## STATISTICAL TEST EVALUATION IN THE ABSENCE OF A GOLD STANDARD

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Estimation of test performance parameters in the absence of a gold standard is a difficult and challenging problem. In this presentation we review some of the traditional and more recent statistical methods developed to estimate diagnostic test sensitivity and specificity in the absence of gold standard tests. In particular we review the traditional latent class modeling approach that requires the assumption of independence between diagnostic tests conditional on the true disease status, and the more recent procedures that relax the conditional independence assumption. Unfortunately, all the above models do not account for the nature of the tests being evaluated. Thus, in this presentation we also review a hierarchical latent class analysis for modeling dependence between tests that separates groups of tests based on different biological phenomena, thus measuring different latent variables (e.g. detection of DNA and detection of current infection.) This approach allows estimation of sensitivity and specificity with respect to each latent variable. Finally, we discuss the potential public health implications of using biased estimates of performance indices.