

HOW TO REVIEW AN ARTICLE ON DIAGNOSIS

GUIDE	COMMENTS
Are the results of this diagnostic study valid?	
1. Was there an independent “blind” comparison with a reference (gold) standard of diagnosis?	<ul style="list-style-type: none"> The gold standard is used to define the true state of the patient The gold standard must be reasonable and doable, but does not have to be the perfect test. Example – coronary angiography is considered the gold standard for the identification of coronary artery disease. One could argue that autopsy is the gold standard, but difficult to perform in live patients
2. Was the diagnostic test evaluated in an appropriate spectrum of patients (like those in whom it would be used in practice)?	<ul style="list-style-type: none"> You want to see that patients with a wide spectrum of the target diagnosis (mild, moderate & severe) and patients with commonly confused diagnoses (eg, diagnostic value of rales – include patients with congestive heart failure, chronic lung disease, pneumonia) are included. Spectrum bias refers to the bias introduced by having too narrow a spectrum of patients (severity or other commonly confused diagnoses)
3. Was the reference standard applied regardless of the diagnostic test result?	<ul style="list-style-type: none"> Every patient in the study should get both the reference standard and the diagnostic test being studied. Beware of studies that only compare the reference standard and diagnostic test in patients who are positive for a screening test (can be either reference standard or diagnostic test. For example, a study examining the value of d-dimer in the diagnosis of deep vein thrombosis, only patients who had a positive venous ultrasound (reference standard) got a d-dimer.
4. Was the test (or cluster of tests) validated in a second, independent group of patients?	<ul style="list-style-type: none"> Ideally (especially for cluster of tests or clinical prediction rules), the diagnostic test should be validated in a second independent sample. This does not often occur.
Are the valid results of this diagnostic study important?	
See handout on test characteristics for formulas. In addition for likelihood ratios – $SpPin - LR+ > 10$ $SnNout - LR- < 0.1$	
Can we apply this valid, important evidence about a diagnostic test in caring for our patient?	
1. Is the diagnostic test available, affordable, accurate, and precise in our setting?	<ul style="list-style-type: none"> In order to be useful, a test needs to be affordable and available. It doesn't do your patient any good if they cannot afford the test or have to go to the North Pole to get it.
2. Can we generate a clinically sensible estimate of our patient's pre-test probability (from personal experience, prevalence statistics, or primary studies)? <ul style="list-style-type: none"> Are the study patients similar to our own? Is it unlikely that the disease possibilities or probabilities have changed since this evidence was gathered? 	<ul style="list-style-type: none"> In order to sensible use the diagnostic test and apply it's test characteristics to our patient, we must be able to generate our patient's pre-test probability of disease. Generating the pre-test probability of the disease is usually not a problem. The problem is the accuracy of our estimate. For a variety of reasons, physicians (and others) tend to over-estimate the probability of disease in their patients.

<p>3. Will the resulting post-test probabilities affect our management and help our patient?</p> <ul style="list-style-type: none">• Could it move us across a test-treatment threshold?• Would our patient be a willing partner in carrying it out?	<ul style="list-style-type: none">• There is an old clinical adage – don't order a test unless it will alter your management. With the ever-growing emphasis on cost, it is difficult to justify ordering a test that does not benefit the patient. Satisfying our curiosity is no longer considered an acceptable reason to order a test. Benefit can be defined as leading to a change in therapy or providing information regarding prognosis.• The patient must also be a willing partner after explaining the need for a test. Even though a test may provide valuable information to you as a clinician, the risk of performing the test may be unacceptable to the patient.
---	---