The International Journal of Tuberculosis and Lung Disease
You pay for what you get: the true cost of tuberculosis
pp. 969-969(1)
Author: Schwartzman, Kevin

Adding up the true yield of active case finding
pp. 970-970(1)
Author: Mitchell, Ellen

The importance of TB transmission prevention in health care settings
pp. 971-971(1)
Author: Tudor, Carrie

Droplets, dust and guinea pigs: an historical review of tuberculosis transmission research, 1878–1940
pp. 972-982(11)
Authors: Donald, P. R.; Diacon, A. H.; Lange, C.; Demers, A-M.; von Groote-Biddlingmeier, F.; Nardell, E.

Measuring catastrophic costs due to tuberculosis in Viet Nam
pp. 983-990(8)

Cost-utility analysis of high-dose treatment for intermediate-susceptible, dose-dependent tuberculosis patients
Performance of the QuantiFERON®-TB Gold In-Tube assay in tuberculin skin test converters: a prospective cohort study

Factors affecting tuberculosis health message recall 2 years after active case finding in Blantyre, Malawi

Resource utilization for multidrug-resistant tuberculosis household contact investigations (A5300/I2003)

‘I didn’t know so many people cared about me’: support for patients who interrupt drug-resistant TB treatment

High tuberculosis transmission rate in children with nursery exposure to undetected pulmonary tuberculosis

Burden, spectrum and outcomes of children with tuberculosis diagnosed at a district-level hospital in South Africa
Risk factors for gastric aspirate culture contamination in children evaluated for tuberculosis in Botswana

Authors: Ho-Foster, A.; Tenforde, M. W.; Arscott-Mills, T.; Maramba, M.; Sedigeng, P.; Mbeha, B.; Banda, F.; Steenhoff, A. P.

Evaluation of Xpert® MTB/RIF assay as a diagnostic test for pulmonary tuberculosis in children in Myanmar

Authors: Myo, K.; Zaw, M.; Swe, T. L.; Kyaw, Y. Y.; Thwin, T.; Myo, T. T.; Aye, K. O.; Myint, A. A.

Discordance in Xpert® MTB/RIF assay results among low bacterial load clinical specimens in Bangladesh


Serum antiphospholipid antibody levels as biomarkers for diagnosis of pulmonary tuberculosis patients

Authors: Takenami, I.; de Oliveira, C. C.; Petrilli, J. D.; Machado, A.; Riley, L. W.; Arruda, S.

Evaluation of leucocytes from sputum samples of pulmonary tuberculosis patients using flow cytometry

Authors: Gaspar, P. C.; Rudolf-Oliveira, R. C. M.; Wildner, L. M.; de Moraes, A. C. R.; Reis, M. L.; da Silva, R. M.; Gonçalves, J.; Bazzo, M. L.; Santos-Silva, M. C.

Evaluation of line-probe assay for molecular analysis and drug susceptibility of extra-pulmonary tuberculosis

Authors: Raghuvanshi, S.; Kotwal, A.; Maheshwari, R.; Sindhwani, G.

Cost of point-of-care lateral flow urine lipoarabinomannan antigen testing in HIV-positive adults in South Africa
## Computer-assisted chest radiography reading for tuberculosis screening in people living with diabetes mellitus

**Authors:** Mukora, R.; Tlali, M.; Monkwe, S.; Charalambous, S.; Karat, A. S.; Fielding, K. L.; Grant, A. D.; Vassall, A.

**Favourites:** ADD

**ORIGINAL ARTICLES - Lung Disease**

**Proteobacteria community compositions correlate with bronchiectasis severity**

**Authors:** Guan, W.-J.; Yuan, J.-J.; Li, H-M.; Gao, Y-H.; Huang, Y.; Chen, C-L.; Chen, R-C.; Zhong, N-S.

**Favourites:** ADD

**CORRESPONDENCE**

**Under-reporting of tuberculosis in Praia, Cape Verde: study reports doubtful results**

**Authors:** Barreto, Jorge Noel; de Lourdes Monteiro, Maria; da Luz Lima, Maria; Valadas, Emília; Hanscheid, Thomas

**Favourites:** ADD

**In reply**

**Authors:** da Luz, E. Furtado; Braga, J. U.

**Favourites:** ADD

**Cross-border tuberculosis: opportunities, challenges and change**

**Authors:** Foster, J.; McBryde, E.; Taune, M.; Peniyamina, D.

**Favourites:** ADD

**An opportunity to compare the effects of BCG-Moreau and BCG-Russia in Brazil**

**Authors:** Antas, Paulo R. Z.; Flores-Valdez, Mario; Shann, Frank
Failure in TB control: why should the rapid diagnostic test bear the blame?

Author: Atre, Sachin

Favourites:
ADD

Sign-in

Register

• Username:

• Password:

SIGN IN NOW

• Remember Login

Tools

• Activate personal subscription

• Receive new issue alert
  • RSS for latest issue
  • RSS for recent issues

• Reference exports +
• Linking options +
• Favourites

Accessibility

Powered by Google Translate

Share Content
- more
- Access Key

- Free content
- Partial Free content
- New content
- Open access content
- Partial Open access content
- Subscribed content
- Partial Subscribed content
- Free trial content

- Browse by Publication
- Browse by Subject
Computer-assisted chest radiography reading for tuberculosis screening in people living with diabetes mellitus


*Infectious Disease Research Centre, and †Department of Biomedical Sciences, Faculty of Medicine Universitas Padjadjaran, Bandung, Indonesia; ‡London School of Hygiene & Tropical Medicine, London, UK; §National and Supranational Reference Laboratory, Research Centre Borstel, Germany; ¶Department of Internal Medicine, Faculty of Medicine Universitas Padjadjaran, Hasan Sadikin General Hospital, Bandung, Indonesia; #Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands; **Department of Radiology, Faculty of Medicine Universitas Padjadjaran, Hasan Sadikin General Hospital, Bandung, Indonesia; ††Centre for International Health, University of Otago, Dunedin, New Zealand

SUMMARY

BACKGROUND: Diabetes mellitus is a significant risk factor for tuberculosis (TB). We evaluated the performance of computer-aided detection for tuberculosis (CAD4TB) in people living with diabetes mellitus (PLWD) in Indonesia.

METHODS: PLWD underwent symptom screening and chest X-ray (CXR); sputum was examined in those with positive symptoms and/or CXR. Digital CXRs were scored using CAD4TB and analysed retrospectively using clinical and microbiological diagnosis as a reference. The area under the receiver operator curve (AUC) of CAD4TB scores was determined, and an optimal threshold score established. Agreement between CAD4TB and the radiologist’s reading was determined.

RESULTS: Among 346 included PLWD, seven (2.0%) had microbiologically confirmed and two (0.6%) had clinically diagnosed TB. The highest agreement of CAD4TB with radiologist reading was achieved using a threshold score of 70 ($\kappa = 0.41$, $P < 0.001$). The AUC for CAD4TB was 0.89 (95%CI 0.73–1.00). A threshold score of 65 for CAD4TB resulted in a sensitivity, specificity, positive predictive value and negative predictive value of respectively 88.9% (95%CI 51.8–99.7), 88.5% (95%CI 84.6–91.7), 17.0% (95%CI 7.6–30.8) and 99.6% (95%CI 98.2–100). With this threshold, 48 (13.9%) individuals needed microbiological examination and no microbiologically confirmed cases were missed.

CONCLUSIONS: CAD4TB has potential as a triage tool for TB screening in PLWD, thereby significantly reducing the need for microbiological examination.

KEY WORDS: CAD4TB v 5; triage tool; Indonesia

IT HAS LONG BEEN RECOGNISED that people living with diabetes mellitus (PLWD) are disproportionately affected by tuberculosis (TB).1 Compared with people without diabetes mellitus (DM), PLWD have an increased risk of Mycobacterium tuberculosis infection,2 at least a two-fold higher risk of developing TB,3–6 and experience worse outcomes once diagnosed with TB.7 In 2015, there were approximately 10.4 million new TB cases and 1.4 million deaths caused by TB worldwide.8 The six countries with the highest number of incident TB cases in 2015 were India, Indonesia, China, Nigeria, Pakistan and South Africa. Of these, Indonesia accounted for 10% of global cases, with an estimated 1 020 000 new TB cases in 2015.8 Approximately 9.5% of all TB cases in Indonesia in 2010 were attributable to DM, and this percentage is estimated to increase to 14% by 2030.9 The International Diabetes Federation predicts that global DM prevalence will increase from 7% (415 million) in 2015 to 10% (642 million) by 2040.10,11 Indonesia has the seventh highest DM prevalence rate worldwide, with 10 million (6.2%) PLWD in 2015; this prevalence has been estimated to increase to 16.2 million people by 2040.10

To address the double burden of TB and DM and the absence of international guidelines, the World Health Organization (WHO) and the International Union Against Tuberculosis and Lung Disease developed a collaborative framework setting out the principles for bidirectional screening and integrated management.12 Studies on how best to screen for TB in PLWD have mainly focused on symptom screening and chest radiography (CXR).13,14 Novel technologies such as the Xpert® MTB/RIF assay (Cepheid,