

How Is Evidence Constructed in 2024?: Levels of Evidence, Strengths of Recommendation, Preprints and Regional Bibliographies

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Evidence-based medicine (EBM) uses the scientific method to organize and apply current data to improve healthcare decisions. It combines the best available scientific evidence with the clinical expertise of the healthcare professional and the values of the patient to make the best medical decision. There are 5 main steps to apply EBM to clinical practice:

- Definition of a clinically relevant question
- Searching for the best evidence
- Critical appraisal of the evidence
- Applying the evidence
- Evaluating the effectiveness of EBM

EBM starts with a clinical question. The clinical question is a topic that the healthcare professional discusses with the patient. Once the clinical question is formulated, relevant scientific evidence related to the clinical question is sought. Scientific evidence includes study results and opinions. Not all evidence is equally strong. The recommendations of one expert are not as strong as the results of one well-conducted study, which are not as good as the results of a series of well-conducted studies. Therefore, in evidence-based medicine, levels of evidence or data should be ranked according to their relative strength. When making clinical decisions, the strongest evidence should be given more weight.

Evidence is generally stratified into six different levels:

Level IA: Evidence from a meta-analysis of several well-conducted and well-designed randomized trials. Randomized trials provide some of the strongest clinical evidence; when they are replicated and the results are combined in a meta-analysis, the overall results are considered to be even stronger.

Level IB: Evidence from a single well-conducted and well-designed randomized controlled trial. The randomized controlled trial, when well designed and well conducted, is the gold standard in clinical medicine.

Level IIA: Evidence from at least one well-designed

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and well-executed nonrandomized controlled study. If randomization is not used, additional bias may be introduced into the study.

Level IIB: Evidence from at least one well-designed case-control or cohort study. Not all clinical questions can be effectively or ethically studied with a randomized controlled trial.

Level III: Evidence from at least one non-experimental study. Typically, Level III evidence would include case series and case-control or cohort studies that are not well designed.

Level IV: Expert opinion from recognized authorities in the field based on their clinical experience.

All clinical studies or scientific evidence can be classified into one of the above categories. The physician must then use his or her professional clinical experience to extrapolate the scientific evidence as it applies to the specific patient. Most clinical trials have specific inclusion and exclusion criteria, as well as a specific population being studied. In most cases, the patient the physician is treating will have one or more substantial differences from the study population. Clinical judgment must then be used to determine how important or unimportant the differences between the patient and the study population are, and how they affect the application of the study results to the specific patient.

However, the best available evidence often does not have a hierarchical level I or II ranking and often corresponds to case series and expert consensus.

In general, the highest level of evidence (Level I) in current clinical guidelines is less than 15%, with even lower percentages in some specialties. For this reason, clinical guidelines and expert consensus are of enormous relevance.

When searching for evidence, the most commonly used sites are Pubmed, OVID Medline, Cochrane, Web of Science, Science Direct or Scopus. Regional sites such as LILACS and Bireme are also useful.

Regional databases are developed and maintained within a specific organization or community, generally to store information that may not be available elsewhere or that is only of local interest.

These databases generate valid information that can be included in the societal journals of the specialty, where working groups can present their experiences, facilitating access to information from specialists and reading in the language of origin.

For this reason, the societal journals have the effect of disseminating local experience, since they can trans-

fer information and epidemiological analyses that would not otherwise reach the specialist.

At the same time, and with the limitations of publishing in foreign journals of impact, this becomes really important, since these national journals generate position papers, national consensus and clinical practice guidelines in accordance with the practices and regulations of the society they involve.

There are other sources of information that, although they have their limitations, are important to know because of their current diffusion.

One of them is the preprint, which is a version of a manuscript before peer review, who will or will not certify its formal publication in a journal. The preprint is deposited by the corresponding author in a preprint server, usually thematic, according to public procedures. The preprint version may be a preview or an incomplete version, but most often it is a final version. By using this service, authors can establish a firm date as a precedent, request comments, and add suggestions to the manuscript which is then submitted to the formal editorial process of a journal.

While both preprints and journal articles allow researchers to share their findings with the community, they should ***not be used as evidence because without peer review they lack scientific quality.***

We conclude that what should be valued is the “best current evidence”, which in most cases is not Class A or Level I, so that practice guidelines and consensus become relevant in the medical community.

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