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Literature Searching and Evaluating Your Results

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Review!

Why include synonyms (words that mean the same thing)? e.g. "Cancer or Neoplasm"

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Where can you find synonyms?

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If you have too many irrelevant results, what are ways to narrow your search down?

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When should you add "OR" to a literature search

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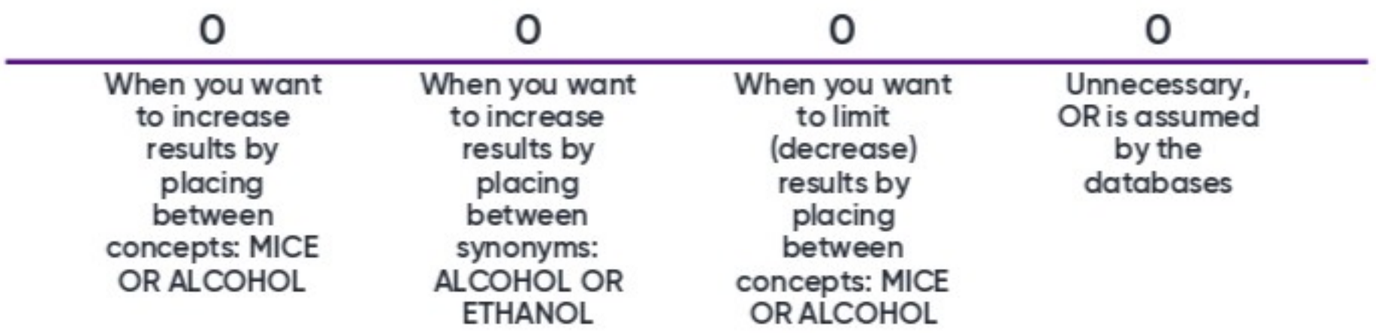

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Why is it important to group synonyms in a set of parentheses

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Parentheses enable human readability, making the search reproducible	It does not actually matter, PubMed can generally "figure it out"	So you do not get too many irrelevant results, e.g. (mice OR mouse) AND alcohol OR ethanol

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AND is useful for:

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Limiting your search by grouping different concepts	Expanding your search by combining synonyms

What are challenges relating to searching?

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Why or why not search more than one literature database/search engine?

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Evaluating Your Search Results

Critical Appraisal

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Objectives: Students will be able to...

- Differentiate between bias and error
- Identify key sources of bias, error and explain how they relate to rigor and reproducibility
- Evaluate if findings in an article are likely to be biased

Why is it important not to skip to the conclusions/results of a paper?

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What comes to mind when you hear the word "error" (with regards to science)

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Error

The difference between observed values and true values

Common Sources of Error

- → Accuracy
- → Imprecision
- → Human
- → Reporting Errors

What words come to mind when you hear about bias?

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Bias

The **systematic** introduction of error

Common Bias Issues

- Randomization
- Blinding
- Population Selection
- Housing
- Analysis
- Publication Bias

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Reviewing an article

Viudez-Martínez, A, García-Gutiérrez, MS, Manzanares, J. Gender differences in the effects of cannabidiol on ethanol binge drinking in mice. Addiction Biology. 2019;e12765. https://doi-org.ezproxy.med.nyu.edu/10.1111/adb.12765

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Go to the article, if you have not already done so, review the methods section

From a rigor and reproducibility standpoint, what did they do right?

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Where might bias have been introduced?

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Where might errors have occurred?

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Appraisal Checklists and Tools

Checklists

- Krauth, Woodruff and Bero (2013) go through a high volume of critical appraisal checklists
- SYRCLE tool is one option among many

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Review SYRCLE

Go to: Hooijmans CR, Rovers MM, de Vries RB, Leenaars M, Ritskes-Hoitinga M, Langendam MW. SYRCLE's risk of bias tool for animal studies. BMC medical research methodology. 2014;14:43. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4230647/

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Discuss benefits and drawbacks with your table

What are benefits and drawbacks of a checklist?

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Homework

Read: https://www.ncbi.nlm.nih.gov/pubmed/31575638

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Write a reflection of potential sources of bias, error, and any replicability issues. Try out the SYRCLE tool (provided in Syllabus under Hoojimans et al) to appraise and describe your experience.