An easy way to visualize all of the different types of research is by thinking of it as a pyramid with the highest quality, most supported evidence at the top.

**TYPES OF RESEARCH**

Once you have found some information to work with, you will find that there are many types of research that can be loosely organized based on the quality of evidence and the amount of evidence.

**THE EVIDENCE PYRAMID**

- Meta Analysis
- Systematic Review
- Practice Guideline
- Randomized Controlled Trial
- Cohort Study
- Case Control Study
- Case Reports

**WHAT ARE YOUR SOURCES?**

Not all sources are created equally. When possible, look for primary sources when you do your research.

### PRIMARY SOURCES

- Journals, periodicals that report scientific research.
- Theses, reports, conferences, patents

### SECONDARY SOURCES

- Analyze or interpret primary or other secondary source material.
- Databases, review journals, textbooks

### TERTIARY SOURCES

- Collected primary and secondary source material that has been distilled into an easily usable format.
- Encyclopedias, factbooks, almanacs

**PRIMARY SOURCE RESOURCES**

Some of the online databases you can use to find primary source information on herbs and health include:

- www.ncbi.nlm.nih.gov/pubmed
- www.sparrho.com
- www.tripdatabase.com
- https://nowomics.com
- http://scicurve.com/highlights

**PICO ACRONYM**

**FINDING RELEVANT RESEARCH**

PICO stands for Population, Intervention, Comparison, and Outcome. When you research, it’s best to use search terms that are as specific as possible and focus on the most recent research available. A few of the sources above will allow you to narrow down your search using the acronym PICO, or you can keep PICO in mind as you read through your research.

**Population** Are you interested in a specific group of people such as diabetics or those with arthritis?

**Intervention** For herbal research, a good formal term to search for is “phytotherapy.”

**Comparison** Comparing the intervention with another treatment is a good place to start.

**Outcome** Improvement of condition.

**EXPERIMENTAL METHODS**

Being familiar with the different types of experimental methods—the ways that experiments can be done—can also help you understand the research you discover. Here are a few to know:

- **In vivo** Experiments done on a living organism such as in human trials, animal research, or experiments using live bacteria or viruses as the test subject.
- **In situ** Research that occurs at the point where the issue being examined occurs. There’s no interference by the researchers, they observe rather than actively participate.
- **Ex vivo** Experiments that use tissue or cells taken from a living organism, but the tissues or cells haven’t been altered in any way.
- **In Vitro** Studies that are conducted using cells, organisms, or tissues taken outside of their normal environment to be analyzed (like cells kept in a petri dish).
- **In Silico** Experiments that use computer generated models for research.

**CRITICAL APPRAISALS**

Critical appraisal is the process of systematically assessing the outcome of research to judge its trustworthiness and value in a particular context. The ability to think critically about evidence presented in a study takes time and practice, but it can be rewarding and useful. Different types of evidence listed in the evidence pyramid will require different approaches for critical appraisal. Critical appraisal checklists can be found online. We recommend the ones by Critical Appraisal Skills Programme (CASP) to get started:

www.casp-uk.net/#/checklists/cb36