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# Reviews / Analyses

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## Practical and affordable measures for the protection of health care workers from tuberculosis in low-income countries

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*With the global upsurge in tuberculosis (TB), fuelled by the human immunodeficiency virus (HIV) pandemic, and the increase in multidrug-resistant TB, the condition has become a serious occupational hazard for health care workers worldwide. Much of the current understanding about nosocomial TB transmission stems from the USA; however, little is known about the risk of such transmission in low-income countries. The focus of this review is on sub-Saharan Africa, since this is the region with the highest TB incidence, the highest HIV incidence, the worst epidemic of HIV-related TB, and where the risk to health care workers is probably greatest.*

*Measures used in industrialized countries to control nosocomial TB transmission (ventilation systems, isolation rooms, personal protective equipment) are beyond the resources of low-income countries. Protecting health care workers in these settings involves practical measures relating to diagnosis and treatment of infectious cases; appropriate environmental control; and relevant personal protection and surveillance of health care workers. Research needs to be carried out to examine the feasibility and cost-effectiveness of measures such as voluntary HIV-testing of health care workers (to enable known HIV-positive health care workers to avoid high-risk settings) and isoniazid preventive therapy for workers in high-risk settings. More resources are also needed to ensure full implementation of currently recommended measures to decrease the risk of nosocomial and laboratory-acquired TB.*

### Risk of TB infection among health care workers in industrialized countries

#### Background

Before the advent of effective antituberculosis medication, the risk of tuberculosis (TB) among health care workers, particularly those who worked in TB sanatoria, was high. After 1950, this risk declined substantially in industrialized countries because of

the decreasing incidence of the disease and the availability of effective antituberculosis chemotherapy. However, since 1985 there have been a number of reported outbreaks of nosocomial TB, particularly in the USA, and the disease has once again become a serious occupational hazard for health care workers. In 1993, a total of 3.2% of TB cases in the USA occurred among such workers (1), and many of these cases were occupationally acquired.

There are several reasons for the upsurge of nosocomial TB in industrialized countries (Table 1). Over the last decade there has been a resurgence of the disease in Europe and the USA. The incidence of TB increased by 20% in the USA over the period 1985–92, by 20% in Denmark over the period 1986–92, by 27% in Italy over the period 1988–92 and by 28% in Spain over the period 1990–92 (2). Many medical staff with working experience of TB have retired from the health service, leaving a new generation of physicians for whom it is an uncommon disease and low on the list of differential diagnoses. Infection control practices were therefore relaxed or

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