

TITLE: EVALUATION OF THE GeneXpert® MTB/RIF FOR MTB DIAGNOSIS IN PATIENTS ATTENDED AT A TERTIARY HOSPITAL

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ABSTRACT:

Worldwide, tuberculosis (TB) represents a significant risk to global health and is considered a major social, economic and public health problem. According to the World Health Organization (WHO), one-third of the world's population is infected with *M. tuberculosis* (MTB). HIV infection is an important risk factor for the development of TB among adult patients. Usually, the diagnosis is performed by direct acid-fast bacilli (AFB) smear and bacteriological culture, which is the gold-standard method. AFB detection is a rapid, simple, and inexpensive tool for diagnosing pulmonary TB, but it has low and variable sensitivity. Mycobacterial culture requires 2 to 6 weeks for interpretation, and then, to perform the tuberculostatic susceptibility test. Recently, molecular assays have been developed for early detection of active TB, as well as evaluation of drug resistance. The rapid diagnosis of TB becomes necessary to guide an effective treatment of this highly infectious disease, preventing transmission and increasing the effectiveness of the treatment. Currently, the accurate detection of smear-negative disease, which disproportionately occurs in HIV-positive people with TB, and the detection of drug resistance are the major challenge to TB control. This work aims to analyze the results obtained in the GeneXpert® MTB/RIF (GeneXpert, Cepheid, Sunnyvale, CA, USA), a rapid molecular tool for TB diagnosis in immunosuppressed or non-immunosuppressed patients, comparing the results with conventional methodologies in samples from patients attended in a tertiary public health hospital. A total of 823 samples of respiratory and non-respiratory sites were collected from patients suspected of being infected with MTB from May 2015 to May 2017 and analyzed by Ziehl, Lowenstein-Jensen, and rapid molecular test. Among these, in 12.5% (103) samples MTB was detected by the molecular method, while 5.5% (46) and 6.8% (56) were positive by the Ziehl Neelsen staining and culture in solid medium, respectively. The molecular test increased MTB detection by 45% and 55% in clinical samples compared with AFB smear and bacteriological culture, respectively. In patients thought to have TB, Xpert® MTB/RIF substantially increases TB detection, and the decentralized availability of this test may have an important impact on the control of this disease.

KEYWORDS: GeneXpert MTB/RIF, *Mycobacterium tuberculosis*, tuberculosis infection

DEVELOPMENT AGENCY: Ministério da Saúde