

APPRAISING AN ARTICLE ON THERAPY

DIRECTNESS	Why is it Important	What to Look For
Does the study provide a direct enough answer to your clinical question in terms of patients (P), exposure (E) and outcome (O)? In this situation the exposure is the treatment that is being evaluated, and outcome is the condition being prevented.	Many times, the P, E and O are not exactly the same as those studied by the authors of a paper. If this is the case, you need to decide if you can use the study results at all. The decision requires some expertise on the disease under question.	Seek the opinion of an expert (this might be you), or your colleagues.
VALIDITY	Why is it Important	What to Look For
Were patients randomly assigned to treatment groups?	Randomization makes the treatment and control groups equal with regards all known or unknown prognostic factors.	Look for the word "randomize", "randomly allocated" in methods.
Was allocation concealed?	Concealment of the allocation helps protect the process of randomization.	Look for strategies such as use of opaque envelopes, randomization by third party, or randomization by computer.
Were baseline characteristics similar at the start of the trial?	This criterion assesses comparability of the groups being compared. The magnitude of any difference is more important than the reported p-value.	Look for a comparison in tables or in the text.
Were patients blinded to treatment assignment?	Blinding patients is necessary especially when subjective complaints are used as outcome measures. Patients are more likely to feel bad if they know they are not on active therapy.	Look for blinding strategies such as use of a placebo. This may not always be feasible or necessary.
Were caregivers blinded to treatment assignment?	Blinding caregivers is necessary because knowledge of what patients are receiving may affect how well they look after these patients .	Look for blinding strategies such as use of a placebo. This may not always be feasible or necessary.
Were outcome assessors blinded to treatment assignment?	Blinding outcome assessors separately may be necessary, especially when patients and caregivers cannot be blinded.	Look for strategies to withhold information regarding patient assignment.
Were all patients analyzed in the groups to which they were originally randomized?	Non-compliant patients should be evaluated as if they received a treatment because non-compliance is part of the effect of treatment.	Look for the term "intention-to-treat" under the planned analysis.
Was follow-up rate adequate?	If there are too many drop-outs with unknown outcome, the validity of a study is threatened.	Drop-outs should be stated explicitly in a paper. If not, compare number recruited with number of patients analyzed at end of study.

RESULTS	Why is it Important	What to Look For
How large was the effect of treatment?	This tells us how effective, ineffective or harmful the treatment is.	For dichotomous outcomes – look for hazards ratios, relative risk, relative risk reduction, or absolute risk reduction (also known as risk difference). For continuous outcomes – look for the mean difference.
How precise was the estimate of the treatment effect?	Because studies just give us estimates of the effect of a treatment, we need to know the range of possibilities rather than just a single number.	Look for 95% confidence intervals around the estimates of treatment effect mentioned above.
APPLICABILITY	Why is it Important	What to Look For
Are there biologic issues that may affect applicability of estimates of treatment effectiveness? (Consider the influence of sex, co-morbidity, race, age and pathology)	Sometimes, effectiveness of an intervention may depend on sex, presence of co-morbidities, race, age, or pathology of the disease in question.	Prior knowledge and experience with the disease will be useful.
Are there socio-economic issues that may affect applicability of estimates of treatment effectiveness?	Social, cultural and economic context may potentially affect how well a treatment works	Prior knowledge and experience with the disease will be useful.
INDIVIDUALIZING RESULTS	Why is it Important	What to Look For
What is the likely effect of the treatment on your individual patient?	Studies report average effects but the effect on your patient may not be average,	Using the patient's baseline risk for the outcome (based on clinical presentation) and the risk reduction (based on the study), one can estimate the individualized absolute risk reduction.

APPRAISING A SYSTEMATIC REVIEW OR META-ANALYSIS

DIRECTNESS	Why is it Important	What to Look For
Does the study provide a direct enough answer to your clinical question in terms of patients (P), exposure (E) and outcome (O)?	Many times, the P, E and O are not exactly the same as those studied by the authors of a paper. If this is the case, you need to decide if you can use the study results at all. The decision requires some expertise on the disease under question.	Seek the opinion of an expert (this might be you), or your colleagues.
VALIDITY	Why is it Important	What to Look For
Were the criteria for inclusion of studies appropriate?	Aside from specifying the target population, the interventions compared, and the outcomes expected, inclusion criteria in a systematic review should also specify minimum methodologic criteria, appropriate for the question being asked.	Look for inclusion criteria in the methodology section.
Was the search for eligible studies thorough?	If a lot of articles are missed, conclusions may not be valid. Missed articles are more likely to have negative results.	Look for specification of a computerized search, hand searches of relevant journals, personal communication with known researchers on a topic (including drug companies), and other methods to search for unpublished articles.
Was the validity of the included studies assessed?	The strength of conclusions from a systematic review depends on validity of the included studies.	Look for a quality scale for studies, or qualitative descriptions of the studies included.
Were the assessments of the studies reproducible?	Assessing study quality is often subjective. High agreement among authors reinforces credibility.	At least two authors should be evaluating the quality of included studies.
RESULTS	Why is it Important	What to Look For
What are the overall results of the review?	Depending on the nature of the systematic review, it may summarize effectiveness of treatment, accuracy of a test, estimates of causality, or prognosis of a disease.	Results may be summarized in tables or graphs (eg – forest plots).
Were the results similar from study to study?	When results of individual studies are too different, then there may be subtle differences in P, E, O or methodologies of the studies combined. It is quite possible that combining would be inappropriate.	Look for tests for heterogeneity. If present, authors should explain where heterogeneity is coming from, and how they plan to deal with it.
How precise were the results?	Precision gives us the best and worst scenarios in terms of effectiveness of the treatment being evaluated, accuracy of tests, prognosis of disease, or causal relationships	Look for overall 95% confidence intervals if results were combined statistically.

APPLICABILITY	Why is it Important	What to Look For
See applicability issues related to specific types of questions (therapy, diagnosis, harm or prognosis) If the overall results of the review are not directly applicable to your patient, are there credible subgroup analyses that you could use?	Sometimes, the overall results apply to a broad range of patients, and we need to decide if they apply to specific subgroups, eg - young vs. old, male vs. female, mild vs. severe, high dose vs. low dose, etc.	Differences discovered on subgroup analyses are credible if 1) they were preplanned analyses by the reviewers, 2) there aren't too many 3) subgroup differences are consistent between studies, and 4) subgroup differences are biologically plausible
INDIVIDUALIZING RESULTS	Why is it Important	What to Look For
What is the implication of study findings on your individual patient?	Studies report average results but the effect on your patient may not be average,	Strategies for individualizing results vary according to whether one is dealing with a study on therapy, diagnosis, causation or harm. Please see previous sections.