Medical Librarians Role in Improving Evidence-Based Medicine Searching Skills: An Annotated Bibliography
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Clinical librarians on the care team led to positive effects on self-reported provider attitudes, provider information retrieval tendencies, and, notably, clinical decision making.

We know that at least 60% of questions posed in primary care have answers that change clinical decision-making. Medical librarians share their experiences and ideas to help resolve the difficult issues of implementing EBP in daily practice.

The evolution of librarians' involvement in morning report and changes made in morning report sessions to facilitate this activity are described.

Presentation of a case at morning report, followed by the timely dissemination of the results of an online literature review, resulted in a shortened length of stay and lower hospital charges compared with controls.

The information component in systematic reviews has received considerable attention in recent years. Information professionals have evolved from simply acting as 'evidence locators' and 'resource providers' to being quality literature filterers, critical appraisers, educators, disseminators, and even change managers.

With the increased focus on EBM in residency education, health sciences librarians have found a natural partnership in teaching EBM search skills in the postgraduate curriculum. However, even with EBM opening the door for increased librarian instruction, the level of librarian involvement in residency education varies greatly by institutional or departmental interest, institutional culture, program directors, librarian expertise, and marketing techniques.

Data suggest that measurable learning outcomes were achieved. Residents receiving instruction improved and retained searching skills six-months after intervention.

Most busy practitioners do not have the time for exhaustive literature searches for each clinical question they encounter. However, they can use the basic steps outlined in this article to find answers that matter most to them and their patients.
Brookman A, Lovell A, Henwood F, Lehmann J. What do clinicians want from us? An evaluation of Brighton and Sussex University Hospitals NHS Trust clinical librarian service and its implications for developing future working patterns. Health Information and Libraries Journal 2006 Dec;23 Suppl 1:10-21. 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; that searches generally result in some change in knowledge; and that this knowledge is disseminated.


Crites GE, McDonald SD, Markert RJ. Teaching EBM facilitation using small groups. Medical Teacher 2002 Jul;24(4):442-4. The problem-centered, learner-focused, small-group process (PLS) is used by faculty to train learners in evidence-based medicine (EBM). The results of a novel course to train faculty in the PLS process are described, participants were seven clinicians and four medical librarians.

Cullen, R, Clark M, Esson R. Evidence-based information-seeking skills of junior doctors entering the workforce: An evaluation of the impact of information literacy training during pre-clinical years. Health Information & Libraries Journal 2011 Jun; 28(2):119-129. Most participants had not retained the high-level search skills they had been taught in their undergraduate education. There was no link apparent between the type of training received and their subsequent skill level but those whose programs required these skills were better at retrieving and then appraising information.

Dorsch JL, Jacobson S, Scherrer CS. Teaching EBM teachers: A team approach. Medical Reference Services Quarterly 2003 Summer;22(2):107-14. A collaborative Evidence-Based Medicine (EBM) course, co-taught by medical and library faculty, targets the needs of health care and information professionals involved in teaching and practicing EBM by introducing concepts, methods and tools of the EBM process.

Dorsch JL, Perry G. Evidence-based medicine at the intersection of research interests between academic health sciences librarians and medical educators: A review of the literature. Journal of the Medical Library Association 2012 Oct; 100(4):251-257. There is continuing literature of controlled studies measuring impact of cross-disciplinary efforts between librarians and medical educators in EBM instruction. A small number provide evidence for librarian impact in this enterprise.

Eldredge JD. The randomised controlled trial design: Unrecognized opportunities for health sciences librarianship. Health Information and Libraries Journal 2003 Jun;20 Suppl 1:34-44. The RCT design offers the potential to answer far more EBL questions than have been addressed by the design to date. Librarians need only extend their horizons through use of the versatile RCT design into new subject domains to facilitate making EBL a reality.

Gagliardi JP, Stinnett SS, Schardt C. Innovation in evidence-based medicine education and assessment: An interactive class for third- and fourth-year medical students. Journal of the Medical Library Association 2012 Oct; 100(4):306-309. This article describes a small group hands-on EBM course at Duke University which used the Berlin questionnaire as an objective scoring system to measure knowledge. The authors found that one of the innovative features leading to success was having a multidisciplinary faculty including a librarian.

The information needs of practicing clinicians are distinct from the needs of students, researchers, or nonclinical personnel. Librarians can play a significant role in evaluating the ever-increasing variety of synthesized resources, placing them into the searching hierarchy, and training clinicians to search from the top down.

The authors created a modification to their hospital's Quality of Care rounds by incorporating a clinical librarian, who assisted residents in conducting literature reviews related to clinical topics discussed during the rounds. The clinical librarian program has greatly improved the Quality of Care rounds by aiding in literature searches and quality of up-to-date, evidence-based presentations.

A randomized crossover trial to determine if the PICO format had better recall and precision for therapy questions in PubMed. The authors concluded that PICO queries did not result in better time-limited searches and that standard queries with enough detail are sufficient.

This randomized controlled trial with third-year medical students showed that a single EBM workshop does not result in statistically significant changes in literature searching skills. Teaching these skills may increase student confidence which in turn may lead to facilitating use as future clinicians.

Fifteen studies published between 1998 and 2011 were examined to determine effectiveness of training on literature searching skills. There was general improvement in clinical question writing, search strategies, article selection, and use of resources.

This article examines the experience of a librarian embedded in an online epidemiology and evidence-based medicine course over three years.

Formative evaluation has shown how the application of evidence-based health care needs adequate resources and requires people with appropriate knowledge and skills. This article charts the progress of a guideline project and highlights how the partnership between the clinical team and the clinical librarian has been deemed to be essential to the success of the project.

This article advocates for hospital librarians to reposition themselves by developing new skills to ensure survival of the role. By becoming embedded into clinical care, research, and education departments they become more integral team players within their institutions.

This study sought to identify medical librarians' roles in supporting evidence-based medicine (EBM) practice; determine whether medical librarians' work settings, work experiences, or job titles made a difference in their EBM responsibilities; and find out medical librarians' perceptions of their roles in EBM practice.


Working in teams led by a resident and librarian, students researched real cases and then evaluated the effectiveness of their approach to the problems. This paper outlines the rationale for the team approach, reviews the administration of a computer-based workshop, and discusses the evaluation process.


Debate continues over the extent of librarian involvement in delivering critical appraisal training. As long as healthcare librarians recognize their own capabilities and identify the boundaries within which they feel comfortable then there is no reason why they should not be involved in delivering critical appraisal training.


Two types of barriers were noted: extrinsic barriers (organizational, environmental, training, role expectations) and intrinsic barriers (knowledge, skills, attitude). The challenge lies in developing strategies to deal effectively with these barriers to encourage and support librarians in the delivery of critical appraisal training at a level at which they feel confident and able.


Research shows that a major barrier to practicing evidence-based practice is lack of time and skills needed by the health-care professional. Therefore, an involvement of a librarian is a benefit to health-care professionals. The traditional skills of searching, organizing, processing and locating information are still the foundation for the new information age.


A large-scale study which demonstrated library information resulted in changes in advice given to patients, diagnosis, choice of drugs, other treatments, and tests. Respondents also reported that information helped them avoid patient misunderstanding of a disease, additional tests, misdiagnosis, adverse drug reactions, medication errors, and patient mortality.


This service showed that it was possible to provide evidence-based answers to clinical questions in 15 minutes or less. The project overcame a number of barriers using innovative solutions. There are many opportunities to build on this experience for future joint projects of librarians and healthcare providers.


To improve health outcomes, physicians must first realize what they need to know, and then how to find it, including how to efficiently employ complex biomedical databases. Librarians, informaticians, and medical educators must join together to make curriculum-integrated informatics education and training a reality.

The Galter Health Sciences Library at Northwestern University has taught an information literacy curriculum for medical students over several years. The curriculum features focused and interactive clinical information sessions with quiz-based assessments.


Because of their contact with clinicians at the point of care and their roles as information providers in hospitals, hospital librarians are in a position to contribute to promoting and enhancing the practice of evidence-based health care. Further exposure, education, and training may help hospital librarians with reservations about EBHC to increase their support for its practice.


Clinical decisions based on a meta-analysis that is based on ineffective retrieval strategies may have serious negative consequences for patients. This study objective was to investigate the extent to which meta-analyses report proof of their retrieval strategies' effectiveness. The conclusion was that peer-review standards must be developed that require authors of meta-analyses to report evidence for the effectiveness of their retrieval strategies.


It is questionable whether the evidence-based health care model, whereby end users appraise all potentially pertinent information, is sustainable. The authors suggest new roles for health sciences librarians: partnering to integrate advanced information management technologies into the clinical enterprise and integration into the processes for developing these technologies.


The objective of this study was to validate an assessment instrument for MEDLINE search strategies at an academic medical center. Search strategy scores were significantly higher for residents who received training than the comparison group with no training. There was no significant difference in search strategy scores between senior residents who received training and faculty experts.


Taking information resources out to clinicians enables clinicians to seek answers to questions that may otherwise go unasked and so helps contribute to patient care. Clinical librarians use their contextual knowledge to guide the formation of clinical questions, whether the request is for background information or to confirm a diagnosis or a treatment plan.

Sampson M, McGowan J. Errors in search strategies were identified by type and frequency. Journal of Clinical Epidemiology 2006 Oct;59(10):1057-63.

Errors in the electronic search strategy of a systematic review may undermine the integrity of the evidence base used in the review. Two librarians assessed eligibility and scored the eligible electronic search strategies for 11 possible errors. When the MEDLINE search strategy used in a systematic review is reported in enough detail to allow assessment, errors are commonly revealed.


The authors studied the effectiveness of a train-the-trainer collaboration model between librarians and medical faculty to instruct librarians and health professionals in teaching evidence-based medicine (EBM) principles. As evidence-based health care continues to extend to other disciplines, librarians can position themselves to participate fully in the EBM educational process.
The learning environment of residency programs is ripe for innovative librarian involvement. How librarians can become part of a clinical team outside of the library and provide real-time reference services while teaching by example is illustrated. Benefits of the alliance include the integration of disciplines to provide enhanced resident learning and improved patient care.

Differences between EBM tools' options, content coverage, and usability were minimal. However, the products' methods for locating and grading evidence varied widely in transparency and process. EBM tools need to provide more information about authorship, reviewers, methods for evidence collection, and grading system employed.

There is nothing easy about the skills required for a trustworthy literature search. To avoid the danger of superficial results, researchers, practitioners, and managers need ready access to experts who can undertake reliable searches, and are conversant with the many databases that different clients require.

This study explores the roles of clinical librarians embedded in patient care teams and the unique aspects of this role which includes the sense of urgency surrounding searching activities, broad dissemination of clinical question responses, and leveraging their role in clinical teams.

Participating librarians share how they incorporated lessons learned into their support of evidence-based practice related to teaching about evidence-based resources, assisting health care practitioners with developing answerable questions, enhancing the clinician-librarian partnership, and assisting practitioners in selecting evidence-based resources for quick answers to clinical questions.

This study compared two methods regarding comprehensiveness and effort for deciding whether to update guidelines. Librarians were an integral part of the research process that streamlined the searches.

While it is important for undergraduate medical students to master the basic and clinical science foundations of medical practice, it may be even more important to teach students how to find and interpret medical information, form professional relationships with mentors and peers, and make a commitment to lifelong learning and professionalism.

When health care providers used professional library services, the result was improved general patient care, diagnosis, choice of tests, choice of therapy, and reduced stay. Clearly, educating physicians in how to appropriately use information resources could lead to improved health outcomes.

The findings of researchers illustrate the need for librarians to be on any team that sets out to undertake meta-analyses or Cochrane reviews. Not only does the literature search strategy need to be reproducible,
documentation should be provided that a comprehensive search was done. The role of librarians in this process is essential.

A librarian's expertise in accessing the evidence base could enhance the safety and appropriateness of care in clinical environments. In addition, librarians could apply specific technical knowledge management skills to medicine. To realize improvements from these skill sets, healthcare leaders must consider ways of working with librarians to enhance patient safety.

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