

Evidence-Based Medicine Definitions

Following are some basic definitions of important Evidence-Based Medicine (EBM) concepts that will help you develop your understanding of the language and methodology of EBM.

What is Evidence-Based Medicine?

Evidence-Based Medicine

Evidence based medicine is the 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. (From *BMJ* 1996;312:71-72)

Evidence-based medicine asks questions, finds and appraises the relevant data, and harnesses that information for everyday clinical practice. Evidence-based medicine follows four steps:

- formulate a clear clinical question from a patient's problem
- search the literature for relevant clinical articles
- evaluate (critically appraise) the evidence for its validity and usefulness
- implement useful findings in clinical practice

The term "evidence based medicine" (no hyphen) was coined at McMaster Medical School in Canada in the 1980's to label this clinical learning strategy, which people at the school had been developing for over a decade. (From *BMJ* 1995;310:1122)

Other Important EBM Concepts

Absolute Risk Reduction

The absolute arithmetic difference (risk difference) in rates of harmful outcomes between experimental (EER) and control groups (CER), calculated as the rate of harmful outcome in the control group minus the rate of harmful outcome in the experimental group (CER–EER). Use restricted to a beneficial exposure or intervention. (From Users' Guide to the Medical Literature Glossary; accessed online through JAMA on 3/18/05)

Cohort Studies

Studies in which subsets of a defined population are identified. These groups may or may not be exposed to factors hypothesized to influence the probability of the occurrence of a particular disease or other outcome. Cohorts are defined populations which, as a whole, are followed in an attempt to determine distinguishing subgroup characteristics. (From Medical Subject Headings; accessed through PubMed on 3/18/05)

Confidence Interval (CI)

Range between two values within which it is probable that the true value lies for the whole population of patients from which the study patients were selected. (From Users' Guide to the Medical Literature Glossary; accessed online through JAMA on 3/18/05)

Double Blinded Method

A method of studying a drug or procedure in which both the subjects and investigators are kept unaware of who is actually getting which specific treatment. (From Medical Subject Headings; accessed through PubMed on 3/18/05)

Gold Standard

A method having established or widely accepted accuracy for determining a diagnosis that provides a standard to which a new screening or diagnostic test can be compared. The method need not be a single or simple procedure but could include follow-up of patients to observe the evolution of their conditions or the consensus of an expert panel of clinicians. (From Users' Guide to the Medical Literature Glossary; accessed online through JAMA on 3/18/05)

Likelihood Ratio

The likelihood of a given test result in a patient with the target disorder compared to the likelihood of the same result in a patient without that disorder. (From Glossary of Terms in Evidence Based Medicine, <http://www.cebm.net/glossary.asp>)

Longitudinal Studies

Studies in which variables relating to an individual or group of individuals are assessed over a period of time. (From Medical Subject Headings; accessed through PubMed on 3/18/05)

Meta analysis

A quantitative method of combining the results of independent studies (usually drawn from the published literature) and synthesizing summaries and conclusions which may be used to evaluate therapeutic effectiveness, plan new studies, etc., with application chiefly in the areas of research and medicine. (From Medical Subject Headings; accessed through PubMed on 3/18/05)

Number Needed to Treat

The number of patients who need to be treated over a specific period of time to achieve one additional good outcome. When discussing NNT, it is important to specify the intervention, its duration, and the good outcome. It is the inverse of the absolute risk reduction (1/ARR). (From Users' Guide to the Medical Literature Glossary; accessed online through JAMA on 3/18/05)

P-Value

The probability that results as or more extreme than those observed would occur if the null hypothesis were true and the experiment were repeated over and over. A P value < 0.05 means that there is a less than 1 in 20 probability of the result occurring by chance alone if the null hypothesis were true. (From Users' Guide to the Medical Literature Glossary; accessed online through JAMA on 3/18/05)

Prognostic Study

A study that enrolls patients at a point in time and follows them forward to determine the frequency and timing of subsequent events. (From Users' Guide to the Medical Literature Glossary; accessed online through JAMA on 3/18/05)

Randomized Controlled Trial

Experiment in which individuals are randomly allocated to receive or not receive an experimental preventive, therapeutic, or diagnostic procedure and then followed to determine the effect of the intervention. (From Users' Guide to the Medical Literature Glossary; accessed online through JAMA on 3/18/05)

Relative Risk

Ratio of the risk of an event among an exposed population to the risk among the unexposed. (From Users' Guide to the Medical Literature Glossary; accessed online through JAMA on 3/18/05)

Sensitivity and Specificity

Measures for assessing the results of diagnostic and screening tests. Sensitivity represents the proportion of truly diseased persons in a screened population who are identified as being diseased by the test. It is a measure of the probability of correctly diagnosing a condition. Specificity is the proportion of truly non-diseased persons who are so identified by the screening test. It is a measure of the probability of correctly identifying a non-diseased person. (From Last, Dictionary of Epidemiology, 2d ed)

Standard Error

The standard deviation of an estimate of a population parameter. The standard error of the mean is the standard deviation of the estimate of the population mean value. (From Users' Guide to the Medical Literature Glossary; accessed online through JAMA on 3/18/05)

Systematic Review

A literature review focused on a single question which tries to identify, appraise, select and synthesize all high-quality research evidence relevant to that question. (From Glossary of Terms in Evidence Based Medicine, <http://www.cebm.net/glossary.asp>)

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