

## SCAMeL Speedy Startups: The Pilot Season 2017

### What is the project?

**Title:** "Best Practices in Teaching Evidence-Based Medicine, Population Health, Informatics, and 'Big Data' in Medical Schools"

**Summary.** This ethnographic research project will provide information and insight on best practices in teaching evidence-based practice (EBP), population health, informatics, and big data from multiple academic institutions, and will report on the extent to which librarians are involved in teaching these skills in medical schools' curricula.

### Why is it important (what is the benefit)?

**Background.** Teaching evidence-based medicine (EBM) has been shown to be both an opportunity and a challenge for medical schools and medical librarians. EBM instruction represents an opportunity for medical librarians to become involved at various points in the curriculum, from teaching individual modules to designing and leading courses. Challenges range from finding time in the curriculum to faculty's lack of EBM knowledge and skills, and to librarians' struggles to find a role as EBM instructors. Maggio et al.<sup>1</sup> also identified learner-centered challenges, including suboptimal role models and students' difficulty in mastering EBM skills that may hinder the ultimate practice of EBM after students graduate, and analyzed several educational approaches that were common across all institutions in the study. Some of these approaches, such as longitudinal courses that are integrated into the curriculum over several semesters, have been implemented recently at the Texas A&M University College of Medicine (COM).

Librarians at the Texas A&M Medical Sciences Library (MSL), in partnership with COM faculty, have served as course directors and core faculty for this longitudinal EBM teaching model, known as "Evidence-Based Medicine, Scholarship, and Research (EBMSR)," as well as for previous variations. The for-credit EBMSR course begins the first semester of the first year of medical school, and continues in three phases over the next two semesters. The course consists of a mixture of didactic sessions, table-based learning, case studies, journal clubs, and a capstone project, and covers the "well-built clinical question" in PICO format ([cebm.net/asking-focused-questions/](http://cebm.net/asking-focused-questions/)), literature searching, and critical appraisal of research articles.

However, now that the course has been delivered over a couple of years, faculty and students are reporting concerns in several areas:

1. Teaching EBM in three successive phases assumes that students mastered the knowledge and skills in the previous phase; however, faculty have to "start from scratch" in phases II and III, because students overall do not retain the knowledge and skills learned in previous phases—in the words of one COM faculty, "they dump it".
2. Although each phase has multiple assessment items, faculty question whether we are measuring the "right" way to give feedback and assure competence for either USMLE or for future practice;

in other words, what test questions should be asked, how many assessments should be given, and when should they be given?

3. COM faculty are concerned that students may arrive in residencies from A&M without demonstrating competency in the required Entrustable Professional Activities (EPA)<sup>2</sup> for EBM. We do not know how to ensure or to measure this, especially since no further EBM instruction occurs after the second year.
4. Although COM is aware that a growing trend in medical school education is teaching students about population health, health systems, quality improvement, and the use of “big data” in research and clinical practice, no curriculum map (e.g., course placement, resources, content, etc.) is in place, and no plans are on the horizon to develop one.
5. MSL has a “short bench” of librarian faculty who are available to teach EBM; short of increasing the job duties of librarians who focus on other client populations, learning more about how to develop and place effective, self-directed modules in the curriculum, for both student learning and faculty development, is a high priority.
6. Students do not like the course.

Teaching EBM is generally a vital and substantial portion of medical libraries’ instructional programs. Librarians in the South Central Chapter (SCC) have presented numerous papers and posters at annual conferences, at both the chapter and MLA levels, on developing and implementing EBM teaching into the medical school curriculum, and have published numerous journal articles on the subject. However, to date an in-depth observational, qualitative study on the specific content and delivery approaches of EBM in medical school curricula has not been conducted. This study could benefit instruction librarians by identifying and recommending those educational strategies that result in better learner outcomes and knowledge and skills retention. Studying these strategies in libraries outside of the SCC five-state region could bring fresh perspectives to both academic and hospital librarians, both for SCC and for other chapters.

***Goals and Objectives.*** This will be a mixed methods study, including both quantitative and qualitative, ethnographic approaches, conducted at multiple institutions. Using a grounded theory approach, semi-structured interviews will be conducted with medical librarians and medical school faculty to address project goals and objectives.

***Goals:***

1. To develop a “blueprint” that will inform the design of EBM instruction that can be adapted and customized for other medical libraries and schools.
2. To assure that required starting residency competencies in EBM are met by the fourth year of medical school.
3. To fully integrate EBM into students’ third-year clinical experience, as is already established at other schools.<sup>3</sup>

4. To raise the level of awareness of medical school faculty and administrations of librarians' roles and skills in teaching and assessing EBM knowledge and skills, and of the potential benefits in including librarians as EBM faculty on syllabi and course descriptions.

*Objectives:*

1. Describe EBM structure, teaching methods, and curriculum placement at other medical schools.
2. Describe the extent and type of librarians' involvement with teaching EBM.
3. Identify common challenges in teaching and learning EBM.
4. Identify successful and unsuccessful strategies and approaches to overcome EBM teaching and learning challenges.
5. Describe evaluation measures to determine degree of success of these strategies and approaches.
6. Validate survey or interview questions and data analysis methods for other medical librarians who wish to investigate the state of EBM teaching and learning at their institutions.
7. Describe how and where concepts and methods of population health, informatics, systems thinking, and "Big Data" are incorporated into medical schools' curricula.
8. Develop a rationale for teaching EBM in the third-year clerkships.
9. Increase COM students' satisfaction with the EBMSR course.

Depending on IRB approval, a sample of students may also be interviewed, and observation of live or online EBM instruction, as available, will be documented.

These are some of the "unknowns" that this project will address. As one of the COM EBMSR course directors has declared, "EBM is the foundation for clinical quality." It is imperative that we prepare our students properly for this foundation.

*Method.* The general strategy will follow these steps:

1. Investigator obtains IRB approval. All data will be de-identified and every effort will be made to eliminate possible tracing of responses to individuals.
2. Investigator contacts the medical library directors at the institutions listed above, explains the project, and asks to come for a visit. Upon the director's invitation, investigator contacts key informants with a description of the project and obtains agreement to collaborate. Participants and investigator mutually agree upon timing for a scheduled visit, and the site librarians contact pertinent faculty at their medical school to arrange interviews. Visits will be scheduled to coincide with timing of live EBM instruction and/or curriculum committee meetings. Visits may take place over a span of a few days to a couple of weeks.
3. Semi-structured interviews will be conducted with librarians and medical school faculty. Questions will be shared with key informants ahead of time. In addition to demographic questions, questions oriented to the objectives will be asked, such as: At what points in the 4-year curriculum do other medical schools introduce EBM topics, such as PICO and critical appraisal of evidence? How often are these concepts reinforced? How are students assessed on their learning of these concepts? How is learning retention measured? What barriers have been experienced, what strategies to overcome these barriers have been implemented, and what degree of success have

these realized? What exercises and case studies have worked best to instill EBM knowledge and skills? How are population health, systems thinking, and “big data” incorporated into the curriculum? To what extent are librarians involved in the curriculum, and why (or why not)? What benefits do you or would you see in having librarians involved in EBM curriculum design and delivery? Additional questions may be suggested during the interviews.

4. All interviews will be recorded and transcribed. Participants will be asked to submit EBM curricular materials, such as syllabi, slides, and assignments.

5. Investigator will observe live EBM instruction in didactic sessions, journal clubs, or online modules. Learning objectives, content, and delivery modes will be documented.

6. Interview data will be analyzed using a qualitative tool such as Atlas<sup>TM</sup>. Quantitative data will be analyzed for statistical significance and strength of correlations with SPSS<sup>TM</sup>.

**Evaluation.** Formative, process, and summative evaluation methods will be used, combining the strengths of an in-process with an end-of-project evaluation. Exit interviews will be conducted with the key informants after each visit. A summative evaluation on Qualtrics will be sent via email to all participants after all results have been analyzed and shared.

## References

1. Maggio L, ten Cate O, Chen H, Irby D, O'Brien B. Challenges to Learning Evidence-Based Medicine and Educational Approaches to Meet These Challenges. *Academic Medicine*. 2016;91(1):101-106. doi:10.1097/acm.0000000000000814.
2. Association of American Medical Colleges (AAMC). The Core Entrustable Professional Activities for Entering Residency. May 2014. <https://www.aamc.org/initiatives/coreepas/>
3. Blanco MA, Capello CF, Dorsch JL, Perry GJ, Zanetti ML. A survey study of evidence-based medicine training in US and Canadian medical schools. *J Med Libr Assoc*. 2014 Jul;102(3):160-8. doi:10.3163/1536-5050.102.3.005.

## What institution is involved?

Texas A&M University Medical Sciences Library is the lead institution. The University of Colorado Health Sciences Library, Anschutz Medical Campus, Denver, CO has agreed to participate. Other institutions may include:

- Lane Medical Library, Stanford University, Stanford, CA
- University of Washington Health Sciences Library, Seattle, WA
- Oregon Health & Science University Library, Portland, OR
- Idaho State University Health Sciences Library, Boise, ID
- (Possible additional visit with planners of Idaho's first medical school in Meridian)
- University of Utah Spencer Eccles Health Sciences Library, Salt Lake City, UT
- University of New Mexico Health Sciences Library, Albuquerque, NM
- Hardin Library for the Health Sciences, Iowa City, IA
- Taubman Health Sciences Library, Ann Arbor, MI
- Becker Medical Library, St. Louis, MO

## Who will carry out the project and what are their roles?

The Principal Investigator is Catherine Pepper, MLIS, MPH. Ms. Pepper will conduct all segments of the study, including data collection and analysis, recruiting participants, and writing reports and journal papers. Esther Carrigan, Director of the Medical Sciences Library, will oversee the overall execution of the study and the budget expenditures.

**What is the timeline?**

Data collection will take place over a two- to three-month period, during July-September of 2017. Data analysis will be conducted in October, and the final report will be completed by mid-December. A submission will be submitted to a peer-reviewed journal for publication in 2018. Abstracts for research papers will be submitted for MLA and SCC 2018 conferences, as well as for the 2018 annual conference of AAMC (Association of American Medical Colleges).

**How much money do I need for the project (budget)?**

This is a large, ambitious project, and will require funding beyond the allowed grant amount. Some professional development funding will be available from MSL, but the remainder will be funded by the PI. Some costs will be mitigated due to being able to stay with family or friends at two sites. Visits will be clustered geographically within the two-month time frame, for efficient car route planning. If the schedule for one site will be much earlier or later than the other visits, the PI will fly to that site. The number of sites can be reduced or increased.

A minimum of 10 institutions will be visited. In order to allow enough time to reach multiple key informants at each site, 4 nights per site for hotels have been allotted--lengthier stays will be covered by either the Medical Sciences Library or by the Investigator.

Hotel: 4 nights x 8 sites @ \$130/night = \$4160. Two sites will not need hotel. One site should require only one day = \$130. Total Hotel: \$4290.

Gasoline/Airfare: \$1660

Food: \$100 x 10 sites + \$50 x 1 site = \$1050

GRAND TOTAL: \$7000

Total Requested from SCAMeL: \$5000

Remaining \$2000 to be funded by other sources, including MSL and/or Investigator.

Approved 2/28/2017  
 SCAMeL Research Committee  
 Joy Summers-Ables, Chair

Site	Hotel		Gasoline / Airfare	Food	GRAND TOTAL	Requested-SCAMeL	
	No. nights	Rates					Totals
University of Colorado Health Sciences Library, Anschutz Medical Campus, Denver, CO	0	N/A	N/A	100	100		
Lane Medical Library, Stanford University, Stanford, CA	4	130	520	100	620		
University of Washington Health Sciences Library, Seattle, WA	4	130	520	100	620		
OR	0	130	0	100	100		
Idaho State University Health Sciences Library, Boise, (Possible additional visit with planners of Idaho's first medical school in Meridian)	4	130	520	100	620		
	1	130	130	50	180		
University of Utah Spencer Eccles Health Sciences Library, Salt Lake City, UT	4	130	520	100	620		
University of New Mexico Health Sciences Library	4	130	520	100	620		
Hardin Library for the Health Sciences, Iowa City, IA	4	130	520	100	620		
Taubman Health Sciences Library, Ann Arbor, MI	4	130	520	100	620		
Becker Medical Library, St. Louis, MO	4	130	520	100	620		
		<b>TOTAL</b>	4290	1660	1050	<b>7000</b>	<b>5000</b>

February 21, 2017

SCAMeL  
UNTHSC Gibson D. Lewis Library  
3500 Camp Bowie Blvd.  
Fort Worth, TX 76109

Dear SCAMeL,

The Health Sciences Library at the University of Colorado Anschutz Medical Campus (CU Anschutz HSL) is pleased to offer support for Cathy Pepper's SCAMeL Speedy Startups: The Pilot Season 2017 application. We are excited about Ms. Pepper's research proposal to visit select health sciences libraries, document how they are teaching evidence-based medicine (EBM), then compile and share the findings.

Integration of EBM into the medical school curriculum has been an area of interest in health sciences librarianship for a number of years. Medical school faculty have struggled to determine the optimal placement for the topic of EBM in the curriculum. Health sciences librarians have worked at their respective institutions to locate a good "fit" for EBM in the curriculum, with some institutions having more success than others. Ms. Pepper's proposal to document and share the content of instructional sessions, assessments given, and success levels obtained would be useful to many health sciences librarians as they work with medical school faculty at their institutions.

Should her proposal be awarded, the CU Anschutz HSL would be happy to host Ms. Pepper if she elected to visit our campus. CU Anschutz HSL would commit staff time to work with Ms. Pepper to shape the study and ensure it covers questions that are important in our efforts to integrate library instruction into the medical curriculum. I'm optimistic that the study will strengthen relationships with our medical school faculty. Additionally, CU Anschutz HSL is excited about potential collaborations with other health sciences libraries that would be involved in this proposal.

Sincerely,



Melissa De Santis  
Director