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## META-ANALYSIS TECHNIQUES APPLIED IN PREVALENCE RATE ESTIMATION

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### Abstract

In some cases, the estimators obtained in compound tests have better features than the traditional ones, obtained from individual tests, cf. Sobel and Elashoff (1975), Garner *et al.* (1989) and Loyer (1983). The bias, the efficiency and the robustness of these estimators are investigated in several papers, e.g. Chen and Swallow (1990), Hung and Swallow (1999) and Lancaster and Keller-McNulty (1998). Thus, the use of estimators based on compound tests not only allows a substantial saving of costs, but they also can (in some situations) be more accurate than the estimators based on the individual tests.

Nevertheless, each laboratory produces estimates for the prevalence rate of a given infection using different methodologies, such as halving nested

procedures (Sobel and Elashoff, 1975) and square array testing (Kim *et al.*, 2007). The logistic regression or the weighted least squares regression can be used in order to combine different prevalence rate estimates (Chen and Swallow, 1990). In this work some meta-analytical techniques are proposed as an alternative approach. This methodology has the advantage of being quite simple and flexible to account for the error source.

**Keywords:** compound tests, estimation of prevalence, meta-analysis, sensitivity, specificity.

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