Public Health Action

VOL 3 SUPPLEMENT 1 PUBLISHED 4 NOVEMBER 2013

International Union Against Tuberculosis and Lung Disease
Health solutions for the poor

EDITORIAL

Taking on the diabetes-tuberculosis epidemic in India: paving the way through operational research

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http://dx.doi.org/10.5588/pha.13.0039

In September 2011, a national stakeholders meeting was held in Delhi, India, to discuss how to move forward with bi-directional screening of tuberculosis (TB) and diabetes mellitus (DM). Agreement was reached about how to 1) implement screening at hospitals and peripheral health institutions, 2) monitor and record the process and outcomes of screening for each individual patient and 3) report on aggregate data at quarterly intervals. The meeting was followed by training of health care personnel involved in the work, implementation of screening and a reconvening of implementing partners to share data and discuss challenges. This body of work culminated in two published papers presenting the process and aggregate data on bi-directional screening of TB and DM in India.[1,2]

These pilot projects, conducted within the routine health services, produced good quality evidence that has led to changes in policy and practice. A policy directive has been issued that all patients registered with TB in India should be screened for DM. Patient TB treatment cards and TB registers have been modified to accommodate these new parameters, recording whether screening has taken place for DM, whether the patient has received a diagnosis of DM and the results of blood glucose measurements during TB treatment. A Ministry of Health Training Manual on screening TB patients for DM has also been developed for health care workers in the field.[3] Importantly, a policy directive from the Directorate General of Health Services now links India's Revised National TB Control Programme to the National Programme for Non-Communicable Diseases (NCD) at the sub-centre level so that data on TB patients screened for DM are reported to the NCD programme. The NCD programme is in a nascent phase in the country, but it is also evolving rapidly, and this model of convergence, adapting and incorporating the DOTS framework with its 'cohort reviews', is important for this evolution. This bi-directional approach will be the first of its kind to be implemented at national level, with such initiatives recently being endorsed by the 66th World Health Assembly Resolution on 25 May 2013.[4]

In this context, the current supplement on DM and TB is timely and important. It consists of two review articles and eight operational research papers. The first review article provides an up-to-date international perspective on the epidemiology of and interaction between DM and TB, and examines three important operational challenges for care—bidirectional screening of the two diseases, treatment of persons with dual disease and prevention of TB in persons with DM.[5] For each of these challenges, the knowledge gaps are highlighted along with the research questions that need to be answered if care and control of the dual burden of disease are to be achieved. The second review article looks at existing and new technologies for screening and diagnosing type 2 DM that may be more suitable for TB patients in low- and middle-income countries.[6] As pointed out, these new technologies should be low cost, rapid, easy to use, non-invasive, requiring minimal additional infrastructure and able to differentiate between transient and longer term hyperglycaemia. Several tools in development, such as point-of-care glycated haemoglobin and glycated albumin assays, non-invasive advanced glycation end (AGE) product readers and sudomotor function-based screening devices, are discussed.

The eight operational research papers assess 1) bi-directional screening of the two diseases in one facility,[7] 2) screening of DM patients for TB in one facility,[8] and 3) screening of TB patients for DM in the other facilities,[9–14] with one of these facilities also evaluating treatment outcomes.[13] A few key messages that are consistent across sites emerge. First, the yield of diabetes was high among TB patients, with higher yields seen among patients aged more than 35–40 years, patients with smear-positive pulmonary TB, current cigarette smokers and those with recurrent TB. The proportion with newly diagnosed DM as a result of blood test screening was higher among TB patients managed in peripheral health facilities compared to tertiary care centres, highlighting the need to prioritise active screening efforts at the peripheral level. Second, the yield of TB among DM patients was relatively low, and further research is required to optimise the screening criteria and diagnostic algorithms for diagnosing TB. One study showed that DM patients who were male, older, had a longer duration of DM, required combined oral hypoglycaemic drugs and insulin medication and had poorly controlled DM were more likely to have TB.[7] Third, while the results reported are useful, the one study that assessed treatment outcomes was not adequately powered to answer the question about whether DM adversely affects outcomes.[12] There was a statistically non-significant trend towards failure of DM-TB patients to smear convert at 2 months, but this whole area requires adequately powered, prospective cohort research.

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The interaction between DM and TB is rapidly becoming a hot topic for research, with projects examining the biological and molecular reasons for the linkages and addressing questions about how best to manage and integrate care. These operational research studies from various sites in India will begin to pave the way towards a better understanding of the two diseases, in addition to better care and, ultimately, better health outcomes.

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e-ISSN 2220-8372
Editor-in-Chief: Donald A Enarson, MD, Canada
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