This section is on developing a search strategy from a PICO/PICOTTS question.

The learning objective is to “develop a search strategy, based on a PICO/PICOTTS question, to find the relevant literature to answer a clinical question.

As we explore the PICO search strategy we will use this question “What prevention methods, besides patient education, are clinically proven to be effective at preventing contact allergic dermatitis in adults?”

To build an effective search approach we will take this question on the prevention of contact dermatitis and de-construct it into separate search components. Each identified component of PICO (Patient/Population, Intervention, Comparison, and Outcome) can become key elements within a search strategy.

You may ask, why deconstruct the PICO? What is the purpose of this approach? Won’t I just find the same results by typing the PICO question in the search box? While it might not seem intuitive, the final results will provide a richer and more complete group of relevant journal articles.

Let’s look at deconstructing this PICO question.

The Population is adults with contact allergic dermatitis. The Intervention is clinically proven prevention methods. The Comparison is patient education. The Outcome is the reduced exposure to contact allergic dermatitis. The Type of Study is a prevention study. In this case, Time is not applicable. Study Designs we want to focus on are clinical trials, randomized controlled trials, systematic reviews, meta-analyses, and practice guidelines.

These are the PICOTTS components we will use to build our search strategy.

Some tips to keep in mind as we start building the search strategy. The first tip is to consider each PICO/PICOTTS component as a separate search concept to develop independently of the other concepts. For each ‘search concept’ think about possibly synonyms or alternate terms. The next tip is to combine synonyms with “OR” to capture the relevant articles on the one component. To determine which articles have two or more of search concepts in common, use “AND.” Another tip is to avoid combining too many concepts at once, but start with combining two concepts before adding a third concept.

Sometimes a search concept is best searched through use of a filter, like for age groups, to avoid having to think of all the possible variations that might be used to describe the same concept. For example, teenagers as age group, could be teen, teenage, teenagers, tweens, etc. There will be more on using filters in a later module.

Sometimes searching the PICO “outcome” component may eliminate valid search results, especially in cases where it is challenging to properly search for the concept. Depending on how many relevant articles you need, consider not including the Outcome component in your search

Finally, if the search results aren’t matching the PICO/PICOTTS question, review and revise the search strategy. There are several reasons why the search results may need revising. For instance, if a search term is finding different results than expected. In some cases, maybe an OR was used when AND should have been used for combining concepts, and sometimes, too many concepts may have been combined resulting in almost no results. Building an effective search strategy is an iterative process.

Let’s take a closer look at some of these search strategy tips using our stated PICO question on the prevention of contact dermatitis in adults. In investigating synonyms for allergic contact dermatitis, we discover several other terms that could be used to describe this concept…allergic eczematous dermatitis, allergic eczema, allergic dermatitis, and ACD, a common acronym for allergic contact dermatitis. In considering the “prevention” component, we have word variations like prevent or preventing, or avoid or avoidance.

For richer search results relevant to the PICO component for population, we will use OR between each of the synonyms we have discovered for allergic contact dermatitis, we have a search statement that looks like “allergic contact dermatitis OR allergic eczematous dermatitis OR allergic eczema OR allergic dermatitis OR ACD.”

To assist with listing synonyms and the PICO concepts, use this simple table format. Note a row for each search concept and additional columns for possible synonyms. The table format also notes where the ORs and the ANDs belong. Remember to OR together your synonyms for each PICO concept before combining the individual concepts together with AND.

Here is a sample search strategy for the PICO question on prevention of contact dermatitis. One of our search tips was to start by combining two concepts before adding a third or fourth concept. If there are too many results when searching just the Population and Intervention, then add the Comparison and potentially the Outcome.

From a sample search of PubMed, we begin with elements of the Population, contact dermatitis and adult, and then combine with the Intervention of prevention. To further reduce the search results, combine the search with the Comparison. With just three PICO components included in the search we have a reasonable number of article abstracts to review.

As you are building your search strategy, remember to search each PICO concept separately and then combine two concepts together, reviewing the results, before adding the third concept. Sometimes including the Outcomes component can eliminate valid search results. Finally, if the search results aren’t matching the PICO question, consider revising your search.

In summary, the components of your final PICO or PICOTTS question can become the search components you use for investigating the literature to find relevant journal articles.

Reference: “Person thinking” by DigitalShards from Noun Project is licensed under CC BY 3.0 <https://thenounproject.com/icon/person-thinking-1823342/>

End Credits