LEARNING AND TEACHING EVIDENCE-BASED MEDICINE MEDEDU 2220 JUNE 2009

COURSE DIRECTOR: Rachel Givelber, MD

LOCATION: 219 Parkvale Building
DATES: June 2 - 28, Mondays and Wednesdays
TIMES: 1:00 - 3:00 pm
TEXT: Evidence-Based Medicine: Learning and Teaching EBM
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<td>SESSION VIII Monday, June 28</td>
<td>Learning and Teaching about Summaries of the Literature: Systematic Reviews, Meta-Analysis, and how to GRADE the evidence.</td>
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GRADE ALLOCATION: 50% in-class participation
25% final project
25% teaching session
LEARNING AND TEACHING ABOUT EVIDENCE-BASED MEDICINE MEDEDU 2220

SESSION I Wednesday, June 2

“Modes” for Teaching EBM The 5 A’s for EBM Practice Targeting Skills in EBM Practice: Generating an Answerable Clinical Question and Acquiring Evidence

Rachel Givelber, MD

LEARNING OBJECTIVES

- To review the “five A’s” for practicing EBM: Assess, Ask, Acquire, Appraise, Apply
- To introduce the targeting of specific skills in practicing EBM: generating an answerable clinical question and acquiring evidence
- To introduce the three different “modes” for teaching EBM

ASSIGNMENT


**Recommended reading:**

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LEARNING OBJECTIVES

- To review the concepts of bias and random error
- To review the methodology of Randomized Controlled Trials, and consider potential sources of bias
- To understand important concepts in assessing the validity of a therapy article: 1) random allocation; 2) allocation concealment; 3) blinding; 4) follow-up; 5) intention-to-treat principle
- To demonstrate techniques for teaching these concepts

ASSIGNMENT

  - Recommended reading:

- **GRAB-BAG:** Teaching the difference between allocation concealment and blinding, methods of randomization, ITT analysis, definitions of bias and random error

- **READ AND HAND-IN** (everyone who does not do the grab-bag):
  - Choose one of the following articles to read:
  - **Complete and Hand-in:** Validity criteria using Therapy CAT: give the article a validity “score” and explain your rationale for the score.

LEARNING OBJECTIVES

- To review the measures of association that are used in the reporting of therapy trials: Relative Risk, Relative Risk Reduction, Absolute Risk Difference, Number Needed to Treat
- To review measures of precision for study results: Confidence Intervals and p-values
- To demonstrate techniques for teaching these concepts

ASSIGNMENT

- **Recommended reading:**
- **Teaching Topics:** Calculating ARD, calculating NNT, interpreting confidence intervals, describing the difference between ARD and RRR
- **READ AND HAND-IN** (everyone who does not do the grab-bag): Choose one of the following articles to read:
- **Complete and Hand-in:** Results section on Therapy CAT for selected article. Be prepared to summarize the study in the form of a Verbal Study Synopsis to the class.
Learning Objectives:

- To review concepts that are important for assessing the validity of a diagnostic study: diagnostic uncertainty, blinding, ascertainment
- To demonstrate techniques for teaching about a common source of bias in diagnosis articles: spectrum of disease
- To understand and demonstrate teaching techniques for interpreting the results of diagnosis articles: sensitivity, specificity, LRs and multi-level LRs, ROC curves
- To review Bayes’ theorem and the test/treatment threshold

ASSIGNMENT

- **Recommended reading:**


- **GRAB-BAG:** Defining LRs, sensitivity, and specificity; demonstrating the use of LRs with Bayes’ theorem; design of diagnostic studies and choice of gold standard

- **READ and HAND-IN (everyone who does not do the grab-bag):**


  Scenario: A 42 year-old female presents to your office asking for a breast MRI to screen for breast cancer. For the last 2 years, she has been getting annual screening mammograms, but she has recently read a lot in The New York Times about breast MRI as a better method for detecting cancer. The patient is peri-menopausal, used oral contraceptive pills about 20 years ago, and has a mother who was diagnosed with breast cancer at the age of 55. You consider her to be at moderate risk for breast cancer, and remember that there was a recent article in The New England Journal of Medicine that might help to answer her question.

  Consider the following: Would you refer this patient for a screening MRI? What are the risks and benefits of this test? Justify your answer considering the sensitivities and specificities of CBE, mammogram, and MRI. Calculate positive and negative LR’s for each test.

Learning Objectives:

- To understand basic concepts of observational study designs, the choice of study design to answer a research question, and advantages/disadvantages of each
- To review the various types of bias that may be encountered with observational study designs: selection bias, information bias, and confounding
- To review and demonstrate teaching techniques for interpreting the results of prognosis articles: survival curves and hazard ratios

Assignment

- **Recommended reading:**

- **Teaching Topics:** Defining survival curves and hazard ratios; describing cohort study design; describing case-control study design; definition of confounding
- **EVERYONE ELSE** who does not do grab-bag: Work on final project
- **FINAL PROJECT:** Using the “20 questions” worksheet, propose an intervention for introducing EBM into your educational environment. Carefully consider the needs of your educational program, the goals of the intervention, the target audience, the modes that you will employ, and strategies for optimizing success and avoiding failure. Describe your intervention, and your consideration of these factors, in a 1-2 page write-up.
SESSION VII
Wednesday June 23
Learning and Teaching about Harm/Etiology
Articles AND Economic Analyses
Rachel Givelber, MD

Learning Objectives:

- To review the types of study designs that can be used to answer questions about harm/etiology
- To review the case-control study design and how to appropriately choose controls
- To introduce an additional measure of association: the odds ratio
- To demonstrate techniques for teaching these concepts
- To review principles of articles on Cost-Benefit, Cost-Effectiveness or other economic analyses

ASSIGNMENT

- **Recommended reading:**
  - Davies, H., Crombie, I., and Tavakoli, M. “When can odds ratios mislead?” BMJ 1998; 316:989-991
- **Teaching Topics:** Defining odds ratios; difference between odds ratio and risk ratio; describing the nested base-control study design; describing why odds ratios must be used with case-control study designs
- **EVERYONE ELSE** who does not do grab-bag: Work on final project
- **READ FOR PREPARATION FOR SESSION VII:** Greenhalgh, T. “How to read a paper: Paper that summaries other papers (systematic reviews and meta-analyses),” BMJ 1997; 315:672-675.
Learning Objectives:

- To understand the differences between narrative reviews, systematic reviews, and meta-analyses, and the advantages and disadvantages of each
- To review the steps necessary for conducting a systematic review and meta-analysis
- To understand and demonstrate teaching techniques for an important concept in systematic reviews/meta-analysis: heterogeneity

ASSIGNMENT

- **Recommended reading:**
- **Teaching topics:** Defining a systematic review and meta-analysis; comparing and contrasting narrative reviews and systematic reviews; teaching the “hierarchy” of evidence; searching the literature for a systematic review/meta-analysis
- **Turn in Final Project**