

Evidence-Based Medicine: Hype or Reality?

By the last decade of the 20th century, medical scientists were looking at “Tangible Evidence” to supplement the use of protocols to treat diseases or employ surgical interventions. This was demanded by physicians, the public and of course the regulators. In 1992, the Evidence Based Medicine Working group introduced the term evidence-based medicine (EBM) as a new approach to teaching the practice of medicine.¹ Sackett *et al.* in 1996 defined what EBM actually was and also clarified what it is not.² Unfortunately, as is often the fate of all that is new, only some of the good things of the concept were incorporated in practice, while a limited understanding of the overall scenario leads to a lot of misuse and disillusion.

Twenty years on, an editorial in the British Medical Journal, 2014 had very catchy title; “Evidence-Based Medicine (EBM) is broken,” it says. Spence,³ from Glasgow, very vehemently states that current EBM is corrupted by the major influence that drug manufacturers and other vested interests have on modern-day publications. He quotes another article by Moynihan *et al.*,⁴ which states that the focus on using information based on so-called evidence is “fueling over diagnosis and overtreatment.”

Is this a cry wolf kind of story, or is there more to this than meets the eye? The current trends in modern medicine demand doctors to look at good evidence to base treatment; more than that the patients, and often the regulators, demand that most interventions for diagnosis or therapy be based on hard evidence. This often becomes a problem as many times the clinical experience and judgment of some “knowledgeable/experienced practitioners” are pushed into the background, and the facilities available at many centers in the underdeveloped world may not correspond to those available at western centers, where most data for the current EBM originates. In addition, the current EBM practice also ignores patient preferences and local economics, which differ from area to area, and even today, factors other than pure “evidence” often come into play when deciding treatment for different patients.

So is EBM actually a broken science, or are doctors not understanding the issues involved? Well, it may actually be a bit of both. Even at its advent, in the late 1980s, EBM was clearly defined as “the conscientious, explicit, and judicious use of current best evidence in making decisions about patient care.”² It meant that physicians had to integrate the best available clinical evidence, which stemmed from good systematic research, add their individual clinical expertise, and then apply this to the appropriate patient. And that

exactly is where the failure lies. The unmanageable volume of published research overwhelmed the users of EBM, especially the so-called “clinical guidelines” developed in the economically advanced countries. Emphasis on strict adherence to these guidelines overlooked physician experience or local practice preferences that had worked for years. In addition, there was a problem on the side of the doctors in evaluating the published research; many were not knowledgeable enough to discern what is good and what is bad evidence, and sometimes, debates arose about a concept that was supposed to be put in practice, just because it was published in a good journal, without understanding if the evidence dispensed was actually good or bad. A major issue pointed out by Glasziou *et al.*⁵ and by Godin *et al.*⁶ is this lack of ability to assess the quality of the evidence presented, as well as the research that has led to its publication. The evidence pyramid⁷ came into being, and systematic reviews and randomized control trials have now become the cornerstone for assessing evidence applicable in particular situations. However, it is important to understand that different types of research may be needed to answer different clinical questions; for this, efficient search strategies are needed by the doctor to identify the presented evidence, and the reliability of this also has to be understood.

Two other things have also happened over the last 25 years; some vested interests were actually driving research that gave statistically significant evidence in their favor, and major allegations came up against drug and implant manufacturers. It also came to light that certain data, which were negative in connotation, were actually not published. In addition, there was suspicion that even the available published data may actually not be significant enough to influence changes in practice.

This has led many surgeons to suspect the evidence itself, and EBM was labeled as a “Hype” by the nonbelievers. Nevertheless, this may be only one extreme position or thought process; it is important for a practitioner to understand that all aspects of a disease or problem may not be addressed by currently available evidence-based publications, and many lacunae exist. This is where “experience-based medicine” steps into the fray and guides the surgeons. Other issues that are not factored in are the fact that patients with multiple comorbidities would behave differently to some procedures; in addition, economic issues and local situations may play a role in the application of “best” treatment based on evidence. More importantly, EBM does not factor in local patient preferences and physician experience, which may be different in different areas of the world.

It is also important to note that current publications propagating EBM originate in the West, where treatment protocols and available modalities are very different from that of underdeveloped countries. The application of processes and procedures that would work well in countries where patient care is subsidized and immediately applicable (like primary Tibial nailing in Grade 3 open fractures), may not be appropriate in settings with less than optimal conditions, where the same cases present with delay. A Canadian study in JBJS⁸ presented evidence in favor of fixing Clavicle fractures; an experienced surgeon (maybe in India) may follow this evidence and fix a young adult with a clavicle fracture and associated injuries which demand the stability; on the other hand, he may choose not to fix a similar fracture in an elderly female, who has comorbidities and cannot afford the implant. Does this mean, he deviated from EBM practice? In fact, he is using the EBM data to apply it to some situations and using his experience to ignore it for others. Practitioners also need to understand that the so-called statistical benefits of an intervention proven to work in the western world, may actually be minimal in clinical practice in the rest of the world.

So where does this leave the average surgeon? EBM was welcomed by Dutch orthopedic surgeons in a recently published study; no such data are available from the underdeveloped world.⁹ Emphasis on EBM is now reflected in increased awareness about EBM publications, better definitions of levels of evidence,⁷ and more knowledge about Cochrane reviews. However, this may be a limitation in underdeveloped countries, as neither are surgeons educated in these concepts nor is the relevant literature available to all. Nevertheless, younger Orthopedic surgeons worldwide now have a better knowledge about EBM and are better equipped to evaluate the data.

To answer the question about “Hype or Reality,” I offer a simplistic viewpoint. It is a fact, that when utilized properly after appropriate evaluation, application of good-quality evidence significantly influences treatment applications. However, the other side of the coin has also to be looked at. The group that screams “EBM is reality” has not understood the limitations of current EBM; even today, good evidence is not available for focused topics, and many surgeons are unaware of evidence evaluation methods. Appropriate multicenter research is not universally available for perusal in all parts of the world. Further to that, this research has to originate from various centers in different strata of society, and from varying population groups, in large enough patient subsets to be relevant. This may change the concept of EBM to “Evidence Farming,” wherein experience of the surgeon will also be factored in, and different patient scenarios may be covered,¹⁰

which is the so-called “patient-centered approach”. The group that screams “Hype” has also not fully understood the concept behind the science; we must realize that we cannot have guidelines for everything, and looking for answers in publications, rather than using our experience, and judgment may actually be a disservice to our patients. The education of the surgeon has to also evolve, not only in evaluating the presented facts but also in evaluation of the published evidence. This requires a lot of change in perception plus an understanding of statistical applications, and this is wisely being initiated at many forums. In addition, the quality of research has to improve, and the questions it asks have to be relevant worldwide.¹¹ Once these shortcomings are overcome, the shift in thinking from hype to reality would be spontaneous. Till that time, we have to take everything with a bit of caution, use our experience for specific patients, and employ “EBM” judiciously in our practice.¹²

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