With the growing burden of tuberculosis (TB) infection among populations of developing countries the risk of health care workers (HCWs) occupationally acquiring TB increases. In studies conducted in medium- and low-income countries the median occupational attributable risk of TB in HCWs was estimated at 5.8%. In South Africa the presence of drug-resistant TB, which is dependent on workplace and individual factors, compounds the potential risk posed to HCWs.

Workplace factors include the number of TB patients treated at the facility and infection control practices. In facilities where a high number of TB patients are seen, the risk of developing occupational TB is much greater than in facilities with a small number of cases. Similarly, in the absence of appropriate infection control practices the risk of developing occupational TB increases.

Individual factors that increase the risk of developing occupational TB in HCWs include occupational category, depressed immune status and presence of a chronic illness such as diabetes. HCWs who work in TB inpatient facilities, laboratories, medical wards and emergency rooms, and staff required to perform procedures (e.g., intubations, bronchoscopy and chest physiotherapy) likely to cause droplet aerosol, appear to be at greater risk than those working in administration and management. Therefore it is important for a health practitioner responsible for the occupational health of HCWs to have a good understanding of the burden of TB infection managed at the facility and the health profile of those under his/her medical surveillance.

The Hazardous Biological Agents (HBAs) Regulations’ promulgated in terms of the Occupational Health and Safety Act No. 85 of 1993 require that regular risk assessments be conducted to determine...
whether there is exposure to HBAs in a workplace. Mycobacterium tuberculosis is categorised as a Group 3 HBA, i.e. one that ‘may cause severe human disease, which presents a serious hazard to exposed persons and which may present a risk of spreading to the community, but for which effective prophylaxis and treatment is available’.

A risk assessment of a health facility should be conducted every 2 years; in the interim, if HCWs with TB are identified, a risk assessment is warranted to review workplace controls. Based on the findings of risk assessments infection and workplace control strategies should be implemented. The three levels of control to be implemented with regard to TB are administrative, engineering/environmental and personal protective controls. Administrative controls are the first line of controls and include aspects of patient triaging, early diagnosis, treatment and management of TB patients as outpatients as opposed to inpatients. Engineering controls that have been proposed include negative-pressure local exhaust ventilation (LEV) or dilution ventilation systems, with high-efficiency particulate air filtration (HEPA) and/or UV treatment of vented air. However, in resource-constrained environments the implementation and maintenance of such measures is not always possible.

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Table I. A suggested cough questionnaire

<table>
<thead>
<tr>
<th>Date</th>
<th>Hospital</th>
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<tbody>
<tr>
<td>Name</td>
<td></td>
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<tr>
<td>Marital status</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Job description</td>
<td></td>
</tr>
<tr>
<td>Date of birth</td>
<td></td>
</tr>
<tr>
<td>Current workstation</td>
<td></td>
</tr>
</tbody>
</table>

1. Do you have a cough that has lasted longer than 3 weeks? Yes No
2. Are you coughing at night? Yes No
3. Do you have a dry cough? Yes No
4. Do you cough up blood? Yes No
5. Have you lost your appetite? Yes No
6. Have you lost weight (more than 5kg) in the last 2 months without trying to? Yes No
7. Do you have night sweats (need to change the sheets or your clothes because they are wet)? Yes No

Table II. Required reports for submission to the compensation commissioner in the case of occupational TB

| Notification of an Occupational Disease (WCL14) |
| Employers Report of an Occupational Disease (WCL1) |
| Exposure History (WCL110) |
| 1st Medical Report (WCL22) |
| Progress Medical Report (WCL26) |
| Final Medical Report (WCL26) |

Workplace controls must be coupled with a medical surveillance programme. Ongoing screening of HCWs is vital to ensure that occupational TB is diagnosed and treated early, preventing complications and spread. Much has been written about the use of tuberculin skin testing (TST) and interferon assays in the immune diagnosis of TB. Each method has its own advantages and disadvantages. There are no national guidelines for the screening.
and treatment of latent TB infection in HCWs in South Africa.

However, a routine medical surveillance programme of HCWs exposed to HBA is required. Medical surveillance should encompass pre-employment and annual medical examinations together with a self-administered health questionnaire at baseline and a modified questionnaire at subsequent annual examinations. In addition, screening tools such as quarterly cough questionnaires (Table I) and monthly weighing can be implemented in HCWs at high risk as a means of ensuring early diagnosis of TB.

Currently the diagnosis of TB in HCWs follows the routine method of analysis recommended by the South African National Tuberculosis Control Programme, i.e. two sputum samples or the use of chest radiography in cases where there is one positive sputum sample or none of the samples is positive (Fig. 1). In cases of non-pulmonary TB the site of infection will determine the diagnostic method; investigations such as fluid cytology, culture, fine needle aspiration, biopsy and polymerase chain reaction may be required.

Treatment of HCWs diagnosed with TB should follow routine TB treatment guidelines as for any patient diagnosed with TB.

All cases of HCWs diagnosed with occupationally acquired TB must be submitted to the office of the Compensation Commissioner for compensation in terms of the Compensation for Occupational Injuries and Diseases Act No. 55 of 1995 (COIDA). While Circular Instruction No. 178 on Compensation for Pulmonary TB in HCWs outlines the requirements for compensation, even non-pulmonary cases of TB resulting from occupational exposure should be submitted for compensation. The first medical report should be submitted together with notification of the occupational disease, exposure history and employer’s report. Progress medical reports must be submitted every 2 months until complete recovery, when a final medical report must be submitted (Table II).

HCWs should have the option of voluntary testing and counselling (VTC) for HIV as part of their medical surveillance programme. Those who test positive for TB should be advised on VTC. In addition to VTC all HCWs who test positive for TB should be advised to ensure that their nearest contacts are tested for the disease. Depending on the progression of TB infection and treatment response, infected HCWs may require leave or re-deployment in the workplace and amendments to working hours.

References