

Beyond Therapy: Teaching Evidence-Based Medicine Fundamentals to Internal Medicine Residents

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Background and Planning

The Internal Medicine (IM) Residency program at the University of Nevada, Reno School of Medicine (UNR MED) comprises graduates of medical schools from four continents, and is among the most diverse group of learners in our history – bringing unique experiences and knowledge. However, given their diversity, teaching the fundamentals of evidence-based medicine (EBM) could be a challenge. In 2017, to ensure that all residents attain competencies in EBM fundamentals, the IM Residency Program and the Savitt Medical Library collaborated to develop an EBM program that was tailored to their needs. The immediate success of the EBM 1 (Therapy) module, inspired us to develop the EBM 2 (Diagnosis and Prognosis) module.

Step 1. Assess Training Needs: the Internal Medicine (IM) Program identified gaps in the residents' knowledge of EBM fundamentals.

Step 2. Set Training Objectives: the IM Program approached Savitt Medical Library and joint planning of an EBM program began.

Step 3. Develop Comprehensive EBM Program Training Plan: Savitt Library collaborated with the IM Program to develop the instructional design, contents, materials, timeframe, resources, and teaching methods.

Step 4. Implement EBM Training Program: Savitt Library coordinated the training schedule, facilities, and equipment; librarians provided the training; and the IM Program monitored attendance and progress.

Description & Objectives

The EBM program comprises two modules that cover the fundamentals of EBM. Residents are divided into small groups and attend the EBM modules during their clinic week.

EBM 1 (Therapy)

- Attain a basic understanding of EBM;
- Use PICO (problem – intervention – comparison – outcome) to ask an answerable question;
- Develop advanced PubMed searching skills;
- Differentiate between randomized controlled trials, systematic reviews, meta-analyses, and the levels of evidence;
- Learn basic features of EndNote.

EBM 2 (Diagnosis and Prognosis)

- Understand how PubMed's *Clinical Queries* functions;
- Learn the basics of locating and evaluating diagnosis studies;
- Learn the basics of locating and evaluating prognosis studies;
- Learn advanced features of EndNote.

Program Outcomes

Based on our pre- and post-test and evaluation, we have been meeting program objectives in both modules.

EBM 1 (Therapy)

One of the objectives of the EBM 1 (Therapy) module is to *use PICO to ask an answerable question*. In 2017, results of the EBM 1 (Therapy) pre-test revealed that only **9** out of **42** respondents provided the correct definition of PICO.

We conducted a post-test with the same group of residents **six months later**, and **32** out of **48** respondents provided the correct definition of PICO.

When asked: *Did you learn any advanced search skills that you had not known before*, **26** respondents answered positively.

EBM 2 (Diagnosis and Prognosis)

Following the EBM 2 (Diagnosis and Prognosis) classes, we conducted an online evaluation survey to see if the objectives of the module were met.

- **24** out of **24** respondents answered that they understood how the PubMed *Clinical Queries* functions, and that they felt comfortable using it.
- When asked: *Did your knowledge of evaluating Diagnosis studies change*, **16** respondents improved significantly; **4** improved; and **4** somewhat improved.
- When asked: *Did your knowledge of evaluating Prognosis studies change*, **17** respondents improved significantly; **4** improved; and **4** somewhat improved.

Resources Covered in Program

- PubMed Advanced
- PubMed MeSH
- PubMed Clinical Queries
- JAMA Evidence
- EndNote
- BrowZine
- Embase

Methods

- The EBM curriculum consists of three-hour, in-class modules, that are delivered in a workshop setting to small groups of residents by librarian faculty from the Savitt Medical Library.
- The EBM module format includes lecture, demonstration, case scenarios, and hands-on computer practice.
- Residents work on specific EBM concepts, based on individual case scenarios. They locate and analyze the appropriate types of studies, and present their findings to the class. Class participation, and the asking of questions is encouraged.
- The Library Director and the Clinical Librarian directly oversee and co-teach within the EBM curriculum.

Conclusions

The teaching of EBM to Internal Medicine residents has been a huge success. It has opened up new venues for librarians to work with residents and faculty and to teach new EBM topics. The class discussion and presentations have also prompted new collaborations, such as participation in clinical rounds, journal clubs, and morning reports.

Going forward, we hope to offer:

- evaluation of systematic reviews and critical appraisal modules
- online, asynchronous sessions
- EBM snippets at selected committee and departmental meetings
- and adapt session topics for other medical and health sciences learners

In addition, we would like to continue to conduct pre-test and post-test assessments in order to determine the impact that the EBM classes have on residents, and their library user satisfaction, overall.

