META-ANALYSIS OF DIAGNOSTIC TEST PERFORMANCE

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A meta-analysis of studies of diagnostic test performance should consider variation in both test accuracy and test threshold (positivity criteria) between studies. For a given test, a single estimate of sensitivity and specificity from each study is generally used to derive a Summary ROC curve that characterizes the relationship between the accuracy and threshold for the test. Standard regression methods are commonly used to estimate the SROC, and investigate sources of heterogeneity in test accuracy. However, this approach does not take proper account of within and between study variability. A less straightforward but more rigorous hierarchical SROC model has been proposed that overcomes this problem. This model also has the advantage that it allows investigation of heterogeneity in both accuracy and threshold (positivity criteria) between studies. The use, interpretation and limitations of the SROC and HSROC models will be used in the meta-analysis of: (a) the diagnostic performance of a single test; (b) comparative performance of two tests; and (c) assessment of the gain in using two tests in combination.