

ALTERNATIVE GRAPHS FOR DIAGNOSTIC TESTS: THE AGREEMENT CHART AND THE RECEIVER OPERATING CHARACTERISTIC (ROC) CURVE

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Objective

For diagnostic tests, the most common graphical representation of the information is the receiver operating characteristic (ROC) chart. The ‘agreement chart’ displays the information of two observers independently classifying the same n items into the same k categories, and can be used if one considers one of the ‘observers’ as the diagnostic test and the other as the known outcome. This study compares the two charts and their ability to visually portray the various relevant summary statistics that assess how good a diagnostic test may be, such as sensitivity, specificity, predictive values, and likelihood ratios.

Study design and setting

The geometric relationships displayed in the charts are first described. The relationship between the two graphical representations and various summary statistics is illustrated using data from three common epidemiologically relevant health issues: coronary heart disease, screening for breast cancer, and screening for tuberculosis.

Results

While the ROC graph incorporates information on sensitivity and specificity, the agreement chart also includes information on the positive and negative predictive values of the diagnostic test.

Conclusion

The agreement chart should be considered as an alternative visual representation to the ROC for diagnostic tests.