Systematic Review

- Literature review
- Researchers form a clinical question and then search for scientific studies that answer that question
- Researchers develop criteria to decide which studies to include and which studies to disregard in their search

**Benefits**

- The highest quality evidence since it is a review of multiple scientific studies

**Example**

- Researchers reviewed studies that addressed whether taking omega-3 supplements prevented or slowed the progression of age-related macular degeneration

**How to find**

- Search [Cochrane Database of Systematic Reviews](https://www.cochranelibrary.com)
- In PubMed, select *systematic reviews* under Articles Types on the left

**META-ANALYSIS**

- Optional component of a systematic review
- Crunches the numbers of the results in each study and develops an aggregate result
- To find, search Cochrane Database of Systematic Reviews or in PubMed, select *meta-analysis* under Articles Types on the left

NECO Library | library@neco.edu
Randomized Controlled Trial

- An experiment conducted using two groups: a control and an intervention group

**benefits**
- Having a control group minimizes bias

**drawbacks**
- Costly
- Time-intensive
- Participant group can occasionally be too small for results to be relevant
- **Ethical issues** (researchers would not be able to give cigarettes to a group to study the effects of tobacco, for example)
- **Confounders** (things other than the treatment like age and socioeconomic class) can affect results

**example**
- **Testing a binocular iPad game versus patching for the treatment of amblyopia to see which treatment is more effective**

**how to find**
- In PubMed, select **randomized controlled trial** under Articles Types on the left
- Search the **Cochrane Central Register of Controlled Trials**
Cohort Study

- Usually prospective (looks ahead in time)
- Examines a population that does not have a disease over a period of time
- Looks at an exposure and tries to trace it to an outcome

benefits

- Control group minimizes bias

drawbacks

- Expensive
- Time-intensive
- **Confounders** (education level, age or socioeconomic status) can affect the results of the studies
- **Self-selection bias**: patients place themselves in groups

example

- A group of Medicare beneficiaries with a diagnosis of cataracts were analyzed from 2002 to 2012. Surgery for cataracts decreased mortality incidence.

how to find

- Search patient’s condition AND "cohort study" in PubMed or neco.edu/library
Cross-Sectional Study

- Looks at a group of diseased and non-diseased people at one point in time or over a short period of time
- Usually measures the prevalence of a disease, typically by administering a survey

**benefits**

- Inexpensive
- Quick to conduct

**drawbacks**

- Antecedent-consequent bias: it can be unclear whether the exposure or the outcome came first
- The results might be affected by the period of time the study was conducted in

**example**

- Researchers surveyed 16 ophthalmology departments of hospitals, asking 220 patients with allergic conjunctivitis about their comorbidities and the time and length of their allergy episodes

**how to find**

- Search patient’s condition AND “cross-sectional study” in PubMed
Case-Control Study

- Retrospective (looks back in time)
- Looks at a group of patients with a disease and matches them to a group of patients without a disease (the control group) to try and identify exposures and outcomes

**benefits**
- Quick to conduct
- Cost-effective

**drawbacks**
- **Recall bias**: results are based on the memories of the participants

**example**
- Researchers look through the medical records of a group of patients with lung cancer to figure out how many participants were smokers

**how to find**
- Search patient’s condition AND "case-control study" in PubMed or neco.edu/library
Case Report/Series

- Presentation of an individual case or cases
- Focuses on unusual or unique events, associations, or cases
- Looks at reactions to different types of treatments, such as medications

benefits

- Great for finding information on rare or new diseases that haven't been tested in a randomized clinical trial yet

drawbacks

- Only looks at one patient or a small number of patients

example

- A 10-year-old girl with diabetic ketoacidosis presents with blindness and hearing loss

how to find

- In PubMed, select case reports under Articles Types on the left