

# FROM TRADITIONAL LIBRARY INSTRUCTION TO COLLABORATIVE INSTRUCTION: CHARTING THE COURSE TOWARD EVIDENCE-BASED PRACTICE

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## INTRODUCTION

The Norris Medical Library at the University of Southern California employs a liaison program to provide an essential link between the library and the University's academic communities. The goal of the program is to promote outreach activities that ultimately lead to collaboration with stakeholders outside of the immediate library community. This goal was achieved last fall when a research support librarian teamed up with a professor of physical therapy to develop a curriculum for physical therapy students. The objective of this teaching alliance was for first-semester doctor of physical therapy students to learn introductory skills for Evidence Based Practice. The collaboration combined the librarian's expertise in database searching, library instruction, and information literacy with the subject knowledge of the physical therapy professor.

In developing the learning experience, the professor of physical therapy requested assistance through the liaison program. Her requests, however, did not fit within traditional teaching methods used by the liaison. The librarian and the professor were able to maintain and enrich the interdisciplinary partnership through flexibility, communication, and cooperation. In this article, the collaborators will share how they overcame obstacles, learned to speak each other's language, and quelled colleagues' concerns that they were abandoning traditional teaching methods.

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## BACKGROUND

The Norris Medical Library is located on the University of Southern California (USC) Health Sciences Campus in Los Angeles. The library has a strong emphasis on educating faculty and students through workshops on Internet resources, database searching, and computer literacy. Librarians teach users to access the library's many resources including 2,184 electronic journals, 1,002 current print journals, and 173,687 print volumes (124,662 journals and 49,025 books). Library users include medical, pharmacy, occupational therapy, and physical therapy students, 1,260 full-time faculty, and other health professionals. The library staff includes 13 librarians.

To optimize library and information services provided to the Health Sciences Campus (HSC), each unit or department has a designated library liaison who is available to:

- Help users find information, e.g., for research or patient care
- Provide training for databases appropriate for the user's field
- Alert users to new resources in their field
- Inform users of new library services and programs
- Highlight and demonstrate key information resources at departmental meetings
- Provide orientation programs for new department members, including graduate students and staff

The Doctor of Physical Therapy (DPT) program at USC is a full-time graduate program that prepares students for professional careers as physical therapists. The program has 270 concurrent students and 74 faculty. The DPT curriculum involves three years of combined didactic and clinical training. A primary goal is to prepare physical therapists who are able to make independent diagnostic and treatment decisions based on the scientific evidence that informs clinical practice. This requires that students develop strong skills in Evidence Based Practice.

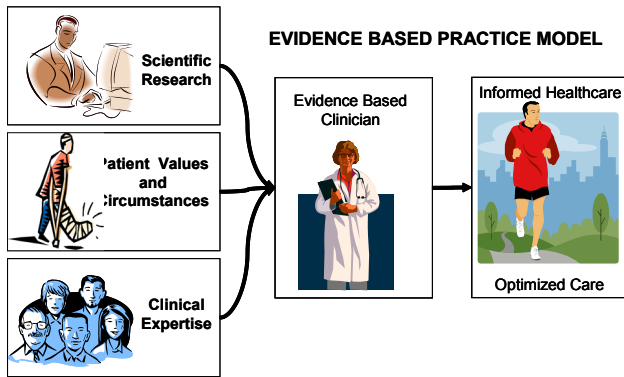


Figure 1. Using EBP, clinicians integrate scientific research, patient values and circumstance and clinical expertise to make informed decision and optimize patient care.

Evidence Based Practice (EBP) is a relatively new model of healthcare practice, first described in 1992 (“Evidence-based medicine. A new approach to teaching the practice of medicine. Evidence-Based Medicine Working Group,” 1992). Using EBP, healthcare providers integrate research evidence, clinical expertise, and their patients’ unique values and circumstances to make informed clinical decisions (Fig. 1). Historically, the translation of scientific research into patient care has been startlingly slow (Heffner, 2000). One reason for this has been the difficulty clinicians experience trying to efficiently identify the most appropriate clinical research findings to make an informed clinical decision about an individual patient (Jette et al., 2003).

A survey of physical therapists in 2003 showed that while 90% of respondents recognized the importance of EBP, few therapists actually performed frequent database searches to obtain current scientific literature to guide their practice (Jette et al., 2003). With this fact in mind, the authors’ two goals in designing an introductory EBP curriculum were to indoctrinate DPT students in the importance of EBP and to create a foundation for development of life-long habits of evidence based practice.

## DEVELOPING THE CURRICULUM - PHYSICAL THERAPY PROFESSOR’S PERSPECTIVE

The librarian’s and the professor’s introductory EBP module would take place during the first two weeks of school in a class of 96 students. The goal was to introduce students to the first four steps of EBP:

- 1) Convert the need for information into a searchable clinical question;
- 2) Find the best research evidence to answer the question;
- 3) Critically appraise the quality of the research evidence;
- 4) Integrate the research evidence with clinical expertise and the patient’s unique biology, values, and circumstances (Straus, 2005).

The idea was to design the module around an individual patient case because case-specific examples ensure that skills are learned in the context of patient care. This presented a unique challenge since the authors’ students could not be expected to have any appreciable clinical background so early in their educational experience. With this in mind, the physical therapy professor developed a simple clinical case. The case and corresponding searchable clinical question could be understood by students without clinical background. A research article, Feland et al. (2001), was identified that addressed the clinical case, provided a simple

## FIGURE 2. THE CLINICAL CASE, SEARCHABLE CLINICAL QUESTION, AND ARTICLE FOR APPRAISAL

**CLINICAL CASE:** Mr. Chu is a 63 year old retired high school teacher who lives in his own home with his wife. His primary care physician referred him to outpatient PT with a diagnosis of low back pain. The examination that you complete with your clinical instructor (CI) reveals that one impairment contributing to his back pain is hamstring muscle tightness. Your CI asks you to develop a therapeutic exercise program for Mr. Chu to do at home to improve his hamstring flexibility. While working with Mr. Chu you find that he has a sedentary lifestyle but is otherwise fairly healthy. You sense though that he is anxious and a little impatient about exercising. He is only holding his hamstring stretches for about 5 seconds. When you instruct him to hold the stretch longer he says “I really don’t like stretching but I will do it. How long do I really have to hold these stretches?”

**SEARCHABLE CLINICAL QUESTION:** For a 63 year old male with low back pain, what duration of stretching exercise is required to improve hamstring muscle flexibility?

**ARTICLE for APPRAISAL:** Feland, J. B., Myrer, J. W., Schulthies, S. S., Fellingham, G. W., & Measom, G. W. (2001). The effect of duration of stretching of the hamstring muscle group for increasing range of motion in people aged 65 years or older. *Phys Ther*, 81(5), 1110-1117.

research design, and was devoid of excessive clinical vernacular. This article was crucial to the learning module because it provided an inviting first article for students to read, appraise, and apply to a particular clinical case. Figure 2 describes the clinical scenario, searchable clinical question, and research article.

After developing the case, the physical therapy professor asked the librarian to lead the development of a search skills lab where students would search for information to answer the clinical question about Mr. Chu. The search results needed to include Feland's paper (Feland, Myrer, Schulthies, Fellingham, & Measom, 2001) because the students would appraise this article in the final stage of the module.

## DEVELOPING THE CURRICULUM - LIBRARIAN'S PERSPECTIVE

### Traditional Searching

Traditionally, Ovid MEDLINE hands-on classes use examples that utilize a formalized, detailed controlled vocabulary called Medical Subject Headings (MeSH), along with subheadings, explode, and focus. Usually the initial search topic utilizes a disease with a subheading, adds a second topic, and combines the two with the Boolean "AND" operator. The exercise begins with a straightforward example designed to build confidence in the learners. Subsequent searches introduce more complex discipline-specific concepts. This class is typically one hour; a second lengthier class covers searching for evidence-based medicine using multiple databases and resources.

### A Challenging Request

The article chosen by the physical therapy faculty member presented several challenges for the librarian. The primary problem was that the Medical Subject Headings (MeSH) for the article did not reflect the article's specific content. Two concepts in the article, *hamstring muscles* and *stretching*, had no corresponding specific MeSH terms. In addition, a more recent article would be preferred. Thus, initially, the liaison librarian thought this article would not work.

## A Shift in Librarians' Thinking

The liaison met with library colleagues who would assist in teaching the class. After reflection, the liaison librarian concluded that the librarians needed to adjust their teaching to dovetail with the overall lesson plan proposed by the physical therapy professor. The library liaison lobbied the other librarians involved in teaching the module to consider the physical therapy professor's teaching goals in addition to the traditional library teaching goals and techniques. This required the librarian to convince her colleagues of the importance of introducing students to the concept of keyword searching. The liaison's colleagues initially resisted this change but eventually agreed to this shift in thinking.

## THE CURRICULUM - COLLABORATION AND SUCCESS

The curriculum started with a two-hour lecture by the physical therapy professor. Learning objectives focused on student familiarity with the EBP model, insight into the value of EBP as a core of professionalism, and beginning skills for clinical question development based on the case of Mr. Chu. This lecture was followed by a one-hour computer-based Ovid MEDLINE search class during which students learned to use traditional MeSH search strategies and discipline-specific keyword searching.

### SEARCH TOPICS

The three search topics used in the Ovid MEDLINE class are presented below and discussed briefly. During each class a librarian explained Ovid MEDLINE searching concepts and strategies, demonstrating them with the three search examples shown below. Students acquired hands-on experience by inputting search terms at their own computer stations while the librarian projected them on a screen at the front of the classroom. The first two topics follow the traditional practice of using MeSH and the final topic introduces keyword searching.

### TOPIC 1: ELECTROTHERAPY FOR STROKE PATIENTS

The first topic was Electrotherapy for stroke patients. It was designed to be a simple, confidence-building search using MeSH terms, subheadings, explode, and focus. It also introduces the Boolean "AND" operator to add the second concept.

Topic 1: Electrotherapy for Stroke Patients		
#	Search History	Results
1	exp *Cerebrovascular Accident/rh, th [Rehabilitation, Therapy]	3066
2	exp Electric Stimulation Therapy	10614
3	1 and 2	90
4	Limit 3 to (humans and English language and "review articles")	19

## TOPIC 2: SUBACROMIAL IMPINGEMENT SYNDROME REHABILITATION

The second topic, rehabilitation for subacromial impingement, was increasingly complex and introduced the Boolean “OR” operator. It also focused on the steps needed to find general articles on physical therapy for a disease or condition. The final search statement uses the *randomized controlled trials* publication type to demonstrate one method finding evidence-based practice articles.

Topic 2: Subacromial Impingement Rehabilitation		
#	Search History	Results
5	exp *Shoulder Impingement Syndrome/rh [Rehabilitation]	27
6	exp Rehabilitation/	38916
7	exp Physical Therapy Modalities	28066
8	6 or 7	59498
9	exp *Shoulder Impingement Syndrome/	466
10	8 and 9	70
11	5 or 10	76
12	Limit 11 to (humans and English language and randomized controlled trials)	11

## TOPIC 3: DURATION OF STRETCHING EXERCISES TO IMPROVE HAMSTRING MUSCLE FLEXIBILITY

The final search topic, “What is the duration of stretching exercises required to improve hamstring flexibility?”, was the one posed by the physical therapy faculty member. It utilized keywords because two of the search concepts, *stretching* and *hamstring*, did not map to appropriate subject headings. Since the method for finding general articles on physical therapy for a specific disease or condition is complex, a step-by-step tip sheet was developed.

Topic 3: Duration of stretching exercises to improve hamstring muscle flexibility		
#	Search History	Results
13	Stretching.mp.	4144
14	Exp Time factors/ or duration.mp.	353631
15	Hamstring.mp.	1040
16	13 and 14 and 15	10
17	Limit 16 to (humans and English language and randomized controlled trail)	3

Note: In 2007, a new MeSH heading, *muscle stretching exercises*, was introduced.

After completing the search lab, students read and answered basic appraisal questions about the Feland et al (2001) article. In a final two hour session with the physical therapy professor the students participated in a lively discussion appraising the applicability and validity of the Feland paper to their clinical question about Mr. Chu.

Students expressed that they had benefited from the sessions. DPT faculty have reported that the students are less intimidated by articles assigned for reading in class and have better insight into the importance of EBP. Additionally, students have more actively pursued assistance from the medical librarians when searching for articles for class assignments.

### LESSONS LEARNED

Healthcare faculty, students, and clinicians need the expertise of librarians because accessing the scientific literature can be overwhelming. Librarians can help clinicians overcome this significant barrier by facilitating development of effective search skills, awareness of secondary research resources, use

of ‘push’ technology, and assistance in negotiating the ever-changing and improving informatics technological landscape. In this case, due to the liaison program, the physical therapy professor recognized that a librarian could add tremendous value to an introductory EBP curriculum for physical therapy students.

Librarians need to understand and appreciate the real-world context of the healthcare environment to develop an effective, long-lasting liaison relationship with healthcare faculty and clinicians. In this case, the librarian took the time to understand the teaching and clinical context of the situation and went outside of traditional teaching practices to foster a successful collaboration.

### FIGURE 3. KEYS TO SUCCESSFUL TEACHING COLLABORATION

The following four items were crucial to the success of this project and will serve as the foundation for future collaborative projects through the Norris Library Liaison Program:

- Work to understand and appreciate the perspective of each collaborator
- Keep students' real-world needs at the center of teaching strategies and goals
- Identify new professional opportunities that each collaborator can gain through interdisciplinary collaboration
- Openly share and explore each professions' global perspectives and challenges

#### THE FUTURE

The Biokinesiology and Physical Therapy Division's library liaison is now involved in developing and delivering EBP curricula across all three years of the DPT curriculum. The goals of this collaboration are to ensure that students achieve a full complement of informatics skills and learn to utilize librarians for assistance throughout their careers as evidence based practitioners.

Faculty at the Division of Biokinesiology and Physical Therapy are in the process of developing a standardized assessment test of student and clinician EBP skills. This test will assess skills in developing clinical questions, search strategies, appraising research evidence, and integrating all evidence for informed clinical decision making. This tool will be used to assess the impact of the Division's curriculum, including the library liaison program, on student and graduate aptitude in the crucial components of EBP.

#### SUMMARY

The Norris Library's liaison program aims to create alliances with USC's academic community and provides a vehicle for academic outreach. The ultimate success of such a program, however, requires the ability of librarians to think outside of the box and develop new and creative ways to teach traditional topics. The authors have provided an example of a successful collaboration between a research librarian and physical therapy professor to teach physical therapy students the foundations of Evidence Based Practice.

#### BIBLIOGRAPHY

- Evidence-based medicine. A new approach to teaching the practice of medicine. Evidence-Based Medicine Working Group. (1992). *Jama*, 268(17), 2420-2425.
- Feland, J. B., Myrer, J. W., Schulthies, S. S., Fellingham, G. W., & Measom, G. W. (2001). The effect of duration of stretching of the hamstring muscle group for increasing range of motion in people aged 65 years or older. *Phys Ther*, 81(5), 1110-1117.
- Heffner, J. E. (2000). Miracles and magic bullets: translating science into better care. *Crit Care Med*, 28(10), 3572-3573.
- Jette, D. U., Bacon, K., Batty, C., Carlson, M., Ferland, A., Hemingway, R. D., et al. (2003). Evidence-based practice: beliefs, attitudes, knowledge, and behaviors of physical therapists. *Phys Ther*, 83(9), 786-805.
- Straus, S. E. (2005). *Evidence-based medicine : how to practice and teach EBM* (3rd ed.). Edinburgh ; New York: Elsevier/Churchill Livingstone.