

Tuberculosis (TB) infection control in healthcare settings is an important aspect of eliminating TB, and is growing in importance with the emergence of drug-resistant strains of TB. Healthcare workers in endemic areas are frequently exposed to infectious TB cases and international guidelines from the World Health Organisation were produced in 2009¹, however these require access to personal protective equipment that is often unavailable.

In this issue, Rao and colleagues² analyse the risk of incident tuberculosis (TB) among resident doctors in an Indian teaching hospital according to a stratified assessment of their exposure risk. Frequency of exposure to infectious TB patients and type of precautions taken was assessed using questionnaires at the beginning and end of their placement. Five of the 398 residents developed incident TB: an incidence 3.1 times that of the general population, with 4 cases from the high-risk specialities and 3 of the 5 incident cases presenting as extra-pulmonary disease.

While there is evidence of a dose-response relationship between exposure and incident TB, as the authors point out, this does not imply causality. There is much we still do not know about the transmission dynamics of TB. The evidence suggests that only a minority of smear-positive cases transmit infection to their contacts³ and there is a need to better understand the interplay of infecting strain, host case, environment, and contacts. The authors have chosen a broad definition of “infectious” TB that included patients with clinical suspicion of sputum-positive disease. Also, the rate of new infections as measured by tuberculin skin test conversion was not collected, but given the high prevalence of TB this is likely to have been of limited value in this setting.

The frequent lack of resources in TB endemic settings is an ongoing problem. Of the doctors enrolled 18% did not use any precautionary measures, and only one reported using a N95 mask- a standard precaution recommended by the World Health Organisation¹. Existing work demonstrates the benefits of protective interventions for healthcare workers in endemic environments⁴, and even in resource-poor settings it should be possible to provide protection to those most at risk through rational allocation of available resources. Rao et al managed to correctly identify high-risk specialities using a simple approach that could be replicated elsewhere.

A possible limitation to this study is recall bias among residents because the investigation was conducted retrospectively which might have led to differences in recall of exposure. Additionally, the environment is not mentioned in detail but this would likely vary between specialities⁵ (for example between outpatient versus inpatient, and specialities that perform invasive procedures versus those who do not); environmental factors such as ensuring good ventilation are an essential part of the WHO guidance on reducing TB transmission¹.

Healthcare workers in TB endemic settings are frequently overloaded with large case-loads, few resources, and are likely to be exposed to high stress levels. This paper demonstrates an increased risk of TB among these individuals and the clear scope for improving protective measures in these settings.

References

1. World Health Organisation. WHO Policy on TB Infection Control in Health-Care Facilities, Congregate Settings and Households. Geneva 2009
2. Rao S, Kadiravan T, Swaminathan RP, Mahadevan S. Occupational exposure and tuberculosis among medical residents in a high-burden setting: an open cohort study. *Int J Tuberc Lung Dis* 2016
3. Fennelly KP. Variability of airborne transmission of Mycobacterium tuberculosis: implications of control of tuberculosis in the HIV era. *Clin Infect Dis* 2007;44:1358-60
4. Godfrey C, Tauscher G, Hunsberger S, Austin M, Scott L et al. A survey of tuberculosis infection control practices at the NIH/NIAID/DAIDS-supported clinical trial sites in low and middle income countries. *BMC Infect Dis* 2016;16:269
5. Verkuyl S, Middlekoop K. Protecting Our Front-liners: Occupational Tuberculosis Prevention Through Infection Control Strategies. *Clin Infect Dis* 2016;62(S3):S231-237