasing the need for referrals, further tests, and other courses of action. **TRIAL REGISTRATION:** Controlled-Trials.com ISRCTN96823810.

Mulvaney SA, Bickman L, Giuse NB, Lambert EW, Sathe NA, Jerome RN. A randomized effectiveness trial of a clinical informatics consult service: impact on evidence-based decision-making and knowledge implementation. *J Am Med Inform Assoc.* 2008 Mar-Apr;15(2):203-11. Epub 2007 Dec 20.

**OBJECTIVE:** To determine the effectiveness of providing synthesized research evidence to inform patient care practices via an evidence based informatics program, the Clinical Informatics Consult Service (CICS). **DESIGN:** Consults were randomly assigned to one of two conditions: CICS Provided, in which clinicians received synthesized information from the biomedical literature addressing the consult question or No CICS Provided, in which no information was provided. **Measurement:** Outcomes were measured via online post-consult forms that assessed consult purpose, actual and potential impact, satisfaction, time spent searching, and other variables. **RESULTS:** Two hundred twenty six consults were made during the 19-month study period. Clinicians primarily made requests in order to update themselves (65.0%, 147/226) and were satisfied with the service results (Mean 4.52 of possible 5.0, SD 0.94). Intention to treat (ITT) analyses showed that consults in the CICS Provided condition had a greater actual and potential impact on clinical actions and clinician satisfaction than No CICS consults. Evidence provided by the service primarily impacted the use of a new or different treatment (OR 8.19 95% CI 1.04-64.00). Reasons for no or little impact included a lack of evidence addressing the issue or that the clinician was already implementing the practices indicated by the evidence. **CONCLUSIONS:** Clinical decision-making, particularly regarding treatment issues, was statistically significantly impacted by the service. Programs such as the CICS may provide an effective tool for facilitating the integration of research evidence into the management of complex patient care and may foster clinicians' engagement with the biomedical literature.

Brandes S Experience and outcomes of medical librarian rounding. *Med Ref Serv Q.* 2007 Winter;26(4):85-92.

This article highlights the positive results that can be achieved when a medical librarian rounds with a community hospital's Multidisciplinary Rounds (MDR) team. Background is provided on the rounding process on the hospital's Intensive Care Unit, and case studies report outcomes of the librarian's research. Noteworthy are changes in protocols and changes in patient care which were implemented based, in part, on studies supplied by the librarian.

Robinson L, Bawden D. Evaluation of outreach services for primary care and mental health; assessing the impact. *Health Info Libr J.* 2007 Dec;24 Suppl 1:57-66.

**OBJECTIVES:** This paper reports an evaluation, carried out for London Health Libraries, of the impact of outreach services to primary care and mental health workers in 13 different settings. The main aims of the project were to identify the impact being made by the service, and to produce best-practice guidelines for outreach services in this kind of community setting. **METHODS:** Analysis of documents, analysis of any evaluation already carried out, interviews with outreach librarians, survey of a representative sample of users (eight services). The services evaluated were very diverse in terms of setting, structure, functions and activities. The evaluation was therefore largely qualitative.

Emphasis was placed on trying to identify critical incidents, where it could be shown unambiguously that the outreach services made a difference to practice. **FINDINGS:** Service recipients felt better informed, more up to date, more aware of resources, more confident and supported in their work, and saved time. Direct impacts, such as improved patient care, cost savings, etc., were more difficult to establish. **CONCLUSIONS:** The study identified the main areas of impact, and the main factors which affected this. Recommendations for good practice in such outreach services are made. Lessons of this evaluation for impact studies in general are presented, in particular the difficulty of assessing 'direct' impacts.

Medernach C, Franko J. Assessing the impact of information services in a regionalized health-care organization. *Health Info Libr J.* 2007 Dec;24 Suppl 1:46-56.

**OBJECTIVES:** Assessment of the usage of medical library services before and after the implementation of several new services, as well as assessment of the clinical impact of the information provided by the medical library. **METHODS:** A sample of employees, residents and physicians were surveyed using a stratified, random selection process in two surveys 4 years apart. The response rate for the first survey was 52% and the response rate for the second survey was 35.2%. **RESULTS:** Differences in usage included increased overall use of the librarians and library services, decreased use of the Internet as a source of information, and direct and indirect impacts upon patient care. Information needs of respondents also increased to where 65% of employees and 94% of physicians require information at least once a week. Patient management was the main reason for needing information. The top two specific uses were to find out about a condition and determine a treatment plan. **CONCLUSIONS:** These findings parallel some of the findings of other researchers, and contradict the findings of others. Possible explanations for these findings and implications for future research are discussed.

Banks DE, Shi R, Timm DF, Christopher KA, Duggar DC, Comegys M, McLarty J. Decreased hospital length of stay associated with presentation of cases at morning report with librarian support. *J Med Libr Assoc.* 2007 Oct;95(4):381-7.

**OBJECTIVE:** The research sought to determine whether case discussion at residents' morning report (MR), accompanied by a computerized literature search and librarian support, affects hospital charges, length of stay (LOS), and thirty-day readmission rate. **METHODS:** This case-control study, conducted from August 2004 to March 2005, compared outcomes for 105 cases presented at MR within 24 hours of admission to 19,210 potential matches, including cases presented at MR and cases not presented at MR. With matching criteria of patient age (+/- 5 years), identical primary diagnosis, and secondary diagnoses (within 3 additional diagnoses) using International Classification of Diseases (ICD-9) codes, 55 cases were matched to 136 controls. Statistical analyses included Student's t tests, chi-squared tests, and nonparametric methods. **RESULTS:** LOS differed significantly between matched MR cases and controls (3 days vs. 5 days,  $P < 0.024$ ). Median total hospital charges were \$7,045 for the MR group and \$10,663 for the control group. There was no difference in 30-day readmission rate between the 2 groups. **DISCUSSION/CONCLUSION:** Presentation of a case at MR, followed by the timely dissemination of the results of an online literature review, resulted in a shortened LOS and lower hospital charges compared with controls. MR, in association with a computerized literature search guided by the librarians, was an effective means for introducing evidence-based medicine into patient care practices.

Brettle, A., Hulme, C., & Ormandy, P. (2007). Effectiveness of information skills training and mediated searching: Qualitative results from the EMPIRIC project. *Health information and libraries journal*, 24(1), 24-33.

**OBJECTIVES:** To explore library staff and health professionals' views on the effectiveness of information skills training and librarian mediated searching as methods of providing information for patient care. This is the second article describing the Effective Methods of Providing Information for Patient Care (EMPIRIC) project. The first paper, in a previous issue of this journal (Brettle et al. The costs and effectiveness of information skills training and mediated searching: quantitative results for the EMPIRIC project. *Health Information and Libraries Journal* 2006, 23, 239-247) describes the quantitative results. **METHODS:** A questionnaire survey to library staff and health professionals in the North West. Data was collected on perceptions of services, satisfaction and service usage. Statistical data were analysed using the Statistical Package for the Social Sciences (SPSS) and qualitative data using thematic analysis. **RESULTS:** Both information skills training and mediated searches are perceived by library staff and health professionals to be effective. There is strong support for mediated searches carried out on behalf of the health professional and information skills training to enable them to carry out their own searches. The results provide insights into the effectiveness of the services and the factors that make them effective. **CONCLUSIONS:** Evidence and stakeholders views support the provision of both information skills training and mediated search services. Both services are valued by users who see them as complementary methods of obtaining information depending on their needs at different times.

Joubert, D. J., & Lee, T. P. (2007). Empowering your institution through assessment. *Journal of the Medical Library Association : JMLA*, 95(1), 46-53.

**OBJECTIVES:** The objectives of this study are to describe the process of linking Association of Academic Health Sciences Libraries (AAHSL) data with 2002 LibQUAL+ data and to address four analytical questions created by the AAHSL Task Force on Quality Assessment that relate both to user satisfaction and to services provided by AAHSL libraries. **METHODS:** For the thirty-five AAHSL libraries that participated in the 2002 LibQUAL+ survey, nested-effect of variance was analyzed using a linear mixed model. Using the Pearson correlation coefficient, this study explored four questions about the effect of user demographics on perceived levels of satisfaction with library services. **RESULTS:** The supposition that library user satisfaction may differ according to library institutional reporting structure was unsupported. Regarding effect on mean overall satisfaction, size of library staff is not significant ( $P = 0.860$ ), number of constituents is slightly significant ( $P = 0.027$ ), and ratio of staff to constituents has a moderate and significant effect ( $P = 0.004$ ). **CONCLUSIONS:** From a demographic perspective, the 2002 LibQUAL+ survey represents the largest cross section of AAHSL libraries. Increased understanding of how qualitative assessment can supplement quantitative data supports evidence-based decision-making and practice. It also could promote changes in data collection and usage.

Perley, C. M., Gentry, C. A., Fleming, A. S., & Sen, K. M. (2007). Conducting a user-centered information needs assessment: The via christi libraries' experience. *Journal of the Medical Library Association : JMLA*, 95(2), 173-81, e54-5.

**PURPOSE:** The research sought to provide evidence to support the development of a long-term strategy for the Via Christi Regional Medical Center Libraries. **METHODS:** An information needs assessment was conducted in a large medical center serving approximately 5,900 physicians, clinicians, and nonclinical staff in 4 sites in 1 Midwestern city. Quantitative and qualitative data from 1,295 self-reporting surveys, 75 telephone interviews, and 2 focus groups were collected and analyzed to address 2 questions: how could the libraries best serve their patrons, given realistic limitations on time, resources, and personnel, and how could the libraries best help their institution improve patient care and outcomes? **RESULTS:** Clinicians emphasized the need for "just in time" information accessible at the point of care. Library nonusers emphasized the need to market library services and resources. Both clinical and nonclinical respondents emphasized the need for information services customized to their professional information needs, preferences, and patterns of use. Specific information needs in the organization were identified. **DISCUSSION/CONCLUSIONS:** The results of this three-part, user-centered information needs assessment were used to develop an evidence-based strategic plan. The findings confirmed the importance of promoting library services in the organization and suggested expanded, collaborative roles for hospital librarians.

Urquhart, C., Turner, J., Durbin, J., & Ryan, J. (2007). Changes in information behavior in clinical teams after introduction of a clinical librarian service. *Journal of the Medical Library Association*, 95(1), 14-22.

Berry JN, I.,II. (2006). Blatantberry. humans do a better job: User satisfaction is the most important return on investment. *Library Journal*, 131(6), 10.

Brettle, A., Hulme, C., & Ormandy, P. (2006). The costs and effectiveness of information-skills training and mediated searching: Quantitative results from the EMPIRIC project. *Health information and libraries journal*, 23(4), 239-247.

OBJECTIVES: To compare the effectiveness and costs of providing information for patient care via librarian-mediated searches and information-skills training. METHODS: A questionnaire survey to library staff and health professionals in the North West. Data was collected on perceptions of services, satisfaction and service usage, allowing a cost analysis to be undertaken. Statistical data was analysed using Statistical Package for the Social Sciences (spss). RESULTS: Using satisfaction and use of skills as outcome measures, both mediated searches and information skills training are effective. A breakdown of costs per type of training session and literature search is provided. Cost-effectiveness is dependent on whether costs are viewed from a library or trust point of view. Providing information skills training does not reduce the volume of mediated-search requests. CONCLUSIONS: No one method of providing information for health professionals is more effective or cost-effective than another. A decision about which services to provide cannot be made on the basis of effectiveness or costs alone; the views of library staff and the health professionals they serve should also be taken into account. A proactive approach and targeting training towards those who are most likely to benefit may be an appropriate way forward.

Brookman, A., Lovell, A., Henwood, F., & Lehmann, J. (2006). What do clinicians want from us? an evaluation of brighton and sussex university hospitals NHS trust clinical librarian service and its implications for developing futureworking patterns. *Health information and libraries journal*, 23 Suppl 1, 10-21.

Abstract Background: The Clinical Librarian (CL) Service at Brighton was established in 2003 with the aim of providing high-quality evidence to designated teams and fostering an evidence-based culture. Objective: To evaluate the CL service at Brighton and discuss the implication of the findings. Methods: A combination of internally collected data (n = 167), and an external evaluation of the service by questionnaires (n = 86) of users and non-users and interviews (n = 9) of users. Results: Internal data suggest that the service is valued by its users and that patient care and continuing professional development are the most common uses for searches (confirmed by the external study); that searches generally result in some change in knowledge; and that this knowledge is disseminated. The external study found that visibility of the CL was crucial to the effectiveness of the role and that clinicians used the service mostly to get access to a wider range of resources and/or to save time. Users wanted the CL to include evaluative annotation with the results, and for the CL role to become more embedded in the team. Interview results expanded on the issues of integration of the CL and the need for annotation of results. Conclusions: To be most effective, CLs would be dedicated to one team, but financial constraints make this unlikely. Alternative working patterns are suggested as a possible compromise.

Bryant, S. L., & Gray, A. (2006). Demonstrating the positive impact of information support on patient care in primary care: A rapid literature review. *Health information and libraries*

*journal*, 23(2), 118-125.

AIM: To review the literature on the positive impact of information services, or information resources, on patient care in primary care. OBJECTIVES: To identify and summarize key papers on which librarians might draw in making the case for investment, and to highlight gaps in the research evidence Methodology: A rapid literature review was conducted in the summer of 2005. RESULTS: There is a small body of evidence to demonstrate the positive impact of library and information services on the direct care of patients as well as a beneficial impact on the care of future patients through the application of evidence to multiple patients. CONCLUSIONS: There is relatively limited research evidence of the impact of information, and library services, in primary care, in comparison with hospital settings and the research available is generally reliant on small samples. There is a lack of impact studies conducted with non-clinical staff. The review highlights the value of critical incident technique (CIT). It is possible to gather evidence of the potential for information services to deliver cost savings.

Chowdhury, G., McMenemy, D., & Poulter, A. (2006). Large-scale impact of digital library services: Findings from a major evaluation of SCRAN. *Research and Advanced Technology for Digital Libraries*, 4172, 256-266.

Droese, P., & Peterson, N. (2006). Utilization of the medical librarian in a state medicaid program to provide information services geared to health policy and health disparities. *Journal of the Medical Library Association : JMLA*, 94(2), 174-179.

OBJECTIVE: The role of two solo medical librarians in supporting Medicaid programs by functioning as information specialists at regional and state levels is examined. SETTING: A solo librarian for the Massachusetts Medicaid (MassHealth) program and a solo librarian for the New England States Consortium Systems Organization (NESCOS) functioned as information specialists in context to support Medicaid policy development and clinical, administrative, and program staff for state Medicaid programs. BRIEF DESCRIPTION: The librarian for MassHealth initially focused on acquiring library materials and providing research support on culturally competent health care and outreach, as part of the United States Department of Health and Human Services Culturally and Linguistically Appropriate Services in Health Care Standards. The NESCOS librarian focused on state Medicaid system issues surrounding the implementation of the Health Insurance Portability and Accountability Act. The research focus expanded for both the librarians, shaping their roles to more directly support clinical and administrative policy development. Of note, the availability and dissemination of information to policy leaders facilitated efforts to reduce health disparities. In Massachusetts, this led to a state legislative special commission to eliminate health disparities, which released a report in November 2005. On a regional level, the NESCOS librarian provided opportunities for states in New England to share ideas and Medicaid program information. The Centers for Medicaid and Medicare are working with NESCOS to explore the potential for using the NESCOS model for collaboration for other regions of the United States. RESULTS/OUTCOMES: With the increased attention on evidence-based health care and reduction of health disparities, medical librarians are called on to support a variety of health care information needs. Nationally, state Medicaid programs are being called on to provide coverage and make complex medical decisions regarding the delivery of benefits. Increasing numbers of beneficiaries and shrinking

Medicaid budgets demand effective and proactive decision making to provide quality care and to accomplish the missions of state Medicaid programs. In this environment, the opportunities for information professionals to provide value and knowledge management are increasing.

Edgar, W. B. (2006). Questioning LibQUAL+TM: Expanding its assessment of academic library effectiveness. *portal: Libraries and the Academy*, 6(4), 445-465.

This article examines LibQUAL+[TM]'s instrument, fundamental assumption, and research approach and proposes a functional/technical model of academic library effectiveness. This expanded view of library effectiveness complements LibQUAL+[TM], emphasizing it to be dependent upon users' experience of service delivery, as LibQUAL+[TM] recognizes. However, this broader model reveals that effectiveness also depends upon an academic library's operations, the constituency groups it serves, the types of value provided to them, the models for funding libraries, academic libraries' obligations, and library users' need for professional information assistance. Supplementing LibQUAL+[TM], this broader approach provides a basis for demonstrating both immediate and cumulative academic library effectiveness.

Eldredge, J. (2006). Evidence-based librarianship: The EBL process. *Library Hi Tech*, 24(3), 341-354.

Koufogiannakis, D., & Crumley, E. (2006). Research in librarianship: Issues to consider. *Library Hi Tech*, vol.24, no.3, pp.324-340, 24(3), 324-340. from LISA: Library and Information Science Abstracts database.

Purpose: Attempting to incorporate research into decision making raises several questions about the research that currently exists in librarianship, areas that are most in need of research, obstacles to conducting research, and possible solutions for nurturing a professional environment in which conducting and using research becomes an accepted and expected part of our practice. This article attempts to answer some of those questions.

Design/methodology/approach: A general overview of the research base in librarianship is given. Compilation of content analyses and systematic reviews present an argument relating to the need of further research in librarianship. Further examination of potential research questions is conducted, and potential obstacles and solutions to research barriers are presented. Findings: There is still a need to establish a solid evidence base within our profession. With support from all sectors of librarianship, progress can be made.

Originality/value: This paper points out gaps in our research knowledge, and areas that need to be explored via research in library and information studies. It is hoped that this paper will encourage librarians to think about how they can incorporate research into their daily practice. (Author abstract)

Poll, R., & Payne, P. (2006). Impact measures for libraries and information services. *Library Hi Tech*, 24(4), 547-562.

Sen, B. (2006). Market orientation: A concept for health libraries. *Health information and libraries journal*, 23(1), 23-31.

**OBJECTIVES:** This paper is the result of exploratory research forming part of ongoing study into the value and relevance of market orientation as a strategic option for library managers. The aim of the study is to gain an understanding of the concept of market orientation relative to the health library sector. **METHODOLOGY:** A focus group was used to gather data from health librarians working at different levels in the sector. The data was coded and categorized by an expert panel and analysed using a taxonomic map developed during the study. **RESULTS:** Health library professionals define and understand market orientation in the same way as the concept is defined in the management literature. Their understanding of the concept is developing. A greater emphasis is given to some aspects of market orientation than others. **CONCLUSIONS:** There are implications for further research. Methods used to measure market orientation in other domains are likely to be relevant for libraries. Research should be extended to different sectors to explore any cross-sector differences. Fostering an organizational culture that supports market orientation has implications for service management and development.

Tennant, M. R., Tobin Cataldo, T., Sherwill-Navarro, P., & Jesano, R. (2006). Evaluation of a liaison librarian program: Client and liaison perspectives. *Journal of the Medical Library Association : JMLA*, 94(4), 402-9, e201-4.

**OBJECTIVES:** This paper describes a survey-based evaluation of the five-year old Liaison Librarian Program at the University of Florida. **METHODS:** Liaison librarians, faculty, students, staff, residents, and post-doctoral associates were queried via Web-based surveys. Questions addressed client and liaison perspectives on a variety of issues, including program and service awareness and usage, client-library relations and communication, client support for the program, and liaison workload. **RESULTS:** Approximately 43% of the 323 client respondents were aware of liaison services; 72% (n = 163) of these clients had had contact with their liaison. Ninety-five percent (n = 101) of faculty and students who reported contact with their liaison supported the continuation of the program. Liaison services were used by a greater percentage of faculty than students, although they had similar patterns of usage and reported the same "traditional" services to be most important. Liaisons indicated that communications with clients had increased, the reputation of the library was enhanced, and their workloads had increased as a result of the Liaison Librarian Program.

**CONCLUSIONS AND RECOMMENDATIONS:** Survey results suggest that the Liaison Librarian Program has a core set of clients who use and highly value the services provided by liaisons. Recommendations addressing workload, training, marketing, and administrative support are provided.

Urquhart, C., Durbin, J., & Cumbers, B. (2006). Evaluation of the KA24 (knowledge access 24) service for health and social care staff in London and the south-east of England. part 2: Qualitative. *Health information and libraries journal*, 23(3), 159-168.

**AIM AND OBJECTIVES:** The aim of this two-part paper is to identify the main transferable lessons learned from both the quantitative and qualitative evaluations of the KA24 (Knowledge Access 24) service of online databases and selected full-text journals for health and social care staff in London and the south-east of England. The objectives of the

qualitative evaluation were to assess the enablers and barriers to usage, and to assess the impact of the service on patient care. **METHODS:** Telephone interviews (n = 65) and a questionnaire survey (n = 296) were conducted with various types of user, in various Trust settings. Some non-users were also contacted. Selection of interviewees and questionnaire recipients was not random, and aimed to cover all groups of users representatively. **RESULTS:** Results show that policy goals were being delivered, with indications of changes to clinical practice, and improved clinical governance. Promotion, training and support needs to be extensive, and tailored to needs, but users are not always aware they need training. The sharing of passwords cast doubts on the reliability of some usage data. **CONCLUSIONS:** Digital health library services, delivered at the point of care, are changing the way some clinicians practise. A combination of qualitative and quantitative evaluation methods are needed to assess digital library services.

Klein-Fedyshin, M., Burda, M. L., Epstein, B. A., & Lawrence, B. (2005). Collaborating to enhance patient education and recovery. *Journal of the Medical Library Association : JMLA*, 93(4), 440-445.

**Objective:** The paper describes a collaborative project between librarians and health care staff to enhance patient recovery by distributing educational videos and evaluating the acceptability of this "information intervention." **Background:** On inpatient units, nurses experience decreased time to teach patients. Text handouts do not include multimedia information, and reading levels may limit comprehension. Because the postoperative period is not the optimal time for patient instruction, another format and opportunity for postsurgical instruction was needed. **Methods:** Nurses, therapists, educators, and librarians partnered to select a video designed for home viewing by discharged patients. It was added to the existing text-based educational program for coronary patients. An evaluation component was incorporated into this collaboration. **Results:** The library's role extended to all aspects of the program's implementation and management. The library's circulation system was used to coordinate borrowing with minimal loss. Ongoing preparation of the video materials for distribution and return remained a library function, and the evaluation component showed patients' positive reception of the video. **Discussion:** Patients received a greater amount of information to enhance self-care during the recovery period without consuming more nursing time. Video circulation and reuse enhanced cost effectiveness of the program, and patients benefited from the library's resources.

Turtle, K. M. (2005). A survey of users and non-users of a UK teaching hospital library and information service. *Health information and libraries journal*, 22(4), 267-275.

**BACKGROUND:** The Lancashire Teaching Hospitals NHS Trust was formed in 2002 with the merger of two existing trusts. The library services unified to create a new expanded service with 11 staff. **OBJECTIVES:** The librarians wanted to test out users' opinions of the service, as a basis for a developmental strategy. They also wanted to find out to what extent they were offering a multi-disciplinary service, available to all staff. Therefore it was decided to include both users and non-users in the survey. **METHODS:** A twenty-question questionnaire was sent out to a 10% sample of registered users in all staff categories. The same questionnaire was sent out to a 10% sample of non-users, with the help of the Human Resources Department. **RESULTS:** The library staff and facilities were generally well

regarded. The stock needed expansion in various areas, especially allied health and biomedical science. Non-users were in fact often occasional or remote users. Other non-users needed informing that they were entitled to use the service. CONCLUSIONS: Further research is required, especially concerning the information needs of allied health and scientific staff. There is a need for stock expansion. A marketing strategy is required to capture the interest of potential users.

Weightman, A. L., Williamson, J., & Library & Knowledge Development Network (LKDN) Quality and Statistics Group. (2005). The value and impact of information provided through library services for patient care: A systematic review. *Health information and libraries journal*, 22(1), 4-25.

OBJECTIVE: An updated systematic review was carried out of research studies looking at the value and impact of library services on health outcomes for patients and time saved by health professionals. METHODS: A comprehensive systematic search was undertaken of the published literature to September 2003 in ERIC, LISA, MEDLINE, PREMEDLINE, EMBASE, the Cochrane Controlled Trials Register and Google. Some handsearching was carried out, reference lists were scanned and experts in the field were contacted. Twenty-eight research studies of professionally led libraries for health-care staff, including clinical librarian projects, met the inclusion criterion of at least one health or 'time saved' outcome. Papers were critically appraised using internationally accepted criteria. Data were extracted and results were summarised using a narrative format as the studies were heterogeneous and precluded a statistical analysis. RESULTS: There is evidence of impact from both traditional and clinical librarian services. The higher quality studies of traditional services measured impacts of 37-97% on general patient care, 10-31% on diagnosis, 20-51% on choice of tests, 27-45% on choice of therapy and 10-19% on reduced length of stay. Four studies of clinical librarian projects suggested that professionals saved time as a result of clinical librarian input, and two of these studies showed evidence of cost-effectiveness. However, the clinical librarian studies were generally smaller, with poorer quality standards. CONCLUSIONS: Research studies suggest that professionally led library services have an impact on health outcomes for patients and may lead to time savings for health-care professionals. The available studies vary greatly in quality but the better quality studies also suggest positive impacts. Good practice can be gathered from these studies to guide the development of a pragmatic survey for library services that includes the direct effects for patients among the outcome measures.

Abels, E. G., Cogdill, K. W., & Zach, L. (2004). Identifying and communicating the contributions of library and information services in hospitals and academic health sciences centers. *Journal of the Medical Library Association*, 92(1), 46-55.

OBJECTIVE: This article introduces a systematic approach to identifying and communicating the value of library and information services (LIS) from the perspective of their contributions to achieving organizational goals. METHODS: The contributions of library and information services (CLIS) approach for identifying and communicating the value of LIS draws on findings from a multimethod study of hospitals and academic health sciences centers. RESULTS: The CLIS approach is based on the concept that an individual unit's value to an organization can be demonstrated by identifying and measuring its

contributions to organizational goals. The CLIS approach involves seven steps: (1) selecting appropriate organizational goals that are meaningful in a specific setting; (2) linking LIS contributions to organizational goals; (3) obtaining data from users on the correspondence between LIS contributions and LIS services; (4) selecting measures for LIS services; (5) collecting and analyzing data for the selected measures; (6) planning and sustaining communication with administrators about LIS contributions; and (7) evaluating findings and revising selected goals, contributions, and services as necessary. CONCLUSIONS: The taxonomy of LIS contributions and the CLIS approach emerged from research conducted in hospitals and academic health sciences centers and reflect the mission and goals common in these organizations. However, both the taxonomy and the CLIS approach may be adapted for communicating the value of LIS in other settings.

Allen, C. W. (2004). Research. outcomes-based evaluation in a community health library. *Journal of Hospital Librarianship*, 4(3), 63-78.

Increasingly, libraries are being asked for more accountability. What benefits or impacts do the services provided have on the people who use them? This paper briefly discusses outcomes evaluation and reports the results of an outcomes-based evaluation of the reference interaction at Munson Community Health Library. The methodology for this study is based on the work of Durrance and Pettigrew, who with IMLS grant support, created a toolkit: *How Libraries and Librarians Help: Putting Outcome Evaluation in Context: A Toolkit* ([www.si.umich.edu/libhelp/toolkit](http://www.si.umich.edu/libhelp/toolkit)). Results of the study validate that the Community Health Library fulfills its mission of providing information to patrons that supports informed decision-making and lifestyle changes.

Carney, S., Koufogiannakis, D., & Ryan, P. (2004). Library services for users of personal digital assistants: A needs assessment and program evaluation. *Portal-Libraries and the Academy*, 4(3), 393-406.

Cullen, R. (2004). Evaluating digital libraries in the health sector. part 2: Measuring impacts and outcomes. *Health Information and Libraries Journal*, 21(1), 3-13.

This is the second part of a two-part paper which explores methods that can be used to evaluate digital libraries in the health sector. Part 1 focuses on approaches to evaluation that have been proposed for mainstream digital information services. This paper investigates evaluative models developed for some innovative digital library projects, and some major national and international electronic health information projects. The value of ethnographic methods to provide qualitative data to explore outcomes, adding to quantitative approaches based on inputs and outputs is discussed. The paper concludes that new 'post-positivist' models of evaluation are needed to cover all the dimensions of the digital library in the health sector, and some ways of doing this are outlined.

Gluck, J. C. (2004). The contribution of hospital library services to continuing medical education. *The Journal of continuing education in the health professions*, 24(2), 119-123. Much of the literature relating to continuing medical education programs laments the lack of effectiveness of traditional lecture-based format, the most often used method of presentation in hospitals. A gap exists between the content taught in lectures and the application of that

knowledge in actual patient care. The services of the medical librarian, already employed in most hospitals, can help ameliorate this problem. Further, libraries help to support quality improvement efforts. These three functions (library services, continuing medical education, and quality improvement) are interdependent. Each lends strength to the other, and, ideally, all are coordinated within the hospital structure.

Gorman, P. N., Yao, P., & Seshadri, V. (2004). Finding the answers in primary care: Information seeking by rural and nonrural clinicians. *Medinfo.MEDINFO*, 11(Pt 2), 1133-1137.

**BACKGROUND:** Information systems for rural practice may assume that rural clinicians have different information seeking, but studies have not directly compared rural and nonrural information needs using common methodology. **OBJECTIVE:** Compare rural and non-rural: 1) information needs; 2) information seeking; 3) effectiveness of information seeking; and 4) use of information resources. **DESIGN:** Observation and interviews during one half-day of office practice; telephone follow-up 2-10 days later. **PARTICIPANTS & SETTING:** Primary care physicians (39), nurse practitioners (42), and physician assistants (22) in ambulatory practices in rural and nonrural Oregon. **MEASURES:** 1) number of questions asked, 2) number of questions pursued, 3) number of questions answered, and 4) use of knowledge resources. **RESULTS:** Rural clinicians practiced in smaller groups, but were otherwise similar to nonrural clinicians. During half-day interviews, clinicians cared for an average of 8.2 patients (95% CI 7.5 - 8.8) and asked an average of 0.83 questions per patient seen (95% CI 0.73 - 0.92). At follow up, they had pursued an average of 47% of their questions (95% CI 40 - 53%), and reported being successful in finding an answer to 77% of those they pursued (95% CI 70 - 84%). There were no statistically significant differences between rural and nonrural clinicians for any of these variables.

**CONCLUSIONS:** Rural and nonrural clinicians had similar information needs, information seeking, knowledge resource use, and effectiveness at finding answers to their questions. Human consultants, digital resources, and library-based resources were less available, but these differences in availability had little impact on their use.

Sherwill-Navarro, P. J., & Wallace, A. L. (2004). Research on the value of medical library services: Does it make an impact in the health care literature? *Journal of the Medical Library Association : JMLA*, 92(1), 34-45.

**OBJECTIVE:** To evaluate the impact in the health care literature of research articles that provided evidence of the value of library services (including MEDLINE) as an element of quality health care. **DATA SOURCES/SELECTION:** Four research articles on the relationship between use of library services and quality health care were selected as "primary articles" from a MEDLINE search using appropriate Medical Subject Heading. Primary articles met the following criteria: written in English, reported research, related to clinical care, and published before 1995. **DATA EXTRACTION:** The technique of citation analysis was used to measure the impact of the primary articles on the subsequent literature. The number, authorship, type, and publication venue of articles citing the primary articles were determined using ISI Web of Science, MEDLINE, other electronic resources, and the citing articles themselves. For the 146 English-language citing articles, the article type (i.e., advocacy, instructional, research) was noted; and, for those that reported research, the use to which the author put the cited material was determined. **RESULTS:** The primary articles

were cited more often than the average articles published that year in the same journals. At the time of the study each article had been cited almost every year since publication. Of the 146 citing articles written in English, 43% were written by librarians, 38% by physicians, 12% by librarians with physicians. The majority were published in medical journals, followed in order of decreasing frequency by the Bulletin of the Medical Library Association, information science journals, and health administration journals.

**CONCLUSIONS:** The results of this study demonstrate that published research on the value of medical library services has an impact on the literature. These articles are read and cited and continue to be of value.

Sladek, R. M., Pinnock, C., & Phillips, P. A. (2004). The informationist: A prospective uncontrolled study. *International journal for quality in health care : journal of the International Society for Quality in Health Care / ISQua*, 16(6), 509-515.

**OBJECTIVE:** To determine whether doctors in an Australian tertiary hospital would use an informationist service, and to identify how the service would influence care. **DESIGN:** A prospective uncontrolled pilot study July 2002-January 2003. **SETTING:** A teaching hospital in South Australia. **STUDY PARTICIPANTS:** Fourteen doctors working in the selected units. **INTERVENTION:** An informationist attended specified medical in-patient ward rounds and clinical meetings in the Respiratory Medicine, Sleep Disorders, and Rheumatology units. **Main outcomes measures.** Clinician self-assessed impact of information on a range of outcomes relating to clinical decision-making, clinician education, and avoidance of adverse events. **RESULTS:** In 23 weeks, 52 questions were generated by nine of 14 eligible doctors. Forty-eight of 52 (92%) feedback forms were completed, indicating an average of 5.7 impacted outcomes per response. Twenty-five of 48 (52%) provided new information to doctors, and 24/48 (50%) provided at least some information that could be used immediately. Most common contributions of the service to patient care were revision of treatment plan (21/48, 44%) and confirmation of proposed therapy (18/48, 38%). Thirteen of 48 (27%) contributed to avoiding adverse events, and 10/48 (21%) contributed to avoiding additional tests and procedures. Eleven of 11 (100%) doctors who used the service assessed that it contributed or probably contributed to their professional development, with 8/10 (80%) indicating a similar impact on improving clinical outcomes. **CONCLUSION:** Medical staff will use an informationist service, which contributes substantially to a multiplicity of outcomes relating to medical decision-making, clinician education, and clinical outcomes.

Wagner, K. C., & Byrd, G. D. (2004). Evaluating the effectiveness of clinical medical librarian programs: A systematic review of the literature. *Journal of the Medical Library Association : JMLA*, 92(1), 14-33.

**OBJECTIVE:** This study was undertaken to determine if a systematic review of the evidence from thirty years of literature evaluating clinical medical librarian (CML) programs could help clarify the effectiveness of this outreach service model. **METHODS:** A descriptive review of the CML literature describes the general characteristics of these services as they have been implemented, primarily in teaching-hospital settings. Comprehensive searches for CML studies using quantitative or qualitative evaluation methods were conducted in the medical, allied health, librarianship, and social sciences

literature. FINDINGS: Thirty-five studies published between 1974 and 2001 met the review criteria. Most (30) evaluated single, active programs and used descriptive research methods (e.g., use statistics or surveys/questionnaires). A weighted average of 89% of users in twelve studies found CML services useful and of high quality, and 65% of users in another overlapping, but not identical, twelve studies said these services contributed to improved patient care. CONCLUSIONS: The total amount of research evidence for CML program effectiveness is not great and most of it is descriptive rather than comparative or analytically qualitative. Standards are needed to consistently evaluate CML or informationist programs in the future. A carefully structured multiprogram study including three to five of the best current programs is needed to define the true value of these services.

Beverley, C. A., & Winning, M. A. (2003). Clinical librarianship: A systematic review of the literature. *Health Information and Libraries Journal*, 20(Supplement 1), 10-21. from LISA: Library and Information Science Abstracts database.

Clinical librarianship (CL), currently receiving renewed interest world-wide, seeks to provide quality-filtered information to health professionals at the point of need to support clinical decision-making. This review builds upon the work of Cimpl ("Bulletin of the Medical Library Association" 1985,73,21-8) and attempts to establish the evidence base for CL. The objectives were to determine, from the literature, whether CL services are used by clinicians, have an effect on patient care, and/or clinicians' use of literature in practice and/or are cost-effective. The methodology used was a systematic review of the literature, following, where possible, the NHS Centre for Reviews and Dissemination (CRD) framework. Modifications to this methodology included the resources searched, and the critical appraisal checklist (CriSTAL) used. Two hundred and eighty-four unique references were retrieved. Seventeen (16 unique) evaluative and a further 33 descriptive studies met the inclusion criteria. The quality of reporting of the literature was generally poor. CL programmes appear to be well-used and received by clinicians. However, there is insufficient evidence available on their effect on patient care, clinicians' use of literature in practice, and their cost-effectiveness, thus highlighting the need for further high-quality research. (Original abstract)

Cullen, R. (2003). Evaluating digital libraries in the health sector. part 1: Measuring inputs and outputs. *Health information and libraries journal*, 20(4), 195-204.

This is the first part of a two-part paper which explores methods that can be used to evaluate digital libraries in the health sector. In this first part, some approaches to evaluation that have been proposed for mainstream digital information services are examined for their suitability to provide models for the health sector. The paper summarizes some major national and collaborative initiatives to develop measures for digital libraries, and analyses these approaches in terms of their relationship to traditional measures of library performance, which are focused on inputs and outputs, and their relevance to current debates among health information specialists. The second part\* looks more specifically at evaluative models based on outcomes, and models being developed in the health sector.

Heath, F., Kyriallidou, M., Webster, D., Choudhury, S., Hobbs, B., Lorie, M., et al. (2003).

Emerging tools for evaluating digital library services: Conceptual adaptations of LibQUAL+

and CAPM. *Journal of Digital Information*, 4(2), 8.

The paper describes ways to examine how digital libraries are valued by their users, and explores ways of permitting the allocation of resources to areas of user-identified need. Pertinent models from marketing, economics, and library assessment and evaluation are reviewed, focussing on the application of the LibQUAL+[TM] and CAPM methodologies. Each methodology, which was developed independently, provides a useful framework for evaluating digital library services. The paper discusses the benefits of a combined methodology that would provide even greater potential for evaluation of digital library services.

Sayed, E. N., & Murray, S. D. (2003). User satisfaction survey and usage of an electronic desktop document delivery service at an academic medical library. *Medical reference services quarterly*, 22(4), 21-29.

In June 2000, the Biomedical Library at the University of South Alabama introduced Prospero, an electronic desktop document delivery service. From June 2000 to November 2002, Prospero delivered 28% of interlibrary loan requests and 72% of document delivery requests. In November 2002, the library conducted a user satisfaction survey of the Prospero service. Forty-two surveys were used. Fifteen responses were received from affiliated faculty, staff, and students, who generally expressed satisfaction with the service. Twenty-seven responses were received from unaffiliated users, comprised of medical libraries, individual users, and businesses. Based on the survey results, the library deemed the Prospero service a success. To better support users, the library's Web page was updated to include hardware and software requirements for successful use of the Prospero service, as well as screen shots of the Prospero process.

Weightman, A., & Williamson, J. (2003). How do library services impact on patient care? *CILIP Health Libraries Group Newsletter*, 20(3), 13.

Winning, M. A., & Beverley, C. A. (2003). Clinical librarianship: A systematic review of the literature. *Health information and libraries journal*, 20 Suppl 1, 10-21.

Clinical librarianship (CL), currently receiving renewed interest world-wide, seeks to provide quality-filtered information to health professionals at the point of need to support clinical decision-making. This review builds upon the work of Cimprl (Bulletin of the Medical Library Association 1985, 73, 21-8) and attempts to establish the evidence base for CL. The objectives were to determine, from the literature, whether CL services are used by clinicians, have an effect on patient care, and/or clinicians' use of literature in practice and/or are cost-effective. The methodology used was a systematic review of the literature, following, where possible, the NHS Centre for Reviews and Dissemination (CRD) framework. Modifications to this methodology included the resources searched, and the critical appraisal checklist (CriSTAL) used. Two hundred and eighty-four unique references were retrieved. Seventeen (16 unique) evaluative and a further 33 descriptive studies met the inclusion criteria. The quality of reporting of the literature was generally poor. CL programmes appear to be well-used and received by clinicians. However, there is insufficient evidence available on their effect on patient care, clinicians' use of literature in

practice, and their cost-effectiveness, thus highlighting the need for further high-quality research.

Yeoman, A. J., Cooper, J. M., Urquhart, C. J., & Tyler, A. (2003). The management of health library outreach services: Evaluation and reflection on lessons learned on the VIVOS project. *Journal of the Medical Library Association : JMLA*, 91(4), 426-433.

**PURPOSE:** The aim of the VIVOS project was to develop and evaluate methodologies, i.e., sets of methods, for determining the value and impact of "virtual outreach" information services in the health sector in the UK. **METHODS:** Five different projects were recruited initially, with another two added later. Methods were largely qualitative, with over 130 interviews conducted among health professionals, complemented by postal questionnaire surveys. **RESULTS:** Identified factors that affect the successful roll-out and continued development of the projects included the need for help-desk type services to provide sustained support for new users to the services. **CONCLUSIONS:** Follow-up of the projects eighteen months after the end of the VIVOS project revealed that the long-term impacts for the participating library managers included the benefits of using evidence on service outcomes, enhanced recognition locally, and greater confidence in evaluation.

Abels, E. G., Cogdill, K. W., & Zach, L. (2002). The contributions of library and information services to hospitals and academic health sciences centers: A preliminary taxonomy. *Journal of the Medical Library Association : JMLA*, 90(3), 276-284.

**OBJECTIVES:** This article presents a taxonomy of the contributions of library and information services (LIS) in hospitals and academic health sciences centers. The taxonomy emerges from a study with three objectives: to articulate the value of LIS for hospitals and academic health sciences centers in terms of contributions to organizational missions and goals, to identify measures and measurable surrogates associated with each LIS contribution, and to document best practices for communicating the value of LIS to institutional administrators. **METHODS:** The preliminary taxonomy of LIS contributions in hospitals and academic health sciences centers is based on a review of the literature, twelve semi-structured interviews with LIS directors and institutional administrators, and a focus group of administrators from five academic, teaching, and nonteaching hospitals. **RESULTS:** Derived from the balanced scorecard approach, the taxonomy of LIS contributions is organized on the basis of five mission-level concepts and fifteen organizational goals. LIS contributions are included only if they have measurable surrogates. **CONCLUSIONS:** The taxonomy of LIS contributions offers a framework for the collection of both quantitative and qualitative data in support of communicating the value of LIS in hospitals and academic health sciences centers.

Calabretta, N. (2002). Consumer-driven, patient-centered health care in the age of electronic information. *Journal of the Medical Library Association : JMLA*, 90(1), 32-37.

Americans are turning in increasing numbers to the Internet for information related to their health. Access to information that was previously difficult, if not impossible, for consumers to obtain has helped drive a shift in traditional roles for patients and physicians. Technology has made possible additional avenues for communication that can enhance new relationships. Ample opportunities exist for librarians to participate in a collaborative

practice role, helping to serve the needs of both consumers and physicians as consumer-driven, patient-centered health care evolves to meet its full potential.

Cook, C., Heath, F., & Thompson, B. (2002). Score norms for improving library service quality: A LibQUAL+ study. *portal: Libraries and the Academy*, 2(1), 13-26.

Based on data from 20,416 LIBQUAL+ respondents from forty-three universities, the authors developed norm tables to allow librarians to interpret LIBQUAL+ scores with respect to typical profiles at other universities. Norms were developed for both "perceived" service scores and "gap" scores (e.g., "perceived" performance minus "minimally acceptable" performance). Norms such as these will assist library managers in decision-making by identifying (a) specific areas for needed improvement, (b) specific areas of needed additional service quality information (e.g., focus groups), and (c) peer institutions from which superior service practices can be modeled.

Klein-Fedyshin, M. S. (2002). Consumer health informatics--integrating patients, providers, and professionals online. *Medical reference services quarterly*, 21(3), 35-50.

Consumer Health Informatics (CHI) means different things to patients, health professionals, and health care systems. A broader perspective on this new and rapidly developing field will enable us to understand and better apply its advances. This article provides an overview of CHI discussing its evolution and driving forces, along with advanced applications such as Personal Health Records, Internet transmission of personal health data, clinical e-mail, online pharmacies, and shared decision-making tools. Consumer Health Informatics will become integrated with medical care, electronic medical records, and patient education to impact the whole process and business of health care.

O'Connor, P. (2002). Determining the impact of health library services on patient care: A review of the literature. *Health information and libraries journal*, 19(1), 1-13.

The impact of health library information has been studied in a number of settings and populations. This review examines both the methods employed and the outcomes reported in a series of impact studies conducted in four countries since the late 1980's. It demonstrates that health library information can affect patient care outcomes in various ways and has high cognitive and clinical value in diagnosing and treating patients. But there remains no agreed technique or methodology for determining the level of this impact. In many cases evaluation of the health library's impact will be located within a central process of evaluation of the greater organization to which the library belongs. Consequently, local ad hoc evaluation is rarely reported outside an organization. The author considers the question of whether it is worthwhile doing an impact study and what form it might take. The author concludes by identifying seminal papers on the topic.

Plutchak, T. S. (2002). Determining value. *Journal of the Medical Library Association : JMLA*, 90(3), 273-275.

Rodger, E. J. (2002). Value & vision: Public libraries must create public value through renewal and reinvention. *American Libraries*, 33(10), 50-2, 54.

- Todd-Smith, B., & Markwell, L. G. (2002). The value of hospital library benchmarking: An overview and annotated references. *Medical reference services quarterly*, 21(3), 85-95.
- Wolf, D. G., Chastain-Warheit, C. C., Easterby-Gannett, S., Chayes, M. C., & Long, B. A. (2002). Hospital librarianship in the united states: At the crossroads. *Journal of the Medical Library Association*, 90(1), 38-48.
- Ash, J. S., Gorman, P. N., Lavelle, M., Lyman, J., Delcambre, L. M., Maier, D., et al. (2001). Bundles: Meeting clinical information needs. *Bulletin of the Medical Library Association*, 89(3), 294-296.
- Barnett, L., Cmor, D., & Morgan, P. (2001). Mediated computer search services relative to instruction services: A survey of one health sciences library. *Medical reference services quarterly*, 20(2), 9-21.  
 To assess the quality and usefulness of one health sciences library's mediated computer search service, a survey was undertaken to determine satisfaction rates, why users do or do not use the service, and how useful the service is perceived to be in comparison to instructional service. Satisfaction rates were high, with users indicating librarian expertise and time/cost savings as the main reasons for using the service. Non-users indicated that they preferred to do their own searching, and many were unaware of the service. Though a majority of respondents do not currently use the service, surprisingly a majority of respondents placed significant value on the mediated search service in relation to instruction.
- Helmer, D., Savoie, I., Green, C., & Kazanjian, A. (2001). Evidence-based practice: Extending the search to find material for the systematic review. *Bulletin of the Medical Library Association*, 89(4), 346-352.  
 BACKGROUND: Cochrane-style systematic reviews increasingly require the participation of librarians. Guidelines on the appropriate search strategy to use for systematic reviews have been proposed. However, research evidence supporting these recommendations is limited. OBJECTIVE: This study investigates the effectiveness of various systematic search methods used to uncover randomized controlled trials (RCTs) for systematic reviews. Effectiveness is defined as the proportion of relevant material uncovered for the systematic review using extended systematic review search methods. The following extended systematic search methods are evaluated: searching subject-specific or specialized databases (including trial registries), hand searching, scanning reference lists, and communicating personally. METHODS: Two systematic review projects were prospectively monitored regarding the method used to identify items as well as the type of items retrieved. The proportion of RCTs identified by each systematic search method was calculated. RESULTS: The extended systematic search methods uncovered 29.2% of all items retrieved for the systematic reviews. The search of specialized databases was the most effective method, followed by scanning of reference lists, communicating personally, and hand searching. Although the number of items identified through hand searching was small, these unique items would otherwise have been missed. CONCLUSIONS: Extended systematic search methods are effective tools for uncovering material for the systematic review. The quality of

the items uncovered has yet to be assessed and will be key in evaluating the value of the systematic search methods.

- Richwine, M. P., & McGowan, J. J. (2001). A rural virtual health sciences library project: Research findings with implications for next generation library services. *Bulletin of the Medical Library Association*, 89(1), 37-44.
- PURPOSE: The Shared Hospital Electronic Library of Southern Indiana (SHEL SI) research project was designed to determine whether access to a virtual health sciences library and training in its use would support medical decision making in rural southern Indiana and achieve the same level of impact seen by targeted information services provided by health sciences librarians in urban hospitals. METHODS: Based on the results of a needs assessment, a virtual medical library was created; various levels of training were provided. Virtual library users were asked to complete a Likert-type survey, which included questions on intent of use and impact of use. At the conclusion of the project period, structured interviews were conducted. RESULTS: Impact of the virtual health sciences library showed a strong correlation with the impact of information provided by health sciences librarians. Both interventions resulted in avoidance of adverse health events. Data collected from the structured interviews confirmed the perceived value of the virtual library. CONCLUSION: While librarians continue to hold a strong position in supporting information access for health care providers, their roles in the information age must begin to move away from providing information toward selecting and organizing knowledge resources and instruction in their use.
- Schacher, L. F. (2001). Clinical librarianship: Its value in medical care. *Annals of Internal Medicine*, 134(8), 717-720.
- Tennant, M. R., Butson, L. C., Rezeau, M. E., Tucker, P. J., Boyle, M. E., & Clayton, G. (2001). Customizing for clients: Developing a library liaison program from need to plan. *Bulletin of the Medical Library Association*, 89(1), 8-20.
- Building on the experiences of librarian representatives to curriculum committees in the colleges of dentistry, medicine, and nursing, the Health Science Center Libraries (HSCL) Strategic Plan recommended the formation of a Library Liaison Work Group to create a formal Library Liaison Program to serve the six Health Science Center (HSC) colleges and several affiliated centers and institutes. The work group's charge was to define the purpose and scope of the program, identify models of best practice, and recommend activities for liaisons. The work group gathered background information, performed an environmental scan, and developed a philosophy statement, a program of liaison activities focusing on seven primary areas, and a forum for liaison communication. Hallmarks of the plan included intensive subject specialization (beyond collection development), extensive communication with users, and personal information services. Specialization was expected to promote competence, communication, confidence, comfort, and customization. Development of the program required close coordination with other strategic plan implementation teams, including teams for collection development, education, and marketing. This paper discusses the HSCL's planning process and the resulting Library Liaison Program. Although focusing

on an academic health center, the planning process and liaison model may be applied to any library serving diverse, subject-specific user populations.

Ali, I. (2000). Library provided information and clinical decision making: A study of two hospitals in Canberra. *Australian Academic and Research Libraries*, 31(1), 30-45. from LISA: Library and Information Science Abstracts database.  
Describes the methodology and discusses the results of a study to investigate the impact of library-provided information on clinical decision making in two teaching hospitals. Reports results of a questionnaire survey, involving participating doctors, to investigate the clinical, cognitive and quality value of the information provided by medical librarians to the management of patients. Earlier research projects investigating the impact of information on health care outcomes are also reviewed. Wider implications of this research for academic and research libraries are outlined. (The author may be contacted by electronic mail at [mailto:[irena.ali@dsto.defence.gov.au](mailto:irena.ali@dsto.defence.gov.au)]). (Original abstract - amended)

Marshall, J. G. (2000). Determining our worth, communicating our value. *Library Journal*, 125(19), 28-30.

Dixon-Lee, C. (1999). In pursuit of a value-added entity. *Journal of AHIMA / American Health Information Management Association*, 70(3), 6-7.

Eysenbach, G., & Diepgen, T. L. (1999). Patients looking for information on the internet and seeking teleadvice: Motivation, expectations, and misconceptions as expressed in e-mails sent to physicians. *Archives of Dermatology*, 135(2), 151-156.  
OBJECTIVES: To analyze the motivation, expectations, and misconceptions of patients seeking teleadvice or medical information on the Internet. To explore the possible economics and problems of direct physician-to-patient teleadvice via electronic mails (e-mail). DESIGN: Exploratory survey of 209 unsolicited e-mails mostly sent to physicians by individuals seeking teleadvice. SETTING: University dermatology hospital with a major Web site on the World Wide Web. PATIENTS: Two hundred nine patients and information-seeking individuals, mainly with dermatologic problems. MAIN OUTCOME MEASURES: Previous contacts with live physicians, disease duration, level of frustration expressed in the e-mails, and type of information sought. RESULTS: Many dermatologic patients who request teleadvice have a chronic disease (81%) and seek a second opinion. Seventeen percent express frustration about previous encounters with live physicians. Forty percent of all e-mails could have been answered by a librarian, 28% of all e-mails were suitable to be answered by a physician via e-mail alone, and in 27% of the cases any kind of consultation would not have been possible without seeing the patient. In at least 5 instances patients attempt self-diagnosis. CONCLUSIONS: We found examples for the beneficial effects of the provision of medical information on the World Wide Web but also evidence suggesting that patients are trying to use information on the Internet as a supplement for physicians and that teleadvice might be overused by chronically ill and frustrated patients looking desperately for additional information. Telemedicine via e-mail could substitute a physician visit or telephone call in some cases, but many principal problems must be solved beforehand.

Fuller, S. S., Ketchell, D. S., Tarczy-Hornoch, P., & Masuda, D. (1999). Integrating knowledge resources at the point of care: Opportunities for librarians. *Bulletin of the Medical Library Association*, 87(4), 393-403.

McCray, J. C. (1999). Delivering health information statewide via the internet in a collaborative environment: Impact on individual member institutions. *Bulletin of the Medical Library Association*, 87(3), 264-269.

The Arizona Health Information Network (AZHIN) is a statewide member-driven organization committed to improving access to information for health sciences students and practitioners. Members include several hospitals and hospital systems, an academic health sciences center, and other diverse health care organizations. AZHIN offers its members unlimited Web access to ten well-known health sciences databases. This paper explores the impact that AZHIN has had on its member institutions. A survey asked members to reflect on AZHIN and its possible effects on the visibility of the librarian within the institution, relative dollars spent on AZHIN and range of resources available, Internet connectivity within their institution, access to AZHIN and other Internet resources, teaching, and benefits of collaboration. Results indicated that AZHIN members have access to a wider range of resources than they would otherwise. There are financial savings for some. Internet connectivity and AZHIN membership can provide the librarian with a broadened role and increased visibility. The availability of MEDLINE and other AZHIN resources encouraged some institutions to install Internet connectivity more quickly. Teaching library users has increased. Overall, AZHIN members recognized many benefits of their collaboration.

Peay, W. J. (1999). Strategies and measures for our next century. *Bulletin of the Medical Library Association*, 87(1), 1-8.

The centennial of the Medical Library Association offers an opportunity to reflect with some satisfaction on accomplishments and to consider the future. The Western Governors University is an illustration of the dynamic future. Professional values constitute both distinguishing characteristics and steadfast guides for succeeding in this complex environment. Powerful collaborative technologies now make it possible to overcome challenges that are beyond the capabilities of an individual librarian or library. Providing organized access to the Internet exemplifies these challenges. The profession has a strong history of cooperation but to take full advantage of collaboration, institutional and cultural barriers must be overcome. The National Network of Libraries of Medicine (NN/LM) should be the facilitating agent in this process.

Papandrea, V. A. (1998). Managing reference services in the electronic age: A competing values approach to effectiveness. *The Reference Librarian*, (60), 111-126.

Stead, W. W. (1998). Positioning the library at the epicenter of the networked biomedical enterprise. *Bulletin of the Medical Library Association*, 86(1), 26-30.

The changing economic environment in which our biomedical enterprises operate presents unparalleled opportunities to the profession of medical librarianship. Evidence-based medicine, patient empowerment, asynchronous learning networks, and research

colaboratories each involve a new type of shared information, or access to information in new ways or by different people. These tasks are ones with which librarianship is directly involved. Librarians are therefore placed perfectly to provide new products and services. To position the library at the epicenter of the networked biomedical enterprise we must meet three challenges: We must align the library's business strategy with that of the larger enterprise. We must provide services in ways that will scale-up to enable new business strategies. We must measure the effectiveness of services in ways that document their role in supporting the enterprise.

Trinder, V. M. (1998). What do health professionals think of their library service? report of a multi-professional user satisfaction survey. *Health libraries review*, 15(3), 205-208.

Ward, J. A., Baum, S., Ter Maat, J., Thomsen, C. A., & Maibach, E. W. (1998). The value and impact of the cancer information service telephone service. part 4. *Journal of health communication*, 3 Suppl, 50-70.

The Cancer Information Service (CIS) of the National Cancer Institute (NCI) is a health communications program that disseminates information through two channels: to individuals through a toll-free telephone service and to organizations (serving primarily underserved populations) through an outreach program. People call the 1-800-4-CANCER line to meet a variety of information needs. The information specialists who respond to these calls are prepared to answer questions ranging from cancer prevention to early detection, treatment, and survivorship. In a 1996 random sample survey, 2,489 callers were asked why they called, how they valued the information, and what health-related actions they took or decisions they made since their call. Results show the CIS is highly valued by its users, with satisfaction high across gender, age, education, and racial/ethnic groups. While differences in satisfaction were observed by caller type and subject of inquiry, nearly all respondents reported that contact with the CIS increased knowledge, provided reassurance, and influenced decisionmaking and health behavior. Overall, 95% were satisfied with CIS information, 98% trusted the information, 92% reported an increase in knowledge, 69% felt reassured, and 73% said the information helped them to better cope with their concerns. Eight out of 10 callers reported the information they received had a positive impact, with 56% reporting taking a positive health action. Results demonstrate that health communications programs like the CIS can fill information gaps consumers must bridge to make informed health care decisions and can play an important public health role in motivating people to take actions to reduce risks and/or make decisions that lead to improved health status.

Beilby, J. J., & Silagy, C. A. (1997). Trials of providing costing information to general practitioners: A systematic review. *Medical Journal of Australia*, 167(2), 89-92.

Pifalo, V., Hollander, S., Henderson, C. L., DeSalvo, P., & Gill, G. P. (1997). The impact of consumer health information provided by libraries: The delaware experience. *Bulletin of the Medical Library Association*, 85(1), 16-22.

In the past two decades, consumer health libraries have proliferated in response to the changing health care environment and consumer demand. While this growth of consumer

health resources and services has been extensively described in the literature, there is little documentation about the impact and value of providing consumer health information. This paper explores the issues of impact and value as examined in a retrospective study of consumers who received health information from the Delaware Academy of Medicine's Consumer Health Library during 1995. In this study, 270 adults were mailed a questionnaire that focused on whether the information influenced decisions, actions, anxiety levels, and patient-provider communication. The questionnaire also addressed the value of such library service in terms of likelihood of repeat use, recommendation to others, and willingness to pay. The results, based on a return rate of 86.7%, identified effects of library-supplied consumer health information that extend beyond the anticipated acquisition of knowledge to specific actions and effects on anxiety. The value of consumer health library information service was shown by the extremely high percentage of probable repeat use and recommendation to others, the willingness of 83.8% of the respondents to pay for such service, and the copious comments volunteered by the respondents.

- Urquhart, C. (1997). Performance measurement in library and information services: Health advice from the value and EVINCE studies. *Library and Information Briefings*, (71), 1-12. from LISA: Library and Information Science Abstracts database.  
Based on 2 studies funded by the British Library Research and Innovation Centre. The Value project (1993-1995) examined the impact of the National Health Service (NHS), UK, library and information services on clinical decision making. The EVINCE project (1995-1996) examined the value of information supplied by national, NHS and higher education library and information services to nurses continuing education. Both products produced quality assurance guidelines and performance targets for enhancing the effectiveness of library and information services for 2 main groups of health professionals - doctors and nurses. (Original abstract - amended)
- Urquhart, C. J., & Davies, R. (1997). Assessing the impact of information on evidence-based nursing practice: The EVINCE (establishing the value of information to nursing continuing education) project. *Topics in health information management*, 18(2), 53-63.  
One of the aims of the EVINCE study (Establishing the Value of Information to Nursing Continuing Education) was to assess the impact of information obtained from information and library services about nursing knowledge, competencies, and practice. Survey methods included a critical incident type survey of the patterns of information need and use among a random sample of more than 200 nursing, midwifery, and health visiting staff at five sites and a survey of 776 searches and requests presented to 13 different information services. Questionnaire surveys were followed by selected interviews. Results indicated that information seeking in practice was often prompted by a combination of purposes, with 41 percent of information-seeking incidents involving patient care purposes combined with informal or formal education. The profile of information requests seen by the information service differed, there being more emphasis on formal education and research. Nursing professionals value highly the information obtained from information and library services, and information that helps in evidence-based practice is a priority. Information skills are varied, suggesting that much support for critical appraisal is necessary.

Urquhart, C. J., & Hepworth, J. B. (1996). Comparing and using assessment of the value of information to clinical decision-making. *Bulletin of the Medical Library Association*, 84(4), 482-489. from LISA: Library and Information Science Abstracts database.

Discusses the Value project, which assessed the value to clinical decision making of information supplied by the UK's National Health Service (NHS) library and information services. The project not only showed how UK health libraries help clinicians in decision making but also provided quality assurance guidelines for these libraries to help make their information services more effective. Discusses aspects of user involvement, categories of clinical decision making, the value of information to present and future clinical decisions, and the combination of quantitative and qualitative assessments of value, as applied to the Value project and the studies. Original abstract-amended.

Urquhart, C. J., & Hepworth, J. B. (1996). The value to clinical decision-making of information supplied by NHS library and information services. *Education for Information*, 14(2), 135-137. from LISA: Library and Information Science Abstracts database.

Book review abstract. London, British Library Research and Development Department (BLRDD), BLRD Report 6205. Reviewed by Linda Banwell.

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), 482-489.

This paper discusses the Value project, which assessed the value to clinical decision-making of information supplied by National Health Service (NHS) library and information services. The project not only showed how health libraries in the United Kingdom help clinicians in decision-making but also provided quality assurance guidelines for these libraries to help make their information services more effective. The paper reviews methods and results used in previous studies of the value of health libraries, noting that methodological differences appear to affect the results. The paper also discusses aspects of user involvement, categories of clinical decision-making, the value of information to present and future clinical decisions, and the combination of quantitative and qualitative assessments of value, as applied to the Value project and the studies reviewed. The Value project also demonstrated that the value placed on information depends in part on the career stage of the physician. The paper outlines the structure of the quality assurance tool kit, which is based on the findings and methods used in the Value project.

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.

This paper reports the results of a survey of 372 physicians working in regional hospitals in New Zealand. The survey was undertaken to determine if these physicians used their local medical library and what impact the literature obtained had on patient care. The 295 respondents (80.6% of the sample) expressed genuine interest in their library, with most visiting the library once a week or more. Patient care was ranked as the main reason for their visit; the second most important reason was keeping up-to-date on the latest research. Physicians indicated that information obtained at the library was used to confirm or change diagnoses, medications, or diagnostic tests, or to change advice given to patients.

Information also was used to make decisions concerning early discharge, avoidance of hospital admission, or transfer of patients to another hospital. The survey also addressed the use of librarian services, sources of information used, and physicians' purchase of textbooks and journals. All comments by respondents were supportive of the library. The significance of libraries to clinical decision making, especially in small hospitals, is discussed.

Urquhart, C., & Hepworth, J. (1995). The value of information supplied to clinicians by health libraries: Devising an outcomes-based assessment of the contribution of libraries to clinical decision-making. *Health libraries review*, 12(3), 201-213.

The Value project, a study funded by the British Library Research and Development Department and a group of postgraduate medical deans, has examined the effectiveness of NHS library and information services. Clinicians at 11 hospital library sites were asked to describe the purposes for which they needed information, the steps they took to obtain it, and to assess the value of the information obtained from interlibrary loan requests, database searches and end-user searches. A sample of non-library users and of users of the BMA Dial-Up MEDLINE service were also asked similar questions. Results show that information did, or would in the future, assist in personal clinical decision-making and which kinds of decisions were most supported. Information new to clinicians was often provided. Follow-up interviews provided illustrations of the ways in which developments aimed at more cost-effective patient care were supported by information obtained from the library. Results are being used to guide the production of a quality assurance toolkit to help libraries audit their services and improve the delivery of information to clinicians.

Urquhart, C. J., & Hepworth, J. B. (1995). *The value of information services to clinicians. A toolkit for measurement*

(Copyright held by the British Library Board and the University of Wales, Aberystwyth, Department of Information and Library Studies). Describes a toolkit, available on a floppy disc supplied with the report, developed to enable information services to: assess the impact of the information service is having on clinical decision making; secure evidence of this impact in order to support information service development; and identify ways in which the effect of the information service on clinical decisions may be enhanced. The supplied disc is in IBM format and contains files suitable for use with the following word processing software: Word for Windows (version 2); Works for Windows (version 2); Works for DOS; WordPerfect (version 5.1) and Write (Windows 3.1).

Gorman, P. N., Ash, J., & Wykoff, L. (1994). Can primary care physicians' questions be answered using the medical journal literature? *Bulletin of the Medical Library Association*, 82(2), 140-146.

Medical librarians and informatics professionals believe the medical journal literature can be useful in clinical practice, but evidence suggests that practicing physicians do not share this belief. The authors designed a study to determine whether a random sample of "native" questions asked by primary care practitioners could be answered using the journal literature. Participants included forty-nine active, nonacademic primary care physicians providing ambulatory care in rural and nonrural Oregon, and seven medical librarians. The study was conducted in three stages: (1) office interviews with physicians to record clinical questions;

(2) online searches to locate answers to selected questions; and (3) clinician feedback regarding the relevance and usefulness of the information retrieved. Of 295 questions recorded during forty-nine interviews, 60 questions were selected at random for searches. The average total time spent searching for and selecting articles for each question was forty-three minutes. The average cost per question searched was \$27.37. Clinician feedback was received for 48 of 56 questions (four physicians could not be located, so their questions were not used in tabulating the results). For 28 questions (56%), clinicians judged the material relevant; for 22 questions (46%) the information provided a "clear answer" to their question. They expected the information would have had an impact on their patient in nineteen (40%) cases, and an impact on themselves or their practice in twenty-four (51%) cases. If the results can be generalized, and if the time and cost of performing searches can be reduced, increased use of the journal literature could significantly improve the extent to which primary care physicians' information needs are met.

Hersh, W., & Hickam, D. (1994). Use of a multi-application computer workstation in a clinical setting. *Bulletin of the Medical Library Association*, 82(4), 382-389.

The goal of this study was to assess the usage frequency, user satisfaction, and quality of literature searches for a multi-application computer workstation in a university-based general medicine clinic. A computer with medical literature searching, textbook searching, and a decision-support program was deployed in the workroom of the clinic and made available for routine use. Data were collected for ten months. More than three quarters of the study participants used the computer, with use increasing by level of medical training. Despite physicians' known preferences for nonjournal sources of information, literature searching was the application used most frequently, followed by textbooks and decision support. The literature searches were replicated by experienced clinician and librarian searchers using first full MEDLINE and then text-word-only searching, to compare the quantities of relevant references retrieved. Novice searchers retrieved a larger number of relevant references than did the experienced searchers, but they also retrieved more nonrelevant references. For both groups of experienced searchers, the full MEDLINE feature set conferred little benefit over searching with only text words. These searching results call into question the value of traditional searching methods for both novice and experienced physicians.

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 : journal of the Association of American Medical Colleges*, 69(6), 489-495.

**PURPOSE.** To examine the associations between (1) the economic indicators of hospital costs, charges, and length of stay (LOS) for inpatient cases and (2) the use of MEDLINE searches for such cases. **METHOD.** An outcome-based, objective, prospective study with an economic evaluation was conducted from September 1989 to September 1990 at three metropolitan Detroit teaching hospitals representing both allopathic and osteopathic care. The study consisted of (1) 192 test cases, derived from a consecutive sample of inpatients of all ages for whom MEDLINE searches were requested at the participating medical libraries, and (2) 10,409 control cases, which were of the same diagnosis-related groups (DRGs) as the test cases but did not involve identified MEDLINE searches. Statistical analysis

included the use of multivariate analyses of variance and correlation coefficients. Comparisons of cases were made on case-by-case and DRG bases regarding total patient costs, charges, and lengths of stay for cases with or without MEDLINE searches. RESULTS. The test cases were found to have a higher severity of illness. Among test cases, statistically significant relationships existed between (1) hospital expenses and LOS and (2) hospital expenses and the timing of the search during hospitalization when controlling for LOS. When cases were matched for DRG and LOS, the cases with early searches (i.e., conducted during the first half of hospitalization) had significantly lower expenses. CONCLUSION. Of the test-case patients (for whom MEDLINE searches were conducted during hospitalization), those whose searches were conducted earlier had statistically significantly lower costs, charges, and lengths of stay than those whose searches were conducted later.

Marshall, J. (1994). The impact of information services on decision making: Some lessons from the financial and health care sectors. In M. Feeney, & M. Grieves (Eds.), *Value and impact of information* (pp. 195-211) Published by Bowker Saur for British Library. Paper included in a compilation of the first 8 of a series of Information Policy Briefings, organized by the Information Policy Research Section of the British Library Research and Development Department (BLRDD), covering discussions of the value and impact of information. Presents highlights of 2 significant research projects investigating the impact of information services on decision making in 2 different areas: the financial sector and the health care sector; based on impact and outcomes measures, what differences libraries and librarians make, and what do people do with information when they get it. The health care study was designed to provide evidence of the direct impact of hospital libraries, in the Rochester area, New York, on clinical decision making and was based on an earlier study of Chicago hospital libraries (see Bulletin of the Medical Library Association, 75 (4) Oct 87, 291-301 (LISA ref. 88-2292)). Details of the study are available as a report, available from Rochester Regional Library Council, 302 Goodman Street, Rochester, NY, 14607, USA, and in Bulletin of the Medical Library Association, 80 (2) Apr 92, 169-78 (LISA ref. 92-3201)). The financial study was supported by the Special Libraries Association, and requested 390 randomly selected managers from 5 major financial institutions in Toronto, Canada, to request some information related to a current decision making situation from their corporate information centre or library.

Pifalo, V. (1994). Outreach to health professionals in a rural area. *Medical reference services quarterly*, 13(3), 19-26. An outreach project which juxtaposed technology (Grateful Med) and a human intermediary (a circuit librarian) to serve health professionals in a rural area of Illinois is described. The five goals of the project were: promote Grateful Med as a clinical tool; introduce circuit librarianship to Illinois; heighten the awareness of health professionals to the value of timely information services; increase the visibility of the resource library; and evaluate the impact of the two components, Grateful Med and circuit librarianship. While the project was well-received and enjoyed short-term success, sustaining the same level of information activity post-project has not been achieved. Insuring utilization of health information by remote health professionals may be characterized as a Sisyphean task.

Buchanan, H. S. (1993). Library services and health care administration. *Library Trends*, 42(1), 62-82. from LISA: Library and Information Science Abstracts database.

Reviews the progress made in meeting the information needs of health care administrators within a health care environment that is changing profoundly. Discusses health care economics, a shifting power structure within the industry and quality improvement initiatives. Covers the library's role in providing information for administrative decision making, how this has been communicated to administrators and partnerships between health care librarians and administrators. Future research should include improving the understanding of the administrator's information needs; identifying their patterns of information-seeking and use; developing specialized services to meet these needs and developing indicators to measure the provision of quality library services. Original abstract-amended.

Kuller, A. B., Wessel, C. B., Ginn, D. S., & Martin, T. P. (1993). Quality filtering of the clinical literature by librarians and physicians. *Bulletin of the Medical Library Association*, 81(1), 38-43.

A study was conducted at the University of Pittsburgh to determine the effectiveness of the selection process by clinical medical librarians and to identify the criteria used by librarians and physicians to select relevant articles. The study analyzed the similarity between librarian and physician selections, the decision-making processes used by librarians and physicians, and the utility of librarian selections versus those of physicians. No significant difference in utility between librarian and physician selection was found, suggesting that librarians can recognize and select useful articles as effectively as physicians. Both librarians and physicians based selection decisions primarily on article title, abstract, and journal title. Librarians were more likely to focus on Medical Subject Headings (MeSH) descriptors, while physicians focused on clinical applicability or similarity to a specific case. Journal selection data indicate that the principle internal medicine journals were the most frequently selected sources. The study demonstrates that librarians can effectively serve a quality filtering function in the clinical environment, and they should consider extending quality filtering activities to other arenas.

Lindberg, D. A., Siegel, E. R., Rapp, B. A., Wallingford, K. T., & Wilson, S. R. (1993). Use of MEDLINE by physicians for clinical problem solving. *JAMA : the journal of the American Medical Association*, 269(24), 3124-3129.

OBJECTIVE--To understand the ways in which computer-mediated searching of the biomedical literature affects patient care and other professional activities. Undertaken to determine the ways in which on-line access to the biomedical literature via the National Library of Medicine's MEDLINE database "makes a difference" in what physicians do when confronted with a medical problem requiring new or additional information. DESIGN--An adaptation of the Critical Incident Technique used to gather detailed reports of MEDLINE search results that were especially helpful (or not helpful) in carrying out the individual's professional activities. The individual physician was the source of the patient care incident reports. One thousand one hundred fifty-eight reports were systematically analyzed from three different perspectives: (1) why the information was sought; (2) the effect of having (or

not having) the needed information on professional decisions and actions; and (3) the outcome of the search. PARTICIPANTS AND SETTING--Telephone interviews were carried out with a purposive sample of 552 physicians, scientists, and other professionals working in a variety of clinical care and other settings. Of these, 65% were direct users of MEDLINE throughout the United States, and 35% had MEDLINE searches conducted for them either at a major health sciences center or in community hospitals. RESULTS--Three comprehensive and detailed inventories that describe the motivation for the searches, how search results affected the actions and decisions of the individual who initiated the search, and how they affected the outcome of the situation that motivated the search.

CONCLUSIONS--MEDLINE searches are being carried out by and for physicians to meet a wide diversity of clinical information needs. Physicians report that in situations involving individual patients, rapid access to the biomedical literature via MEDLINE is at times critical to sound patient care and favorably influences patient outcomes.

Royal, M., Grizzle, W. E., Algermissen, V., & Mowry, R. W. (1993). The success of a clinical librarian program in an academic autopsy pathology service. *American Journal of Clinical Pathology*, 99(5), 576-581.

Residents in pathology must acquire a broad base of knowledge in all areas of medicine and the basic medical sciences. We report our experience with the first Clinical Medical Librarian (CL) program used to aid resident training in anatomic pathology. This program was developed by the Lister Hill Library of Health Sciences (LHL) of the University of Alabama at Birmingham (UAB) to test the value of a CL program in filling the clinical needs of medical students and residents by providing key recent references to the wide variety of diseases seen in a busy autopsy service. Use of a CL was accepted completely by both faculty and residents as a method of increasing their efficiency in evaluating the recent literature on diseases seen in the autopsy service. Our use of this program broadened the scope and extent of specific case-oriented medical literature read by both residents and faculty.

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.

In these times of economic constraint, libraries of all types are under increasing pressure to evaluate their services. Hospital libraries face a particular challenge because the goals of the health care system demand that the relevance of library services to patient care be determined. The hospital librarians in Rochester, New York, responded to this challenge by developing a research project that explored the impact of library services on clinical decision making. A systematically sampled group of 448 physicians in the Rochester area agreed to participate in the study between September 1990 and March 1991. The physicians were asked to request some information related to a current clinical case and then to evaluate its impact on the care of their patients. Senior medical staff or administrators acted as study facilitators in each of the fifteen participating hospitals. As a result of the information provided by the library, 80% of the 208 physicians who returned their questionnaires said that they probably or definitely handled some aspect of patient care differently than they would have handled it otherwise. Changes in the following specific aspects of care were reported by the physicians: diagnosis (29%), choice of tests (51%),

choice of drugs (45%), reduced length of hospital stay (19%), and advice given to the patient (72%). Physicians also said that the information provided by the library contributed to their ability to avoid the following: hospital admission (12%), patient mortality (19%), hospital-acquired infection (8%), surgery (21%), and additional tests or procedures (49%). The physicians rated the information provided by the library more highly than that provided by other information sources such as diagnostic imaging, lab tests, and discussions with colleagues. In addition to confirming earlier research findings that information provided by hospital libraries is perceived by physicians as having a significant impact on clinical decision making, the results increase our store of scientific knowledge about the specific nature and extent of the impact of information provided by the hospital library.

Smith, B. T. (1992). Developing a publicity plan for library research: The rochester study. *Medical reference services quarterly*, 11(4), 75-82.

The hospital librarians in Rochester, New York and a research team developed and administered a questionnaire to measure the impact of information provided by the librarian on physicians' clinical decision making. While the research was underway, the librarians also developed a publicity plan. The goal of the plan was to create awareness of the study results in the local client population, as well as in the health care community at large. The plan served to describe and put in priority order the types of media that the librarians would use to publicize the study to target groups. This article includes examples of a nationwide and an institution-specific publicity plan. Those developing publicity plans for future library research may want to allocate adequate funds to hire a media consultant to increase their prospects for national exposure.

Veenstra, R. J. (1992). Clinical medical librarian impact on patient care: A one-year analysis. *Bulletin of the Medical Library Association*, 80(1), 19-22.

The primary role of the clinical medical librarian (CML)--locating and providing quality-filtered, patient-specific information to physicians--has been questioned recently because of the dramatic rise in end-user searching. This study administered a questionnaire to evaluate the current impact of this service in a major hospital setting with a long established CML program. The study showed that the CML provided house officers with information that affected patient care (defined as diagnosis, diagnostic tests, or treatment) between 40% and 59% of the time. This was true even though most physicians reported they generally researched the question prior to consulting the CML. In addition, the house officers in this study indicated that they distributed the CML-provided information to other health care providers 56%-96% of the time. Based on these limited results, it appears that CMLs can continue to provide information that has a strong impact on patient care, despite the availability of an end-user local MEDLINE system.

Veenstra, R. J., & Gluck, E. H. (1992). A clinical librarian program in the intensive care unit. *Critical care medicine*, 20(7), 1038-1042.

OBJECTIVES: Clinical decision-making in the intensive care setting frequently requires the physician to obtain additional resource information. Physicians typically consult with colleagues, use personal medical books or files, or use library materials. Clinical librarians may also be used. This study evaluates the effectiveness of an ongoing clinical librarian

program in the intensive care setting. DESIGN/SETTING: During a 3-month period, house officers in the medical and coronary ICUs in a major teaching hospital asked the clinical librarian 66 patient-care questions. Attached to the information selected by the clinical librarian was a questionnaire asking how the information was applied. MAIN RESULTS: There was an overall response rate of 65.1%. House officers indicated that the information: a) aided in diagnosis (37.2%), b) contributed to a better understanding of the therapy (51.2%), and c) resulted in improved patient management (30.2%). In some instances, the information was multibeneficial. The clinical librarian spent an average of 47 mins/question, and accumulated an average computer charge of \$3.59. Personnel and on-line charges over the 3-month study period averaged \$45/question. CONCLUSIONS: Clinical librarian programs may deliver patient-specific information in a timely, cost-effective manner. This information has an impact in the intensive care setting.

Humphries, A. W., & Naisawald, G. V. (1991). Developing a quality assurance program for online services. *Bulletin of the Medical Library Association*, 79(3), 263-270.

A quality assurance (QA) program provides not only a mechanism for establishing training and competency standards, but also a method for continuously monitoring current service practices to correct shortcomings. The typical QA cycle includes these basic steps: select subject for review, establish measurable standards, evaluate existing services using the standards, identify problems, implement solutions, and reevaluate services. The Claude Moore Health Sciences Library (CMHSL) developed a quality assurance program for online services designed to evaluate services against specific criteria identified by research studies as being important to customer satisfaction. These criteria include reliability, responsiveness, approachability, communication, and physical factors. The application of these criteria to the library's existing online services in the quality review process is discussed with specific examples of the problems identified in each service area, as well as the solutions implemented to correct deficiencies. The application of the QA cycle to an online services program serves as a model of possible interventions. The use of QA principles to enhance online service quality can be extended to other library service areas.

Lovas, I., Graham, E., & Flack, V. (1991). Health professionals' use of documents obtained through the regional medical library network. *Bulletin of the Medical Library Association*, 79(1), 28-35.

The Pacific Southwest Regional Medical Library Service (PSRMLS) studied how health professionals use documents obtained through the regional medical library (RML) network and how various factors, such as delivery time, affected that use. A random sample of libraries in Region 7 of the RML network was selected to survey health professionals who had received documents through the interlibrary loan (ILL) network. The survey provided data about the purposes for which health professionals requested documents, how the immediacy of need for the items affected their usefulness, what effect the obtained information had on the health professionals' work, and whether the illustrations represented an important part of the information content of the items. Survey results provided a positive assessment of the ILL network. Results also verified the basic value of the materials provided to health professionals through ILL and identified some areas for consideration in future network development. Users of the documents indicated that the network works

efficiently and effectively to provide timely and useful information needed by health professionals. Technological developments in electronic information transmission and imaging will further enhance network operation in the future.

Marshall, J. (1991). The impact of the hospital library. *Bibliotheca Medica Canadiana*, 13(2), 106.

Marshall, J. (1991). Preliminary results of the impact of the hospital library on clinical decision-making study. *Bibliotheca Medica Canadiana*, 13(2), 100-105.

Siegel, E. R., Rapp, B. A., & Lindberg, D. A. (1991). Evaluating the impact of MEDLINE using the critical incident technique. *Proceedings / the ...Annual Symposium on Computer Application [sic] in Medical Care. Symposium on Computer Applications in Medical Care*, , 83-87.

An adaptation of the Critical Incident Technique for the evaluation of an online information system is described. 552 users of the National Library of Medicine's MEDLINE database, interviewed by telephone and responding to a highly structured set of open-ended questions, reported 1,158 incidents in which the results of a MEDLINE search was especially helpful (or not helpful) in carrying out professional activities. Systematic analysis of these "critical incidents" produced three comprehensive and detailed views of the purposes and outcomes of MEDLINE searches: (1) why information is sought from MEDLINE; (2) the impact of MEDLINE-derived information on medical decision-making; and (3) the ultimate outcome of having (or not having) the desired information on medical situations prompting a MEDLINE search. Results revealed that MEDLINE is used to satisfy a diversity of medical needs concerning patient care, the progress of biomedical research, the quality of education received by health professionals in training, the safety and effectiveness of health care institutions, the operation of the system of third-party reimbursement, for legal decisions, and for the knowledge of the public.

Haynes, R. B., McKibbin, K. A., Walker, C. J., Ryan, N., Fitzgerald, D., & Ramsden, M. F. (1990). Online access to MEDLINE in clinical settings. A study of use and usefulness. *Annals of Internal Medicine*, 112(1), 78-84.

**STUDY OBJECTIVE:** We introduced self-service access to the medical literature database, MEDLINE, into clinical settings to assess the frequency, patterns, purposes, and success of use. **DESIGN:** Longitudinal descriptive study. **SETTING:** Inpatient and outpatient services of a university medical center. **PARTICIPANTS:** All trainees and attending staff working at the service sites were invited to participate; 158 (84%) did so. **INTERVENTIONS:** Free online access was provided to MEDLINE through GRATEFUL MED software. Participants were offered a 2-hour introduction to online searching and 2 hours of free search time. **MEASUREMENTS AND MAIN RESULTS:** For each search, a computer program requested identification of the user and the question to be addressed. Search transactions were recorded automatically. Interviews were conducted after a random sample of searches, and search questions were given to more expert searchers to run for comparison with the original. Eighty-one percent of participants did searches on study computers, at a mean rate of 2.7 searches per month. On comparison searches, participants retrieved 55% of the

number of relevant articles retrieved by reference librarians ( $P = 0.024$ ) and 50% more irrelevant articles ( $P$  less than 0.001). Forty-seven percent of searches on patient problems affected clinical decisions, but often on scanty information. CONCLUSIONS: MEDLINE searching from clinical settings is feasible with brief training and affects clinical decisions. However, inexperienced searchers miss many relevant citations and search inefficiently. Further studies are needed to assess the impact of searching on physician performance and patient care.

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.

Hospital health sciences libraries represent, for the vast majority of health professionals, the most accessible source for library information and services. Most health professionals do not have available the specialized services of a clinical medical librarian, and rely instead upon general information services for their case-related information needs. The ability of the hospital library to meet these needs and the impact of the information on quality patient care have not been previously examined. A study was conducted in eight hospitals in the Chicago area as a quality assurance project. A total of 176 physicians, nurses, and other health professionals requested information from their hospital libraries related to a current case or clinical situation. They then assessed the quality of information received, its cognitive value, its contribution to patient care, and its impact on case management. Nearly two-thirds of the respondents asserted that they would definitely or probably handle their cases differently as a result of the information provided by the library. Almost all rated the libraries' performance and response highly. An overview of the context and purpose of the study, its methods, selected results, limitations, and conclusions are presented here, as is a review of selected earlier research.

Barbour, G. L., & Young, M. N. (1986). Morning report. role of the clinical librarian. *JAMA : the journal of the American Medical Association*, 255(14), 1921-1922.

The educational value of morning report should be enhanced by thorough evaluation of the medical literature. We added a clinical medical librarian (CML) program to our morning report 2 1/2 years ago to provide rapid, complete access to reference material relevant to topics discussed in morning report. MEDLINE searches and references are made available on a same-day basis; cumulative lists of these are provided to the staff and house staff at bimonthly and yearly intervals. All house staff used the CML service to some degree and the majority found it to be of value in making patient care decisions. Since the inception of the CML program, the medical library has noted a more than twofold increase in the number of on-line reference searches and a similar increase in requests for searches by house staff. Patient care decisions have been improved through ready access to current medical literature, and the teaching program has been enhanced by the creation of the CML program as an integral part of morning report.

Dabanovic, R. (1985). How the literature can help in medical treatment. *International journal of clinical pharmacology research*, 5(1), 1-7.

Experience from various hospitals has shown that the information received from journal literature, indexes and databases has a direct positive impact in improving patient care.

Twenty percent of the doctors interviewed advised that the information supplied to them directly influenced their treatment of patients and altered their methods applied in patient care. Speed and precision is very important in supplying information to the medical doctors and health professionals in order to give them time to digest the information before the decision on treatment is made. Some of the indexes and databases are briefly described, which will give the necessary information with the minimum time and effort for use in medical treatment. Machinery of access to the databases and indexes is suggested with the accent on the microcomputer programs which will allow even the health professionals and librarians who might be unfamiliar with the search techniques to use the databases and indexes effectively.

Garfield, E. (1985). The impact of health information delivery on the quality of patient care: Whither medical information science? *Health libraries review*, 2(4), 159-169.

Hardy, M. C., Yeoh, J. W., & Crawford, S. (1985). Evaluating the impact of library services on the quality and cost of medical care. *Bulletin of the Medical Library Association*, 73(1), 43-46.

Recent federal regulations have minimized the role of the hospital library in contributing to the quality of medical care and in lowering hospital costs. We trace the events that have led to these assumptions and discuss the complex problem of evaluating the impact of library services. Current research on the value and effectiveness of information is outlined.

Kantor, P. B. (1984). Cost and usage of health sciences libraries: Economic aspects. *Bulletin of the Medical Library Association*, 72(3), 274-286. from LISA: Library and Information Science Abstracts database.

A study of 95 medical libraries, involving 24,000 user responses, provides estimates of the national cost of library services through the 3 principal services of circulation, reference and in-house use; and 4 types of users; persons interested in patient care; those interested in research; those involved in education; and others.

Winters, A. A., Sviridov, F. A., Inoue, H., Lenoir, M., Ganz, C., Wilson, T. D., et al. (1982). Session B. value of information and impact of information on decision making and economy. *Organization and economics of information and documentation Vibeke Ammundsen, The Hague, Netherlands, Federation Internationale de Documentation*, , 37-107. from LISA: Library and Information Science Abstracts database.

(Papers presented at the 40th FID Congress, Copenhagen, 18-21 Aug 80). The following papers were presented: Information for problem solving in socio-economic development, by A.A. Winters; Role of patent information in national economic development, by Felix A. Sviridov; Current development of business information and documentation systems and impacts on decision-making in some large Japanese enterprises, by Hitoshi Inoue; Valeur de l'information technique continue dans les brevets. Consequences sur les prises de decisions dans une entreprise, by Maurice Lenoir; Scientific and technical information: property rights, Pigou and public intervention, by Carole Ganz; Current awareness services and their value in local government, by T.D. Wilson; Response by governments and international organizations to information requirements. The Scandinavian case, by Miriam Ginman;

Inform to innovate, by J. Testud; The place of the information service in the company structure, by Sixten Ljungberg; Supply and demand of information for small and middle scale enterprises: a Dutch approach, by Ronald H. da Silva; Information technology and the technologist: a report on a national study of American engineers, by Hedvah L. Shuchman.

Scura, G., & Davidoff, F. (1981). Case-related use of the medical literature. clinical librarian services for improving patient care. *JAMA : the journal of the American Medical Association*, 245(1), 50-52.

Clinical librarian services provide highly specific, case-related medical literature searches in a manner that permits the information obtained to influence ongoing case management. We have measured the impact of such services on actual case management and on diagnostic thinking in a random sample of 50 searches over five months provided to house officers on medical and pediatric services of a university hospital. Patient management was affected in 20% of cases, and diagnostic thinking was influenced in an even higher percentage of instances. In comparison with information generated by other ancillary services such as clinical laboratories, clinical librarian services appear to be highly effective at an acceptable cost. Since the information generated by such searches may often result in further cost savings to patients, the potential overall efficiency of such services may be great.

Greenberg, B., Battison, S., Kolisch, M., & Leredu, M. (1978). Evaluation of a clinical medical librarian program at the Yale medical library. *Bulletin of the Medical Library Association*, 66(3), 319-326.

A clinical medical librarian (CML) program in a large university-based teaching hospital setting is viewed by the majority of clinicians as education-oriented, with slightly fewer clinicians viewing it as patient care oriented. The CML service has been utilized for research purposes only when it is clear that case-relevant information can evolve into research intended to have "clinical" impact. This study reports the results of a questionnaire circulated among clinicians receiving CML support by a large medical school library. Results indicate that (1) the CML effected a change in information-seeking behavior by the clinicians--they obtained information that would not have been available to them if the CML had not been present in patient-management conferences; (2) relevancy of information provided by the CML was judged by the clinicians to be very high; (3) the accuracy of the CML's search, coupled with the rapidity of delivery, was found to be highly satisfactory; (4) acceptance of the CML within the patient care setting was acknowledged by the majority of clinicians, who contact the CML in-hospital and overwhelmingly prefer to do so; and (5) there was no statistically significant variation in the manner in which different medical specialties use the services of a CML. These findings justify implementation of a clinical medical librarian program, on a modified basis, as an additional service to already existing reference services offered by a large medical school library.

Marshall, J. G., & Hamilton, J. D. (1978). The clinical librarian and the patient: Report of a project at McMaster university medical centre. *Bulletin of the Medical Library Association*, 66(4), 420-425.

In June 1975 a clinical librarian project was initiated in the Gastroenterology Programme of McMaster University Medical Centre. The objectives of the project were to assist patients in

participating more knowledgeably in their own health care and to assist health professionals in applying the latest information from biomedical literature to patient care. The implementation and development of the service are described, including the use of feedback from patients and health professionals to assess the impact of the librarians' participation in clinical settings. Benefits included: 1) increased accessibility of information resources to patients, 2) a greater awareness by health professionals of the usefulness of biomedical literature and the library in patient care, and 3) an opportunity for the librarian to gain a first-hand view of activities and information needs in a clinical setting. Key points in determining the successful implementation of the project are given.

Zachert, M. J. (1978). Books and other endangered species: An inquiry into the values of medical librarianship. *Bulletin of the Medical Library Association*, 66(4), 381-389. Major values of medical librarians, as exemplified in their periodical literature 1903-1977, are identified as "professionalism," "cooperation," "sense of community with health sciences practitioners," and "knowledge orientation." These values are examined in terms of interdisciplinary research into human values. Professionalism is studied in greater depth in relation to criteria on a scale of professionalism. Medical librarians have been most concerned with the criteria of organization, specialized education (with more emphasis on continuing education than on introductory medical library education), and service orientation. Indication of challenge to long-held values exists in the contradictions among certain related assumptions underlying our self-image, our current lack of standards, and changing societal views toward commitment to a single, life-long specialization. It is suggested that there is unexplored potential for support of our traditional values and the development of new ones by comparing them with the value systems of health scientists and educators of health sciences practitioners.

Tagliacozzo, R. (1977). Estimating the satisfaction of information users. *Bulletin of the Medical Library Association*, 65(2), 243-249. Several factors influence the responses of users of information retrieval systems who are asked to evaluate the service provided by a system. To realistically estimate user satisfaction, different aspects of the search outcome should be explored. This paper analyzes the data obtained in a follow-up questionnaire sent to a sample of MEDLINE users who had requested searches at seven information centers within a two-month period. The questionnaire requested the user's appraisal of the value of the search and of the usefulness of the retrieved references. A comparison of different items of the questionnaire revealed some contradictions between an overall appraisal of the service and more specific responses on the outcome of the search. Caution is advised in inferring the satisfaction of information needs from the users' evaluation of an information retrieval system.

Staudt, C., Halbrook, B., & Brodman, E. (1976). A clinical librarians' program-an attempt at evaluation. *Bulletin of the Medical Library Association*, 64(2), 236-238. from LISA: Library and Information Science Abstracts database. The Washington University School of Medicine Library carried out an evaluation of its experimental programme to provide patient care information through 'clinical librarians'. The evaluation was based on a questionnaire and in-depth interviews, and covered subject

searches conducted manually and via MEDLINE, Jan-Jun 75. The questions investigated were: (1) the cost of the service and frequency of usage; (2) the purpose of the service; (3) if the service stopped would library use be affected; (4) would use decrease if the service was available only in the library; (5) would the users pay for the service. The methodology is given together with an analysis of results. 85% of respondents to the questionnaire found the searches adequate; the remaining 15% did not.

Harley, A. J. (1975). The price and value of information. *Proceedings of the Royal Society of Medicine*, 68(11), 691-694.

Evans, E., Borko, H., & Ferguson, P. (1972). Review of criteria used to measure library effectiveness. *Bulletin of the Medical Library Association*, 60(1), 102-110.

This article reports the results of a survey of literature on measures of library effectiveness. This survey led to the formulation of six criterion concepts (accessibility, cost, user satisfaction, response time, cost/benefit ratio, and use). The advantages and disadvantages of each method of measurement are discussed. Several points which became clear during the analysis are discussed. First, there is a relative lack of concern with the rationale behind the evaluation process, although the results invariably lead to a confused interpretation when there is no clear understanding of the purpose of an evaluation. Second, the total library system is rarely considered; instead, each evaluation criterion is taken in isolation rather than as part of the whole. Third, the library's preservation function has not been considered at all.