EVALUATION OF A DIAGNOSTIC TEST: FUNDAMENTALS

O.S. Miettinen[1]

[1]*McGill University, Montreal, Canada*

Email: *olli.miettinen@mcgill.ca*

Statisticians, and 'clinical epidemiologists' also, have been wedded to the notions that the result of a diagnostic test is binary, positive or negative, either inherently or upon the choice of a cut-off point (presuming unidimensionality of all test results), and that the frequency of each of these two results is constant conditionally on the presence / absence of the illness being diagnosed. So long as one does think in terms of binary result, one should appreciate that the probability of the positive result conditional on the presence of the illness – misnomered sensitivity – commonly is very dependent on the particulars of the illness and, consequently, on the pretest profile; and that the same also applies, though less forcefully, to the probability of the negative result in the absence of the illness – seriously misnomered specificity. Most importantly appreciated should be this: The correct diagnostic probability for a particular illness is its prevalence conditional on the diagnostic profile (of available relevant facts, risk-related and manifestational) – the realization of a suitable diagnostic prevalence / probability function of the diagnostic indicators involved in the profile. This, then, is the framework in which a test's diagnostic performance – informativeness – is to be evaluated.