EDITORIAL

Overdiagnosis of and treatment initiation delay in smear-negative pulmonary tuberculosis patients

Mareli M. Claassens

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In this issue of *Public Health Action*, Viney et al. report on the frequency of and time to diagnosis in smear-negative pulmonary tuberculosis (PTB) patients in two Micronesian Island countries.¹ The study participants were TB patients notified in the National TB Programme in Kiribati and the Marshall Islands for the period 2006–2010. The high percentage (42%) of smear-negative PTB cases highlighted two issues: 1) the possible overdiagnosis of smear-negative PTB, and 2) treatment initiation delay in smear-negative patients.

TB diagnosis in these countries is based on the 2003 World Health Organization (WHO) guidelines,² whereby individuals with presumptive TB submit three sputum samples for smear examination. In 326 (46%) smear-negative cases these guidelines were followed, but the diagnostic algorithm did not include culture or molecular techniques for *Mycobacterium tuberculosis* confirmation, and patients were referred for chest X-ray and/or clinical diagnosis. This may have led to an overdiagnosis of smear-negative PTB, and could account for the higher than expected proportion of cases (42% instead of 35%).

As these are both lower-middle-income countries, newer diagnostic techniques to improve smear-negative diagnosis may be suggested.³ If, however, the cases do not undergo sufficient sputum investigations, as was shown in the study, it is imperative to address the programmatic challenges first. In addition, if current WHO guidelines were followed (i.e., testing of two sputum samples instead of three),⁴ 58% instead of 46% of the study participants would have had diagnoses that concurred with the guidelines, which might be easier for both health care workers and patients to comply with.

Zachary et al. recently reported a decrease in treatment initiation delay in smear-negative patients after the introduction of a digital X-ray facility.⁵ Such innovative measures could be evaluated in Micronesia, especially with the dependence on radiological and clinical diagnoses for smear-negative PTB. In the study reported here, 238 (34%) smear-negative cases were registered before smear examinations were done, and 131 (18%) were registered within 7 days of the first sputum smear investigation. However, in 234 (33%),

the cause of the treatment initiation delay is not known. It would be interesting to investigate other aspects of health systems delay, such as diagnostic delay,⁶ focusing for example on the turnaround time of smear results, especially given that the TB services are centralised.

Although smear-negative TB is associated with HIV (human immunodeficiency virus) infection,⁷ TB-HIV co-infection is extremely rare in the study countries, with no cases reported in 2010. Additional efforts should therefore focus on screening diabetic patients for TB, as diabetes has an excessively high prevalence in both countries. However, the association between smear-negative PTB and diabetes has not been made definitively, and subsequent research efforts are needed.

The DOTS strategy was adopted in both countries in 2000, but the data do not suggest that presumptive TB cases are sufficiently investigated as per guidelines before being diagnosed with smear-negative PTB. Strengthening the TB programme to ensure that an increased proportion of cases undergo smear microscopy before registration, and accurate reporting of initiation of treatment, should be priorities.

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AFFILIATION

Desmond Tutu TB Centre,
Department of Paediatrics
and Child Health, Stellen-
bosch University, Cape Town,
South Africa

CORRESPONDENCE

e-mail: mcla@sun.ac.za

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