

Detecting New Cases of Infectious Pulmonary Tuberculosis

A Pilot Study for the Evaluation of Two Diagnostic Procedures

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Background: Accurate detection of new cases of infectious pulmonary tuberculosis (TB) is the first step in breaking the chain of TB transmission and successful treatment. New cases are accurately diagnosed by microscopic examination of respiratory specimens. Laboratories that provide reliable and timely microscopy results are the cornerstones of an effective TB control program. Traditionally respiratory specimens were neither homogenised (increases diagnostic reliability) nor concentrated (increases diagnostic sensitivity) and were examined using low-contrast stain (Ziehl-Neelsen) at the limits of light-microscope detection. This procedure is relatively low-cost but is not as effective or reliable as the procedures applied by up-to-date TB laboratories (homogenisation/decontamination, concentration and high-contrast [fluorescent] microscopy). The STOP TB LVIV Project Group proposes that a laboratory initiative be launched to improve the performance of the existing mycobacteriology laboratories of the Lviv oblast of the Ukraine (1). In order to launch this initiative we propose a comparison of the new alternative method to the existing laboratory procedure (reference).

Patients and procedures: A total of 50 consecutive patients with suspected primary pulmonary TB will be enrolled. Socio-demographic, clinical and radiological data will be collected using a standardized questionnaire¹. Two respiratory specimens per patient, i.e. a total of 100 specimens, will be examined in a blinded manner using the existing laboratory procedure (reference) and the alternative procedure (NALC decontamination, high-efficiency centrifugation, fluorescence microscopy and liquid-culture). Microscopy and culture results will be compared.

The study may be extended, if desired, to include the use of DNA-based methods for the direct detection of multidrug-resistant TB (MDR-TB) versus conventional drug susceptibility testing of the cultured organisms.

Relevance of the study: The results of this study will allow informed decisions regarding the future evolution of TB testing in the Lviv oblast of the Ukraine to be made. In addition, the study offers an opportunity to train Ukrainian laboratory staff in up-to-date techniques such as the handling of liquid cultures and DNA-based methods for the direct detection of MDR-TB. The results of drug susceptibility testing will give an estimate of primary resistance among TB cases in Lviv.

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¹ Vorschlag durch J.-P. Zellweger auf der Basis der durch WHO vorgegebenen Meldeformulare.