Welcome to Selecting the Evidence
Learning Objectives

- Determine appropriate articles to use in answering a PICO question
- Summarize accurately the usefulness of the Evidence Pyramid in expediting the selection process
- Define level of evidence
- Classify articles as unfiltered or filtered information
- Apply the Evidence Pyramid to the working set appropriately

The learning objectives for this tutorial are:

1. Determine appropriate articles to use in answering a PICO question
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3. Define level of evidence
4. Classify articles as unfiltered or filtered information
5. Apply the Evidence Pyramid to the working set appropriately
The techniques discussed in this tutorial are part of the Acquire portion of the 5 A’s of the EBD Cycle. You have asked your question and created a working set. Now you need to select articles to bring forward to the next phase: appraise.
An incredibly important step in EBD is the selection of articles to answer the foreground question. You cannot select only one article to answer your question; you must select at least two, and they should have been published within the last 10 years. Each article must address the concept you identified as most important in the PICO question. Additionally, the sum of the articles together must address both the I and the C. In other words, you could select one article about just the I and one article about just the C, but not only articles about just the I. Ideally you will select one filtered and one unfiltered article.

But wait. What do we mean by filtered and unfiltered? First it’s important to understand the Evidence Pyramid.
Even with an appropriately sized working set, the amount of information can still feel overwhelming. An Evidence Pyramid can help guide you and make the process more time-efficient. You may see many different versions of an Evidence Pyramid, because there is some variability to the concept depending upon the question, the quality of the study, and more.

You will notice one element that does not vary among these Pyramids is similar types of studies are listed at the top and the bottom.
The Evidence Pyramid we teach is based on the Center for Evidence-Based Medicine (CEBM) Levels of Evidence. It gives greater detail on how the domain of the question being asked impacts the level of evidence.
Level of evidence quickly communicates two important things to others.

First level indicates where on the Pyramid the article may be found.

Second evidence indicates the study type – type of scientific research conducted, if any – that the article is reporting on.

Level of evidence may be broadly categorized as filtered or unfiltered information.
Filtered information is called this because researchers gather together all the primary research (unfiltered information) on a topic and summarize (filter) its findings for you.

This is time-saving because you can read one article that summarizes the literature in a certain time period rather than each individual article.

It’s also a higher level because there is less risk of bias and confounding and a greater pool of data, if the study is well-done.
Unfiltered information is another way of referring to primary research studies and expert opinion. They are called unfiltered because you yourself will be reading the original research, as opposed to reading a summary of it written by someone else. You will often need to read many of these studies in order to get a sense of the literature available on your question as a whole. This information is lower level for two reasons: it has a greater risk of bias and confounding, and it’s also time consuming, since you have to find, read, and appraise a large volume of it yourself.
The pyramid reminds you in what order to look for the levels of evidence. Look for the evidence listed in the pyramid from the top to the bottom or from filtered information to unfiltered information. Why? It often saves time to start with the filtered information, since these levels of evidence summarize a large amount of data from unfiltered information for you. Similarly, the higher up the pyramid a study type is listed, the lower its risk of bias and confounding, provided the study was conducted in an appropriate, high-quality manner. Searching within your working set for the levels of evidence from top to bottom is also called walking it down the pyramid.
The top of the pyramid represents the filtered information and is the same for all questions. The first level of evidence you should check for within your working set is an Evidence-Based Clinical Practice Guideline followed by a Meta-Analysis and then a Systematic Review.
If you don’t find any filtered information that addresses your PICO that’s ok. You just need to look for it and know whether or not it exists in order to properly practice EBD. You would then continue on to the bottom of the pyramid.
If you look and do find an applicable, high quality piece of filtered information, you would still continue on to the bottom of the pyramid but only for articles that are not already covered by the filtered information. For example, if you find a systematic review that searched the literature through 2014, you would look for primary studies not included in it, in other words, you would look for unfiltered information from 2015 to present.
Once you’ve completed the top of the pyramid you then go to the bottom to find the unfiltered information, but precisely what level of evidence you go to next depends upon your domain, since each domain has its own path. These paths indicate the most appropriate study designs for answering this type of question.

For instance, if your research question is in the Therapy domain, the next level of evidence you would look for would be an RCT, followed by a Cohort Study, then Outcomes Research, and so on down the Pyramid.
Notice that while the highest level of unfiltered evidence for a Therapy question is an RCT, if your question had been Prognosis, the highest level would be a Cohort Study. A Cohort Study found for a Prognosis question would be granted the same weight as an RCT for a Therapy question. However, a Cohort Study for a Therapy question is of a different, in this case, lower, weight than a Cohort Study for a Prognosis question.
If you look and see that one domain’s level has a study type listed and another does not, that simply means that there is not a comparably weighted level of evidence for that domain. The applicability of various levels of evidence depends upon the type of scientific question being asked. You will come over time to understand which study types are more applicable to which patient situations but in the meantime the pyramid will help you.
Do not rely on an article’s title to determine its level of evidence. Titles can be misleading. Sometimes an article will say something that sounds like a level of evidence in the title, such as “cohort” but not actually be that level of evidence. This is true for all levels of evidence. Similarly, often articles won’t state their level of evidence in the title.
You must read the abstract and/or the full text of the article and rely upon your own knowledge to help you determine the true level of evidence for an article. For example, this article is actually an RCT.
Threshold of evidence refers to the highest level of usable evidence you found. Another way of thinking of this is where did relevant evidence appear on the pyramid as you were walking down it? If you have a Therapy question, and highest applicable level of evidence you found in your working set was an RCT, then that would be your threshold of evidence.
Appropriate Article Selection

- At least two articles
- Published within the last 10 years
- Each must address the identified most important concept in the PICO question
- The sum of the articles together must address both the I and the C
- Ideally one filtered article and one unfiltered article
- If no filtered, then two unfiltered is fine OR if you are looking at the I and C separately (combining them with OR) then two filtered is fine.

Knowing all of this, you can see why ideally you would select one filtered and one unfiltered article. It lets you cover the greatest ground in the research with the least amount of time. However, sometimes there is no relevant filtered article available. In that case, simply select the highest-level, applicable unfiltered articles you can find. Another exception is if your working set is looking at the I and the C separately (combining them with an OR instead of an AND) then you would select the highest, applicable level of evidence for the I and the highest, applicable level of evidence for the C. If both happen to be filtered, that’s ok, although ideally if you had time you would also find unfiltered articles that address either both together or both separately as well. If one or zero good quality articles exist, then the fact that there’s very little evidence needs to be considered in the EBD decision.
One thing to keep in mind throughout this process, however, is that a well-done lower level article is a better selection than a poorly-done higher level article. Well-done and poorly-done is a way of referring to quality. How do you determine that? That’s the next step in the 5 A’s: Appraise.

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**Example Articles**

- [Antibiotic protocol for the prevention of osteoradionecrosis following dental extractions in irradiated head and neck cancer patients: A 10 years prospective study.](#)
- [Hyperbaric oxygen therapy for late radiation tissue injury.](#)

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 References


