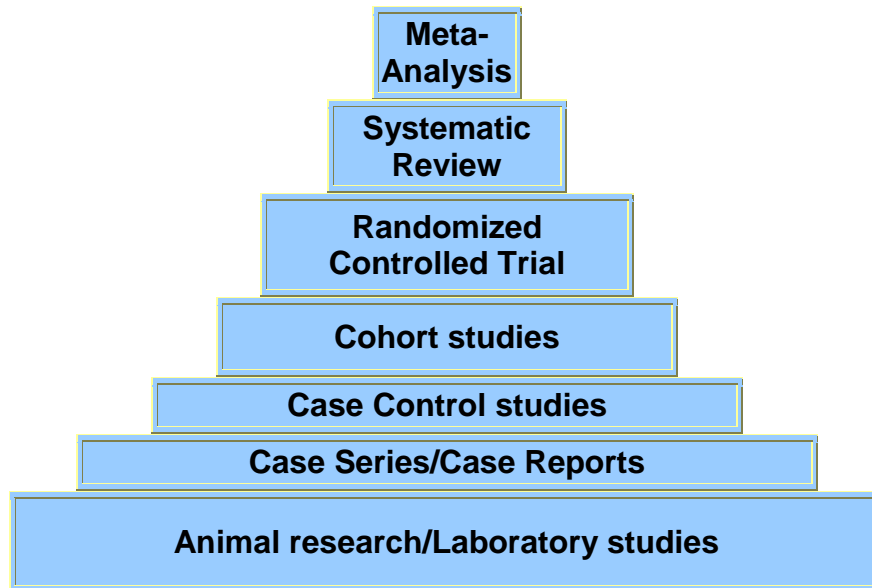


Type of Study Considered to be Evidence Based



This is often referred to as the "evidence pyramid". It is used to illustrate the evolution of the literature.

The base of the pyramid is where information usually starts with an idea or laboratory research. As these ideas turn into drugs and diagnostic tools they are tested in laboratories models, then in animals, and finally in humans. The human testing may begin with volunteers and go through several phases of clinical trials before the drug or diagnostic tool can be authorized for use within the general population. Randomized controlled trials are then done to further test the effectiveness and efficacy of a drug or therapy. ***As you move up the pyramid the amount of available literature decreases, but increases in its relevance to the clinical setting.***

A **Meta-analysis** will thoroughly examine a number of valid studies on a topic and combine the results using accepted statistical methodology as if they were from one large study. Some clinicians put Meta-analysis at the top of the pyramid because part of the methodology includes critical appraisal of the selected RCTs for analysis.

Systematic Reviews usually focus on a clinical topic and answer a specific question. An extensive literature search is conducted to identify all studies with sound methodology. The studies are reviewed, assessed, and the results summarized according to the predetermined criteria of the review question. *The Cochrane Collaboration* has done a lot of work in the area of systematic reviews.

Randomized controlled clinical trials are carefully planned projects that study the effect of a therapy on real patients. They include methodologies that reduce the potential for bias (randomization and blinding) and that allow for comparison between intervention groups and control groups (no intervention).

Studies that show the efficacy of a diagnostic test are called **prospective, blind comparison to a gold standard study**. This is a controlled trial that looks at patients with varying degrees of an illness and administers both diagnostic tests - the test under investigation and the "gold standard" test -- to *all* of the patients in the study group.

Cohort Studies take a large population and follow patients who have a specific condition or receive a particular treatment over time and compare them with another group that has not been affected by the condition or treatment being studied. Cohort studies are observational and not as reliable as randomized controlled studies, since the two groups may differ in ways other than in the variable under study.

Case Control Studies are studies in which patients who already have a specific condition are compared with people who do not. They often rely on medical records and patient recall for data collection. These types of studies are often less reliable than randomized controlled trials and cohort studies because showing a statistical relationship does not mean that one factor necessarily caused the other.

Case series and **Case reports** consist of collections of reports on the treatment of individual patients or a report on a single patient. Because they are reports of cases and use no control groups with which to compare outcomes, they have no statistical validity.

The pyramid serves as a guideline to the hierarchy of evidence available. You may not always find the best level of evidence to answer your question. In the absence of the best evidence, you then need to consider moving down the pyramid to other types of studies.

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