

Clinical Inquiries - WWAMI Network

Fresno Test of Evidence Based Medicine

The practice of Evidence-Based Medicine (EBM) involves some basic knowledge and skills related to searching and evaluating medical literature. This UCSF-Fresno Medical Education tool is designed to assess the level at which you are already utilizing EBM skills. Please complete the entire test in one sitting. There are 7 short answer questions, 2 questions that require a series of mathematical calculations, and three fill-in-the-blank questions. Allow yourself at least 30 minutes to complete the test.

Answer questions 1-4 based on the following clinical scenarios:

- You have just seen Lydia who recently delivered a healthy baby. She plans to breastfeed, but also wants to start oral contraception. You generally prefer to prescribe combination oral contraceptives (estrogen + progesterone) but you have been told that these might more negatively affect her breastmilk production than progesterone only pills.
 - John is an 11 year old boy who presents with primary enuresis. He has grown frustrated with the inconvenience and embarrassment of his problem. You have excluded the possibility of urinary tract anomalies and infection as possible causes. You consider recommending a bedwetting alarm, but a colleague tells you he thinks they're "worthless" and suggests that you treat with imiprimine or desmopressin.
1. Write a focused clinical question for each of these patient encounters that will help you organize a search of the clinical literature for an answer and choose the best article from among those you find.
 2. Where might clinicians go to find an answer to questions like these? Name as many possible types or categories of information sources as you can. You may feel that some are better than others, but discuss as many as you can to demonstrate your awareness of the strengths and weaknesses of common information sources in clinical practice. Describe the most important advantages and disadvantages for each type of information source you list.
 3. Choose to focus on one of the clinical scenarios (breastfeeding and oral contraceptives, or bedwetting alarm). What type of study (study design) would best be able to address this question? Why?

4. If you were to search Medline for original research on one of these questions, describe what your search strategy would be. Be as specific as you can about which topics and search categories (fields) you would search. Explain your rationale for taking this approach. Describe how you might limit your search if necessary and explain your reasoning.

5. When you find a report of original research on these questions, what characteristics of the study will you consider to determine if it is relevant? Include examples. (Questions 6 and 7 will ask how to determine if the study is valid, and how important the findings are....for this question, focus on how to determine if it is really relevant to your practice.) *(Questions 5-7 address critical review of literature divided into relevance, validity, and magnitude of effect size. These may be arbitrary subdivisions of the process of critical review. Therefore respondents may describe issues of relevance in answers to any of these 3 questions. Consider the responses to all 3 questions as one response when applying the criteria in the following rubric.)*

6. When you find a report of original research on these questions, what characteristics of the study will you consider to determine if its findings are valid? Include examples (You've already addressed relevance, and question 7 will ask how to determine the importance of the findings...for this question, focus on the validity of the study)

7. When you find a report of original research on these questions, what characteristics of the findings will you consider to determine their magnitude and significance? Include examples. (You've already addressed relevance and validity...for this question, focus on how to determine the size and meaning of an effect reported in the study.)

8. A recent study of the diagnostic accuracy of arterial blood gas in diagnosis of pulmonary embolus included 212 patients with suspected pulmonary embolus, 49 of whom were subsequently determined to have pulmonary embolus. Of those with pulmonary embolus 41 had abnormal alveolar-arterial oxygen gradient ((A-a)DO₂). Of the 163 patients determined not to have pulmonary embolus, 118 had abnormal (A-a)DO₂.

(4 points each)

- Based on these results, the sensitivity of (A-a)DO₂ for pulmonary embolus is
- Based on these results, the specificity of (A-a)DO₂ for pulmonary embolus is
- Based on these results, the positive predictive value of (A-a)DO₂ for pulmonary embolus is
- Based on these results, the negative predictive value of (A-a)DO₂ for pulmonary embolus is
- Based on these results, the likelihood ratio positive for an abnormal (A-a)DO₂ for pulmonary embolus is

9. A recent randomized trial of found that 29% of diabetics with coronary heart disease (CHD) treated with pravastatin suffered a recurrent coronary event during 5 years of follow-up, while 37% of the placebo group suffered recurrent coronary events.

(4 points each)

- The absolute risk reduction for recurrent events is
- The relative risk reduction for recurrent events is
- The number needed to treat (NNT) to prevent one recurrent event is

10. The recent HERS study compared women on estrogen supplements to women on placebo. Results revealed a relative risk of venous thromboembolic events is 2.89 for the women on estrogen. This suggests that estrogen treatment poses a coronary risk, but we wonder if this difference is statistically significant, so we look at the confidence interval. Give an example of a confidence interval that would support the conclusion that the rate of venous thromboembolic events was indeed (statistically) different for these two treatment groups. (4 points)

11. Which study design is best for a study about diagnosis?

(4 points)

12. Which study design is best for a study about prognosis?

(4 points)