Estimating predictive value of tests without having a Gold Standard -The concept of Etiologic Predictive Value (EPV)

Associate Professor Ronny Gunnarsson and Jan Lanke

Institution: College of Medicine and Dentistry at James Cook University, Australia and Department of Primary Health Care Gothenburg University, Sweden

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Background: Patients with infectious diseases often require the use of microbiologic diagnostic tests. Predictive value of tests are used to describe the usefulness of a diagnostic test in a specific setting. Sometimes an acceptable Gold standard is lacking making it difficult to evaluate the usefulness of a new diagnostic test.

Aims: Describe how predictive value of tests can be calculated despite the absence of an acceptable Gold Standard. Also to describe how to account for asymptomatic carriers.

Methods: Mathematical derivation shows that information from a healthy control population can, for most scenarios, be used to calculate predictive value of tests despite the absence of a Gold Standard.

Results: Rules for how the usefulness of diagnostic tests can be estimated in the absence of a Gold Standard. The new statistical method considers the influence asymptomatic carriers will have on the diagnostic process. These rules are especially suited for evaluating microbiologic diagnostic tests but can be used also in other scenarios.

Conclusions/Recommendations: The existing Gold Standard should always be challenged when evaluating a new diagnostic test. Etiologic Predictive Value offers an alternative to comparing the new test with a conventional Gold Standard.