

# Evidence Based Medicine

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Evidence Based Medicine (EBM) is a concept originated from the 1990s that is aimed at minimising error in treatment selection and administration by grounding clinical decisions in the best available research evidence.

In other words,

Evidence Based Medicine is an application of the best clinical expertise approach to patient treatment and management based on latest research and data and patient response/input.

The late Canadian American medical doctor, Dr. David Lawrence Sackett, author of *Clinical Epidemiology* and *Evidence-Based Medicine*, was the pioneer of evidence based medicine and his definition was:

*"Conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research"* (Sackett et al. 1996).

By research evidence, it means clinically relevant research, hopefully from new evidence research (non biased and with no financial conflict) that validates or invalidates previous accepted diagnostic tests and treatment, that replaces them with new, more accurate and reliable and safer tests and treatments.

By best clinical expertise, it means the ability to use clinical skills honed from past experience to instantaneously identify a patient's presenting health issues and to diagnose, investigate and treat with minimal risk while also meeting the patient's values and expectations.

It is conceptualised as possibly an equally balanced 'triangle' of:

- 1) The best available research evidence bearing on how well treatments work in rigorous controlled trials
- 2) Clinical judgement and expertise

### 3) Patient preferences and values.

In realistic terms, equally balanced 'triangle' would not be possible more often than not, and priority must be given to one or two aspects of this 'triangle' depending on the circumstances and the patient's need.

Also the research 'evidence' favouring various treatments typically comes from trials in which certain companies decide which drugs to test, at what doses, and on how many people and which demographic.

Often in such researched studies, the statistical evidence of such benefit is for a drug of little clinical or practical value. At times, the sheer volume of medical evidence makes assessing all parameters impossible. In addition, the guidelines for summarising the evidence can be too voluminous to be useful to the clinicians.

Also, what if the EBM is not available for the condition your patient is presenting with, and/or you have concerns with widely used practice of certain conditions?

One example could be the use of Statins.

The use of Statins is THE current worldwide EBM for treating hypercholesterolaemia to prevent ischaemic heart disease or stroke.

This is also the medicolegal pathway for clinicians .

This is despite the fact that Statins are also known to cause poor Selenium uptake and myopathy, deprivation of COQ10 which is crucial for mitochondrial cell energy and survival. And despite the fact, the long term use of Statins has not been entirely proven to reduce overall mortality of people in many other studies.

Which clinical studies do we follow? Which is the right EBM here?

As clinicians, we do need to constantly study to keep up to date as there are often disparities between our diagnostic skills, expertise and up-to-date knowledge. However, studying the 'up to date' research also depends on the quality of the research done, and in what context the research was done, and the source of funding for that research.

It also depends if the research was relevant to the patient sitting in front of you.

It is imperative to understand how to read research papers and weed out the real information from the mass.

Since the availability of the internet and technology, the possibility of re-researching for the latest clinical research has become easier but also more overwhelming due to the volume of research one has to read through.

To understand reliable research, the following criteria can be used:

1) General character of the article:

\* Where was the research published?

\* How does the researched information fit in with information already known?

\* How does the funding influence the research?

2) What is/are the question/s researchers are trying to answer, specific and big questions.

3) Method and approach of the study.

The nature of the study. Was it Randomised Controlled Trial (RCT)?

What is the size of the study?

Draw a diagram for each experiment, showing exactly what the authors did. Include as much detail as you need to fully understand the work?

4) Determine whether the results answer specific questions or the big question.

5) Interpretation/Discussion/Conclusion

6) Application of these results to clinical practice.

The University of Sydney advises that:

*The practice of EBM entails a process of life long self directed learning in which caring for patients creates the need for clinically important information and we then:*

*\*Convert these information needs into answerable questions.*

*\*Track down efficiently the best evidence with which to answer them.*

*\*Critically appraise that evidence for its validity (closeness to truth) and usefulness.*

*\*Apply the results to patient care.*

The above approach would be realistic if you have only very few patients. What about your patient sitting in front of you now?

At this point I will bring up a book called "Tarnished Gold" written by two PHD authors,

[Steve Hickey PhD](#) [Hilary Roberts PhD](#) ,

In this book the authors claim EBM increases uncertainty and confuses doctors and ultimately harms patients.

They claim EBM fosters marginally effective treatments, based on population averages rather than individual need. It's mega-trials are theoretically incapable of finding the causes of the disease, yet swallow up research funds.

They claim that EBM gives the impression of solid scientific evidence and discipline, but it is both irrational and unscientific.

They also claim EBM doesn't come from science, but from the legal system where EBM is a useful tool for the government and the medical establishment who use it as a legal framework to dictate how doctors practice medicine. There is often a financial implication to reduce cost for the government.

This is despite the fact people who impose EBM do not have a license to practice medicine and no real obligation to patients themselves.

The authors want the doctors to claim medicine back from statisticians and meta-analysts.

It is easy to standardise treatment protocols but difficult to standardise individual response of each patient.

Does this mean, if there has been no standard protocols to treat certain illness/patterns due to lack of research, hence no EBM, patients need to wait until such EBM exists?

Or, do we treat patients based on experience/instinct and just be doctors?

If Dr. Ritchie Shoemaker initially took an EBM approach, we wouldn't have any knowledge of CIRS and a quarter of the human population with the vulnerable Haplotype to CIRS would have no means of having their Biotoxin illnesses treated.

Dr. Ritchie Shoemaker had to be a true physician and heal the patients with his clinically based knowledge, instinct and experience whilst collecting data and studying the science behind this. He created true EBM on CIRS.

For a lot of physicians like myself, Dr.Ritchie Shoemaker's achievements and approach created real hope in day to day practice, as we will often need to deal with each case individually and provide health care based on experience and instinct alone.

Not many can achieve what Dr Ritchie Shoemaker has achieved.

EBM is a crucial part of clinical practice and is important, but it should not detract each physician from being an effective doctor first.

Nilsson et al. Journal of Negative Results in BioMedicine 2011, 10:6  
(<http://www.jnrbm.com/content/pdf/1477-5751-10-6.pdf>)

Tarnished Gold: The Sickness of Evidence-based Medicine

[Steve Hickey PhD](#) (Author), [Hilary Roberts PhD](#) (Author)

<http://www.medscape.com/viewarticle/844845>

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3263217/>

Sackett DL, Rosenberg WMC, Muir Gray JA, Haynes RB, Richardson WS.  
Evidence based medicine: what it is and what it isn't. BMJ 1996;312:71.

<http://sydney.edu.au/medicine/public-health/current/research/ebm.php>

[Bernd Moosmann](#), PhD, [Christian Behl](#), PhD

Selenoprotein synthesis and side-effects of statins

Leo Marcoff MD, Paul D Thompson MD

The Role of Coenzyme Q10 in Statin -Associated Myopathy. A systemic  
Review

Guy De Backer :

Long term results from statin trials: answers but more unresolved  
questions

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