Citation:

Are the results of the study valid?

1. Was there an independent, blind comparison with a reference ("gold") standard of diagnosis?	
2. Was the diagnostic test evaluated in an appropriate spectrum of patients (like those in whom it would be used in practice)?	
3. Was the reference standard applied regardless of the diagnostic test result?	
4. Was the test (or cluster of tests) validated in a second, independent group of patients?	

What are the results of this study?

1. Is the test able to distinguish patients who do and don't have the disorder?	
a. Sensitivity and Specificity	
b. Likelihood ratios	

Can this study be applied to your patient?

1. Is the diagnostic test available, affordable, accurate, and precise in your setting?	
2. Can you generate a sensible estimate of the patient's pre-test probability (from personal experience, prevalence statistics, practice databases, or primary studies)?	
3. Will the resulting post-test probabilities affect your management and help your patient?	
4. Would the consequences of the test help your patient?	

Diagnostic Test Formulas

		Target disorder		Totals
		Present	Absent	
Diagnostic test result	Positive	A	B	A+B
	Negative	C	D	C+D
Totals		A+C	B+D	A+B+C+D

Sensitivity → "positive in disease" → true positives / all disease → A/(A+C)
Specificity → "negative in health" → true negative / all without disease → D/(B+D)

Positive predictive value → true positives / true positives and fall positives → A/A+B
Negative predictive value → true negatives / true positives and fall positives D/(C+D)

Likelihood ratio → the probability that a given test result occurs in patients with disease
               probability that the same result occurs in patients without disease

Likelihood ratio for a positive test result (LR+) → sensitivity/(1 – specificity)
Likelihood ratio for a negative test result (LR–) → (1 – sensitivity)/specificity

Pre-test probability (prevalence) → (A+C)/(A+B+C+D)
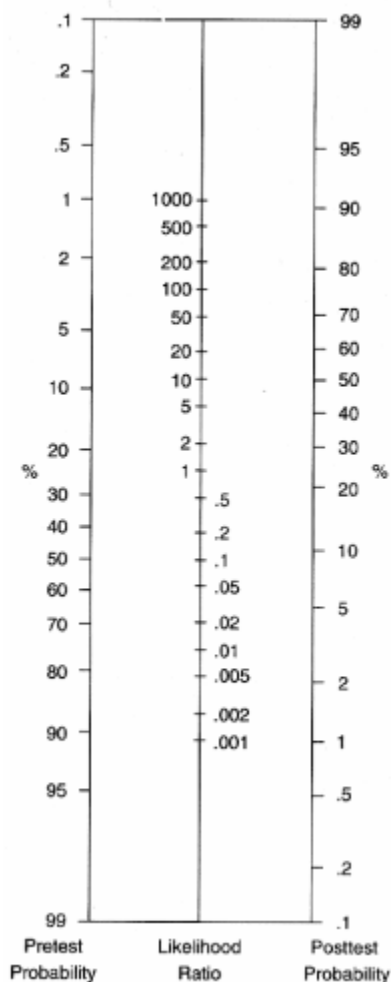***Pre-test odds*** → prevalence/(1 – prevalence)
Post-test odds → (pre-test odds) × LR
Post-test probability → (post-test odds)/(post-test odds+1)

Nomogram:

- Place straight edge on pre-test probability
- Go through the LR in the middle
- Read post-test probability on right side

Pretest Probability   Likelihood Ratio   Posttest Probability