

## Part 4 Transcript

As mentioned in the previous module, foreground questions can best be answered with the information contained in published research studies. Now that we have created an effective search query from our PICO, we are ready to utilize health literature databases to retrieve studies that help answer our clinical question.

However, if we were to just jump into health journal literature in a non systematic way, we would find dozens of relevant articles on our topic of using statins for mild amnesia or dementia. How do we know which articles are best? What if articles report contradictory findings?

When you venture into the health literature you will find several types of articles. Some report results of experimental trials, that is, trials where investigators assign trial participants to different groups. This article is from an experimental trial called a randomized controlled trial.

Some report results of observational studies, where investigators observe individuals participants and report the outcomes. This article is from a type of observational study called a cohort study.

Some are just news stories.

And some are either brief or lengthy reviews of studies and trials.

Proponents of evidence-based medicine have developed a hierarchy of study types to illustrate which types provide better evidence according to scientific merit. Central to the practice of evidence based medicine is the understanding of this evidence hierarchy and realizing the better the evidence the stronger the answer to your clinical question. Let's take a look at the hierarchy.

At the very bottom are the qualitative and case studies. These study types are observational in nature and generally report anecdotal events. As the name implies, case studies describe single cases, typically depicting the manifestations, clinical course, and prognosis of that case.

Case control studies are also observational. In general, a case control study involves two or more groups, with one group associated with a manifestation of disease or condition and the other a control group. The investigator goes back in time—looking at personal and medical histories, and searches for clues as to why one group has a higher (or lower) proportion of that disease. An example: investigators report that a group of individuals have a higher incidence of lung cancer when compared to the general population (or control group). The investigators check the personal histories of these individuals and find they were all heavy smokers.

Prospective cohort, also known as longitudinal, or simply cohort studies are similar to case

control. However, instead of going back in the personal histories of the group, investigators identify a present potential risk factor or exposure (say smoking) and observe over time the individuals within a group or cohort for specific outcomes (say lung cancer). The incidence within the cohort group is then compared to that of a control group or the general population.

Controlled trials, on the other hand, are not observational but experimental. In other words, the assignment of individuals into groups is controlled by the investigator. This makes the study much stronger because it eliminates confounding biases. The strongest type of controlled trial is the randomized controlled trial, in which individuals similar at the beginning of the trial are randomly allocated into two or more treatment groups and the outcomes are compared after sufficient follow up time. The randomized controlled trial or RCT provides the strongest empirical evidence of all the trial and study types.

The study types discussed thus far are considered primary literature because they directly report the results of a single trial or study.

The secondary literature or review literature provide stronger evidence because their results and conclusions are generally based on not just one but several studies on a single topic.

One type of secondary literature is the systematic review. A systematic review focuses on a single question and attempts to identify, appraise, select and synthesize all high quality research evidence relevant to that question.

A meta-analysis is a type of systematic review that examines a number of valid studies on a single question and combines or pools the results of the studies using accepted statistical methodology as if they were from one large study.

Finally, good evidence-based guidelines sit atop the hierarchy. The best evidence-based guidelines are based on systematic reviews of the research literature and provide summaries of evidence and recommendations for practice. Be warned, though, that very few published guidelines are truly evidence based, that is derived from reviews and trials.

So, as we rise up the hierarchy, the evidence increases. Therefore when we search for answers to foreground questions we should start with the secondary resources.

You have completed module number 4: The evidence hierarchy