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Clinical Tests Based On Disease Prevalence Related To Positive And Negative Application To Covid-19 Testing

Gongwen Wang*

Department of Biochemistry, Wuhan University, China

Introduction

Molecular and serological tests play a crucial role within the diagnosis, monitoring and epidemiological investigation of the many diseases. They are often be positive or negative results. a completely unique coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has caused an ongoing pandemic that causes severe coronavirus disease 2019 (COVID-19) [1]. Infection by SARS-CoV-2 could also be identified by detecting viral RNA with macromolecule amplification tests (NAATs) or by viral antigens, or on reflection by documenting the presence of an immune reaction against the virus, as reflected by the presence of specific anti-SARS-CoV-2 antibodies [2]. The clinical performance is "ability of a biomarker to evolve to predefined clinical specifications in detecting patients with a specific clinical condition or during a physiological state". The minimum clinical performance specifications are often defined because the minimum clinical sensitivity and specificity the test must attain to support conclusions that it's fit intended purpose, like for informing clinical (e.g., diagnostic work up) or population health decisions (e.g., for epidemiological investigation during a particular population, for estimating prevalence of current infection, or for monitoring the event of antibodies within a population).

Acknowledging the very fact that no tests are ready to achieve perfect clinical performance, these specifications are often set by defining the tolerable rates of false negative and false positive findings above which the results of working on the test results are considered likely to end in more harm than good [3]. Clinical performance of a test doesn't necessarily translate to clinical effectiveness, which may be a measure of the particular harm-benefit trade-off derived from the acceptable medical decisions or actions triggered by the test results. Thus, good clinical performance of a test may be a prerequisite of, but doesn't guarantee, improved health outcomes. these tests are directly measuring health, public health or other societal outcomes (i.e., clinical effectiveness) aren't available, the clinical performance levels of a test are often used as a proxy to infer health outcomes [4].

To be clinically useful, a test must be ready to deliver a suitable number of true versus false positive and negative findings, in order that working on a positive result are often considered to supply a positive benefit-harm trade-off. The PPV and NPV capture these trade-offs, thus setting minimum acceptable PPV and NPV are often used because the start line for outlining and specificity requirements during a specific population. While PPV and NPV are useful for choosing testing strategy, the calculation of post-test probability of disease using likelihood ratios is useful to form clinical decisions for individual patients [5-6].

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***Corresponding author:** Gongwen Wang Department of Biochemistry, Wuhan University, China; E-mail: t gw@cugb.edu.cn

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