

Partnering for success

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Summary

Evidence-based medicine is a standard part of the curricula at most US medical schools. Yet, the librarians most often tasked with teaching EBM are frequently not included in assessment of EBM skills and therefore lack rigorous evidence of the impact of their teaching on student skills and guidance for continual improvement of the curriculum. This PhD thesis explores what opportunities exist for librarians to lead EBM assessment and what kind of tools and institutional support they would need to do this work. We provide insights into the information-seeking behaviors of graduating medical students and bring forth a theory-based practically applicable EBM assessment tool.

Chapter 1 begins by detailing the four key conceptual areas needed to support this thesis: evidence-based medicine; observational assessment in medical education; optimal foraging theory, and librarian roles in medical education. In each section I outline the history, current state, and area of opportunity relevant to this thesis. This chapter presents the over-arching research question: *How is evidence-based medicine competency assessment implemented by librarians and experienced by medical students?* Following that, I state the four subordinate research questions and present an overview of the four primary studies that comprise this thesis.

Chapter 2 explores how US and Canadian health sciences librarians are currently engaged in teaching and assessment of each step of EBM, using the elements of EPA 7 as a proxy. A detailed survey was sent to all AAHSL member libraries, representing most US and Canadian medical school libraries. The results provided a comprehensive view of the elements of EBM either taught or assessed by the librarians, and whether this was fully part of the curriculum, extra-curricular, or was para-curricular. The conclusion revealed a large gap. While many librarians were embedded in various part of the curriculum teaching many steps of EBM, very few were doing any assessment of what they were teaching. Furthermore, the librarians that were doing assessment were mostly doing it outside the view of the central medical school assessment processes and thus this information was not being captured as a part of or integrated with student portfolios or recorded anywhere other than the files of the librarian.

Chapter 3 investigates the observable information-seeking behaviors of senior medical students performing an EBM activity. Building on the gap uncovered in Chapter 2, there was a need for an EBM assessment tool that could be used to provide feedback to students to improve their learning and to assess their level of competence. By utilizing optimal foraging theory (OFT), we were able to observe and deconstruct the search behaviors of medical students as a part of an EBM OSCE where they had just seen a standardized patient. OFT

provided a theoretical framework for describing the meaningful and observable search behaviors performed by medical students, both good and bad. Through understanding what information seeking behaviors are important in this context, we were able to develop a theory-based and behaviorally anchored rubric to be used in observational assessment of medical student EBM activities.

Chapter 4 examines the needs and preferences of librarians when assessing EBM behaviors in medical students. In this study we utilized the rubric developed in Chapter 3 to assess a cohort of graduating medical students. We recruited and trained a group of librarians with varying years of experience and from a range of types and sizes of institutions across the US, to use this rubric and participate in the assessment process via an EBM OSCE. Following the librarian's participation, we conducted focus groups to explore their perceptions of this rubric and this process. Each librarian faced a variety of different institutional challenges that could hamper implementation of this style of assessment. However, all saw great possibility in having a tool to assist them in integrating themselves into existing assessment processes. By leveraging an observational rubric that conformed with existing medical school standards, great strides could be made in incorporating librarians into student assessment procedures.

Chapter 5 explores how graduating medical students feel about being assessed on EBM behaviors via observation. We sought to study their experiences and opinions because they are largely unexplored and this is an emerging area of observational assessment. Previous assessments of EBM were done under idealized, less authentic circumstances, allowing students unrealistic time and resources to perfect their submitted answers. We conducted our assessment under time limited, case based authentic albeit simulated and standardized conditions. Therefore, in completing the task, students demonstrated their intuition and learned habits as they would in a real-world clinical context.

We recruited students into a focus group who had recently taken part in this EBM OSCE as a part of a readiness-for-residency OSCE (Night onCall) prior to graduation. Instead of feeling vulnerable or exposed, as we might have expected, for not knowing the best way to perform this task, the medical students resoundingly appreciated the experience and felt it underscored how important it would be to be able to practice EBM both quickly and effectively when they enter clinical practice. This finding allays a common concern of librarians that medical students do not wish to hear from us and demonstrates: a way to provide students with the motivation to learn this material; an understanding of how librarians can help them; and the difference engaging in this type of assessment and learning the material would make in their practice. Students in our focus groups explicitly asked for more feedback and opportunities to practice EBM skills.

Chapter 6 presents a review of the findings of this dissertation research program. It touches on the theoretical and practical contributions to evidence-based medicine, observational assessment, information-seeking behaviors, and the role of the librarian in medical education. By focusing on the gaps within current EBM assessment framework, I highlight the need for new tools that allow for competency-based assessment via observation. Building on optimal foraging theory, I show how this information-seeking theory can be expanded upon and leveraged in clinical and simulated settings within the context of EBM. I then explore implementation of the rubric both from the librarian and medical student perspective. Ultimately, I offer a practical and novel option for observational assessment of EBM competency in medical students that can be leveraged by librarians who are attempting to improve their own assessment practices or become more embedded within existing medical school structures.