The Need for Expertise and the Scientific Base of Evidence-Based Medicine

To the Editor:

Being evidence-based medicine (EBM) practitioners, we support the remarks of Karanicolas et al on many common misconceptions about EBM that were brilliantly exposed by Tobin. However, we do not think that his criticisms should be unwelcome, and would like to add some further comments.

Scientific soundness has to do with admitting falsification, not with confirmative proof. Tobin is correct in stating that EBM offers a means of coping with uncertainty, but nowhere it is suggested that it aims to provide “certain truth” or “a distillate of incorrigible knowledge.” In the words of Sackett et al, “External clinical evidence both invalidates previously accepted diagnostic tests and treatments and replaces them with new ones that are more powerful, more accurate, more efficacious, and safer.” This is a clear application of the demarcation problem stated by Popper as the basis of scientific knowledge. Indeed, “scientific medicine” was initially considered as a possible candidate name of EBM. Many methodologic aspects of EBM can, should, and must be highly beneficial to the practice of EBM.

Karanicolas et al, however, fails to mention that EBM “is about integrating individual clinical expertise and the best external evidence.” Expertise is needed to understand the clinical problems, to formulate hypotheses, to search and appraise the evidence (avoiding the methodologic traps highlighted by Tobin), to choose the best options, and apply them in practice. Without expertise, EBM becomes “cookbook medicine,” something that explicitly it is not intended to be. Expertise varies, and there are better and poorer practitioners, as well as studies, systematic reviews, and guidelines. Tobin provides only anecdotal evidence of the fact that meta-analyses can be flawed, and he might be comforted to know that he was not the first one. But as finding a single black swan is sufficient to falsify the assertion that all swans are white, his point is made that not all systematic reviews are perfect. Of course, these may be examples of evidence being replaced with a better one, or of what Popper describes as the common, unintended effects of any rational human activity which need to be dealt with using “piecemeal engineering.” But again, this requires expertise and critical thinking. So, if Tobin’s remarks come as a reminder that the use of clinical evidence must be “conscientious, explicit, and judicious,” and that the critical application of any source of information (be it dogmatic or empirical), including randomized controlled trials, meta-analyses, systematic reviews, checklists, and guidelines, is likely to cause more harm than good, then in our opinion his contribution should be most welcome and might be highly beneficial to the practice of EBM.

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REFERENCES
1 Karanicolas PJ, Kunz R, Guyatt GH. Point: evidence-based medicine has a sound scientific base. Chest 2008; 133:1067–1071
3 Popper KR. The logic of scientific discovery. London, UK: Hutchinson, 1959
6 Guyatt G, Rennie D, eds. User’s guides to the medical literature. Chicago, IL: AMA Press, 2001; iv

Response

To the Editor:

The comments of Drs. Sestini and Irving reinforce our understanding that the views of science of Dr. Tobin are very consistent with current evidence-based medicine thinking and writing. We agree that Dr. Tobin’s analysis mandates thoughtful reflection, and such reflection may further enhance the sophistication of evidence-based decision making.

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