

Application of Diagnostic Techniques on Tuberculosis Diagnosis

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Abstract

Tuberculosis (TB) is a leading notifiable infectious disease primarily caused by *Mycobacterium tuberculosis* complex (MTBC). Bacteriological research and development is crucial for combating public health challenges caused by TB. According to the slow growth and other biological characteristics of MTBC, World Health Organization has recommended a few new TB tools, diagnosis policies and guidelines since 2006. To strengthen laboratory services, mycobacterial liquid culture method, lateral flow immunochromatographic assays and molecular tests for rapid identification and detection of drug resistance were implemented in Taiwan. Consequently, enhanced TB diagnosis and treatment strategies have been successfully adopted in the National TB program. In addition, due to the completion of whole genome sequence of *M. tuberculosis*, several genes detection and genotyping technologies significantly enhance public health efforts on TB outbreak investigations. Currently, clinical mycobacteriology laboratories are categorized and authorized by Taiwan Centers for Disease Control based on their biosafety level, competence and capacity. Depend on available resources, new diagnostics and algorithms are gradually evaluated, introduced and implemented in routine clinical services. Overall improvement of laboratory services could meet the goals of TB control in Taiwan.

Key words: tuberculosis, laboratory diagnosis, tuberculosis control

Preliminary Cost-Benefit Analysis of Rapid Molecular Test for Diagnosing Tuberculosis

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Abstract

The commercial kit Xpert MTB/RIF is a *Mycobacterium tuberculosis* rapid molecular test recommended by World Health Organization (WHO) in 2010. There are some advantages of Xpert MTB/RIF, such as high sensitivity, easy manipulation, and short turn-around time. In order to understand whether adding Xpert MTB/RIF in Taiwan tuberculosis (TB) diagnosis procedure is cost-benefit, this report analyzed diagnosed sputum results and case management records of 15,685 TB cases during 2012 and calculated additional cost and saving expenses. The result shows people who infected by Nontuberculosis Mycobacteria (NTM) can be exclude as TB earlier and save unnecessary medical expenses and cost of contact investigation. People who infected by *Mycobacterium tuberculosis* can be diagnosed earlier, acquire appropriate medical service and contact investigation, and prevent transmission. Using Xpert MTB/RIF will make additional cost about 40,566,725 NTD, but it can save up to 69,868,508 NTD, and the final net saving is 29,301,783 NTD, which is cost-benefit. But the experience of Xpert MTB/RIF application in Taiwan is not enough, it is better to start a pilot project to collect data, and then implement progressively when evidence is sufficient.

Key words : Xpert MTB/RIF, rapid molecular test, *Mycobacterium tuberculosis* test

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