of EBM would argue that high quality evidence obtained through clinical epidemiologic methods should be ignored in the context of patient care. Nor would anyone argue that the current best evidence should be conscientiously, explicitly, and judiciously utilized when caring for an individual patient.

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Rebuttal of Pro

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Popular, scientific, and medical culture in the United States favor the rhetoric of a dichotomous "all or nothing" response to a subject. Proponents of Evidence-Based Medicine (EBM) have taken this approach and have pushed for the abandonment of "authority-based" medicine in favor of EBM. Unfortunately, rhetoric rarely reflects reality and nowhere is this truer than in clinical practice in the Emergency Department (ED). While Dr. Fee and I agree in theory that EBM should be incorporated more into clinical practice, we disagree about the current overall effectiveness of EBM within the ED.

The scope and depth of research underlying EBM is unable to generate "pure" evidence-based clinical guidelines on even the most well studied clinical questions. Most of us would agree with Dr. Fee when he quotes the Evidence-Based Medicine Working Group, "all medical action of diagnosis, prognosis, and therapy should rely on solid quantitative evidence based on the best of clinical epidemiological research." Certainly, clinical guidelines, which grade the level of evidence supporting recommendations, allow the integration of the results of multiple randomized studies. It is important, however, to realize two things about these guidelines. First, many of these clinical guidelines contain recommendations that are based on expert consensus opinion, not evidence, as in the class 1C (C stands for consensus) recommendation from the AHA on treating acute coronary syndromes with nitrates and morphine.[1,2] While I agree with Dr. Fee's statement, "there are simply too many questions and too many variables to control to realistically expect a RCT to be available to answer every clinically relevant issue," let's not call this "pure" EBM.

Secondly, the majority of clinical decisions made in the ED don't even approach this level of evidence. At best, most of our decisions would only be supported by 3D recommendations (Dr. Fee's table) or AHA class 2A/B evidence. EBM, as it currently stands, is unable to consistently and appropriately evaluate and integrate evidence from studies other than randomized clinical trials; however, these studies underpin the majority of clinical decisions within the ED.

Furthermore, since the complete set of relevant variables for any clinical condition is unknown, the evidence underlying EBM continues to evolve and change over time. For example, prior to 1997 the majority of trials investigating myocardial ischemia were done on middle-aged white men and suggested that "crushing substernal chest pain" was the primary presenting symptom; however, Goldberg et al. and subsequent investigators have shown that the presenting symptoms for angina in women are substantially different.[3,4] In fact, in some studies only 43% of women report having chest pain and in most studies the predominant presenting symptom is dyspnea.[4] While cardiac disease is very well studied,

EBM not only failed to appreciate all of the significant variables which are important in evaluating patients in the ED, but also may have inappropriately excluded patients from randomized controlled trials on myocardial ischemia prior to 1997. Clinician preconceptions will always be part of EBM, just as they are part of "authority-based" medicine, and as a result the evidence (and best evidence-based practice) will continue to evolve.

In fact the number of variables not examined due to perceived patient compliance, drug cost, funding sources, etc., is so extensive as to make EBM difficult to currently translate into actual clinical practice. So while it is clear that antibiotics are not required in housed compliant patients with a low grade fever and bronchitis, it is not clear that the evidence demonstrates they are not required in the same patient who is a homeless alcoholic. Similarly, is single dose azithromycin or 7 days of levofloxacin to treat community-acquired pneumonia superior to 7 days of doxycycline? There is no randomized controlled trial comparing either expensive drug with the relatively cheap doxycycline, because there is no monetary incentive to fund such a study. Yet somehow there are a plethora of "evidence-based" clinical guidelines on the treatment of community-acquired pneumonia using all three of these agents. In the end, competent clinicians need to meld relevant EBM with their clinical experience and common sense to form an appropriate care plan for the individual patient.

I suspect that the areas of agreement for Dr. Fee and I are greater than our disagreements; however, we do have some areas of significant philosophical disagreement. Clearly EBM is a powerful tool to improve clinical care and outcomes within the Emergency Department; however, I believe the problems currently inherent within EBM demand a continued integration of pathophysiology, anatomy, common sense and clinical experience. Randomized controlled trials can provide elegant answers to narrow clinical questions within narrow subsets of the population, but the answers are difficult to translate to more heterogeneous populations or complex problems. In fact, when specialty societies attempt to answer more general questions with treatment guidelines and ranked evidence, they are often forced to rely on consensus or "authority-based" recommendations. There is nothing wrong with integrating EBM and older "authority-based" teachings and then molding the treatment to fit the individual patient. That is in fact "good clinical practice," but it is not EBM and shouldn't be called that.

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