Searching for Best Practices in Teaching Evidence-Based Medicine: Findings of a Qualitative Study

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INTRODUCTION

Competencies in evidence-based medicine (EBM) are now included in accreditation criteria for medical and health sciences education.[1]

However, no standardized method of teaching or assessing EBM knowledge and skills exists; therefore, it is currently unknown how well-prepared medical students are for searching, critically appraising, and applying research literature for patient care.

Also, teaching EBM faces several unique challenges, ranging from finding time in the curriculum to faculty's lack of EBM knowledge and skills, as well as students' difficulty in mastering EBM skills.[2] This qualitative study investigated educational approaches and challenges in teaching EBM.

OBJECTIVES

1. Describe EBM structure, teaching methods, and curriculum placement at other medical schools.
2. Identify common challenges in teaching and learning EBM, and strategies and approaches to overcome those challenges.
3. Describe the extent and type of librarians' involvement with teaching EBM.
4. Explain the value—if any—of teaching EBM.

METHOD

Grounded Theory Approach & Site Selection

- Semi-structured interviews were conducted in person with medical librarians and medical school faculty (pre-clinical and clinical).
- Sixteen (16) sites in the Pacific Northwest and Midwest were visited.
- Institutions ranged in size from large academic medical centers to smaller medical schools whose curricula are administered by a medical school in another state.

Interview Questions

1. At what points in the 4-year curriculum does your medical school introduce EBM topics, e.g., PICO, searching the literature, biostatistics, and critical appraisal of evidence? How often are these concepts reinforced?
2. What teaching methods are you using, and how do you determine if they are effective? How are students assessed on their learning of these concepts?
3. How well does EBM translate to medical practice? With all the sophisticated tools available now, is there still value in students learning EBM?
4. How do clinical (clerkship) faculty receive training in teaching EBM?
5. What barriers, and strategies to overcome these barriers, have been implemented, and what degree of success have these realized?
6. To what extent are librarians involved in the curriculum, and why (or why not)? What skills/benefits do you see in having librarians involved in EBM curriculum design/delivery?
7. What would you like to know about how other schools teach EBM?

Route Map

Data collection took place over a two-month period, August-September of 2017.

11,000 miles!

RESULTS

96 interviews
Medical, Pharmacy, Nursing, Dental, Public Health, Kinesiology Schools

Themes

T1	Emphasis—past/current/future state; amount of time; quality
T2	Importance/Significance/Value
T3	Barriers
T4	Strategies
T5	Recommendations

Barrier	Definition	Example
Value	Students, faculty, and/or institutions do not place value on EBM	"Long history of disliking EBM here…" "Our best solution is just to give up in this topic" "Many use UTD as single resource" "Lots of perception of EBM not being relevant"
Structure	EMB curriculum ill defined; faculty not formally trained	"Never thought about the fact that faculty aren't trained" "We discuss EBM briefly" "Haven't standardized approach for wards; not all attendings use PICO"
Assessment	Difficulty in assessing student competency and/or curriculum effectiveness	"Assessments haven't been formalized" "Don't know how to evaluate it. How do we tell? We are supposed to assess all this stuff so we know they can do it" "EBM gets lip service from leadership right down to clerkships. Most students get varied according to faculty happen to be working with. Don't know how to evaluate it."
Time	Teaching/practicing EBM is time consuming	"Need to have time set aside … hard to do during clerkships" "… time is a big issue" "Biggest barrier is attitude and time"
Student Engagement	Students demonstrate lack of interest in EBM curriculum	"We add a level of difficulty that they aren't prepared to accept" "Students don't think it's fun or interesting" "Students recognize there's been a huge sea change in world since their teachers have been trained; students believe that faculty haven't kept up, so there's this level of mistrust and disbelief"
Student Skill	Students display little to no understanding of EBM skills	"I find a lack of rigor in how they read a research article" "They'll read a lit rev and think that's all they need for synthesis" "I get annoyed with questions, like they ask you definitions or questions without any effort to figure it out themselves" "They are tech savvy, but are they information literate? No."
Biostatistics/ Math	Students and/or faculty intimidated by mathematical/statistical component of EBM	"They don't know how to search, nervous about stats" "Everybody feels like they're maxed—doesn't matter; EBM is an afterthought—so math? I hate that stuff. That's the hidden side of it" "Such a gap in med students--they can memorize, but have no stat understanding; not rigorous, going through motions, all a canned experience that they don't learn anything from it." "Death knell—having statistician teach."

Strategy	Definition	Example
Relationships	Build relationships to encourage collaboration & resource utilization Faculty & med librarian-- curriculum design & evaluation Faculty & student – clarify role of med lib in EBM process Med lib & student—Establish expertise	"Having good relationships with librarians…Would love it if they would round with us, we could discuss clinical questions"
Relevance/ Practical application	Make it "real" for the student with faculty life examples Place emphasis on practical application Clerkship faculty model EBM behavior	"Cultivate a 'spirit of inquiry'" "Deliver content in emotionally compelling way; tie to real patients and problems" "I show them a lot of things that should make them angry as a patient; try to elicit emotion"
Assessment	Assess student skill to determine where/how/which level to begin EBM instruction Include EBM in OSCEs	"Everyone thinks they can do it until they do it" "Evaluate skills like you would any other skill/competency: Can they apply it in a clinical setting, either by evaluation of their preceptors"
Course Structure	Weave EBM concepts and skills throughout the entire educational experience	"De-emphasize lecture--More active learning, peer instruction" "Feedback over last year is that small group is where learning occurs."
Faculty Engagement	Enthusiastic about subject matter; interactive classes	"Feedback over last year is that small group is where learning occurs"
Embed Medical Librarians	Faculty status for librarians Faculty emphasis on librarians as information professionals	"Now we have librarians everywhere, so can be involved in everything we're doing. Now they are Us." "Having faculty status definitely helps their credibility."
Standardize course content	Differentiate levels of instruction: "Doers" (Researchers) versus "Users" (Consumers)	"Highlight it early; our courses aren't peripheral to what we do. It's a centerpiece and tracked through curriculum"

"The key to this whole thing, you tell them when they walk in door, you're not going to be fed all this. I tell them you have to tell mechanism of action in detail. They go at superficial level. Biggest hurdle that this is what worked in college."

"We do not buy or recommend UTD for students; we don't support it at all. UTD assumes a context that many students do not have. We don't let our students use UTD for because we want them to do it themselves."

Definition

Evidence-Based Medicine:
A systematic approach to clinical problem-solving that allows the integration of best available research studies with clinical expertise and patient values.[3]
Five steps: Ask, Acquire, Appraise, Apply, Assess

MAJOR POINTS

Assumptions:

- Clinical faculty know EBM
- Clinical faculty incorporate EBM into teaching
- Graduating MDs possess EBM competencies

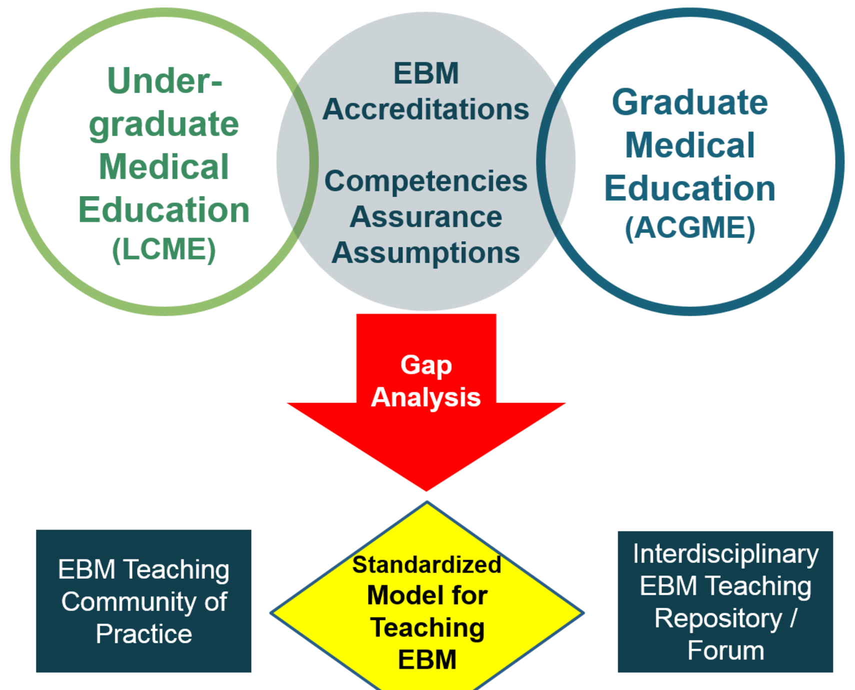
Realities:

- EBM not consistently modeled in clinical teaching
- Faculty not held accountable for incorporating EBM into teaching
- Wide range of competencies/knowledge in interns
- UpToDate has supplanted perceived need for EBM skills in practice
- Yet faculty and librarians still believe there is high value in teaching EBM
- Medical schools could improve EBM learning by talking with other health sciences schools

Recommendations:

- Objective assessments of all 5 steps of EBM needed
- Faculty evaluations to include EBM teaching
- Include librarians in EBM curriculum design and delivery
- Shared repository of EBM teaching materials and discussion forum

FURTHER RESEARCH



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