



Best Evidence = Best Practice

Diagnosis

Making a solid diagnosis is one of the most critical components of the patient encounter. The fact is that you will never be 100% correct on every diagnosis you make during your career. But, by taking just a few minutes to look for the best evidence when making a diagnosis, you can be more confident in your accuracy. To learn about the reliability of any diagnosis you make, it is essential to know the **sensitivity** and the **specificity** of a diagnostic test. You can find sensitivity and specificity data in studies that look at a diagnostic test in a patient group and how those outcomes compare to other available tests.

Sensitivity = the number of people *with* a disease that will test *positive*.

Specificity = the number of people *without* a disease that will test *negative*.

Not every diagnostic test is full proof. At times, patients will test negative even when they really do have a certain disease. On the flip side, some people that do not have a certain disease will still test positive for that disease.

+++++

Other definitions you will most certainly encounter when looking for good diagnostic evidence in the future:

Likelihood Ratio: The likelihood that a given test result would be expected in a patient with a disease compared with the likelihood that this same result would be expected in a patient without the disease.

Pre-Test Probability: The proportion of people with a disease in the population at risk at a specific time.

Post-Test Odds: The odds that the patient has the target disorder after the test is carried out (calculated as the pre-test odds x likelihood ratio).

Definitions amended from the Centre for Evidence-Based Medicine at the University of Toronto, Toronto, Ontario, Canada. <http://www.cebm.utoronto.ca/>

A diagnostic case:

It's cold and flu season and you are covering the Pediatric Emergency Clinic. An otherwise healthy 7-year old male presents with severe lower right quadrant pain. You suspect appendicitis following your initial examination but also know that there has been a nasty GI bug making the rounds as well. You decide to send the patient for an ultrasound before you make your diagnosis. How effective is ultrasound in accurately identifying acute appendicitis?

P=7-year old healthy male

I=Ultrasound

C=Physical examinations and CBC

O=Accurate diagnosis to rule in or rule out appendicitis

Search – PubMed Clinical Queries, category *diagnosis*, scope *narrow*

Search terms – appendicitis AND ultrasound – LIMIT to All Child

Gracey D, McClure MJ. The impact of ultrasound in suspected acute appendicitis. *Clin Radiol*. 2007 Jun;62(6):573-8.

...The **sensitivity** of US was 94.7% in group A, 93.3% in group B and **93.8%** overall. **Specificity** was 90.6% in group A, 91.2% in group B and **91.3%** overall. US findings were contrary to intended surgical management in 103 cases. Management was altered in 97 cases (32.2%), with a positive outcome in 85 (28.2%)...

Not bad...pretty good numbers in both specificity and sensitivity. And, your patient tested positive for acute appendicitis following the ultrasound so he is being prepped for surgery right now. But, did you notice how management of care was altered in 32.2% of the cases that were part of this study? Confirming your diagnosis with good evidence can eliminate unneeded invasive procedures and more importantly, let you know that you are on the right track before sending your patient to surgery or any invasive procedure.