



TUBERCULOSIS

KEY POINTS

Only “open” (cavitating) pulmonary tuberculosis is infectious to others
 Children and people with HIV are very prone to catching tuberculosis
 Nurse patients with open tuberculosis in a negative pressure side room
 Special masks can be worn in the room of a patient with open tuberculosis
 Respiratory care, surgery and autopsy in patients with infectious tuberculosis are risky to the staff performing these procedures (special masks **must** be worn)

STAFF PROTECTION

- All staff are required to have had a pre-employment health screen. Staff in regular contact with patients or pathological material should be tuberculin skin test (Mantoux, Heaf or Tyne) positive, or be known to have had BCG immunisation (see policy for Occupational Health)
- New staff from areas of the world where the incidence of tuberculosis is high may be referred for a chest X-ray on entry. It is usually not considered necessary to perform prospective surveillance of staff who have been in contact with tuberculosis.
- Tuberculosis is transmitted by airborne aerosol droplets. Contact transmission is not important. Needlestick injury with pus contaminated by *M. tuberculosis* may cause local tuberculosis.
- It is essential to perform a risk assessment of visitors entering the room of a patient with tuberculosis (see policy for Source Isolation: Risk Assessment). Patients should be asked to discourage children from visiting.

NOTIFICATION

- All newly-diagnosed cases of tuberculosis must be notified to the Consultant in Communicable Disease Control (CCDC) for the Health District in which the patient lives, to ensure adequate contact tracing. See Notifications
- This is the responsibility of the doctor in charge of the patient. However, notification may be done centrally (eg by Senior Nurse or through the Microbiology Department by telephone or using a proforma [See Section 2.8: Notification Proforma].) In addition, notification books are kept on some wards/floors and in Chest Clinics. If notification is done locally, please inform the Microbiology Department where a separate record will be kept. The Infection Control Team will inform the appropriate Chest Clinic if a case is

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identified so that contact tracing can be started without delay.

- It is the responsibility of the nurse-in-charge to inform the Infection Control Team (see lines of communication) when a tuberculous patient is admitted to the ward, even if the patient is already on treatment.

PATIENT PROCEDURES

NEWLY DIAGNOSED OPEN PULMONARY TUBERCULOSIS ADMITTED TO HOSPITAL

- Admission to diagnose tuberculosis or institute treatment is rarely required. However, patients may be very ill and may even require intensive care, some are admitted for investigations of PUO and the diagnosis of tuberculosis becomes clear, and some are admitted because of reactions to antibiotics.
- "Source Isolate" patients in a side-room (preferably ventilated with a negative pressure in relation to the corridor) with the door shut for the first 14 days of therapy (see policy for Source Isolation).
- If the room is not ventilated, leaving the window open when possible, ensures that any infectious droplets are diluted by outside air.
- A decision to discharge a patient home may be made during this initial treatment period.

After treatment has commenced, the number of infectious particles in the sputum will be very much reduced in most of the patients, who should no longer present a hazard to others. Patients who have a very high bacterial load in the sputum at the start of treatment or have multiply-resistant organisms may require isolation for longer, at the discretion of the medical staff and the Infection Control Team.

SOURCE ISOLATION PROCEDURES

- For patients with pulmonary tuberculosis, it is *not* necessary to wear a disposable plastic apron and gloves on entering the room.
- Aprons (yellow) and gloves should be worn when caring for patients with open discharging tuberculous lesions, or when performing bronchoscopy or tracheal suction.
- Special protective masks (see below) will be provided for staff entering the room of a patient known to have or suspected of having open tuberculosis. They should be worn when performing procedures likely to cause an aerosol. They must be worn by carers when it is known that a patient has drug-resistant tuberculosis.
- Wash your hands after dealing with the patient and when you leave the room.

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- Wear disposable gloves when handling secretions (e.g. sputum pots).
- Disposable crockery and cutlery are not necessary.
- Clinical waste must be placed in yellow bags.
- Linen should be placed in a red alginate stitched bag and then a transparent plastic bag before being sent to the laundry.
- Patients may walk outside at the discretion of the nursing staff, but should not spend time in any general ward areas or indoor public areas.
- They should be dealt with quickly and not stay in shared patient areas for any longer than necessary. When visiting other departments in the hospital, it is not necessary for patients to wear masks.

Discontinue these precautions when the patient comes out of isolation.

TUBERCULOSIS AT OTHER SITES

Isolation is not normally necessary. However, if there is an open lesion (e.g. a discharging sinus), isolate as above until 14 days of therapy have been given.

TUBERCULOSIS IN CHILDREN

Children with primary pulmonary tuberculosis are usually not infectious. If primary lesions are discharging (e.g. lymph nodes or osteomyelitis), source isolate the child for the first 14 days of treatment.

Be aware of the possibility that visiting relatives may have open tuberculosis. Large outbreaks have occurred on children's wards from infectious mothers and other relatives. It is the responsibility of the Medical Staff to ensure that close relatives of children with tuberculosis do not have open tuberculosis, usually through formal notification but also by direct questioning. Please ensure that the Infection Control Team are informed. Visitors who are clearly unwell and may have an infectious disease should anyway not be allowed on the wards.

TUBERCULOSIS IN STAFF

Staff members who are ill must consult their general practitioners and report to Occupational Health. If there is any doubt, a review in the Chest Clinic to exclude active pulmonary tuberculosis is essential to reduce risk of transmission to patients. Staff with tuberculosis will stay off work until deemed non-infectious by chest physicians. Common symptoms of tuberculosis include malaise, unexplained weight loss, fever and night sweats, dry cough, cough with sputum and blood.

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TUBERCULOSIS IN AIDS

Several episodes of transmission of tuberculosis have been documented on AIDS units because these patients appear to be very prone to catching the infection. Multi-drug resistant tuberculosis is now being identified in London. The major problem with instituting a sensible preventive programme is that diagnosis is delayed. Sputum positive for acid-fast bacilli may contain *Mycobacterium avium-intracellulare* complex (MAC) which does not warrant Source Isolation. Cultures will take several weeks. The following guidelines have therefore been drawn up to reduce the risks of nosocomial tuberculosis to patients and staff with HIV.

- Tuberculosis will be considered in any patient with HIV and respiratory disease. Finding another pathogen such as *Pneumocystis jirovecii* does not exclude the possibility of tuberculosis.
- Risk will be assessed in the context of history of exposure (ward, friends, racial predisposition, travel, past history of TB).
- Initial treatment of mycobacterial disease should include drugs effective against both TB and *Mycobacterium avium-intracellulare* complex.
- Patients with TB (whether or not resistant) should not mix with other HIV positive people.
- Special protective masks (not ordinary surgical masks) must be available for staff performing risky procedures (eg bronchoscopy, induced sputum, tracheal aspiration (ICU) and surgery).

Note: "Induced sputum" is excellent for obtaining deep cough specimens for the diagnosis of tuberculosis but dangerous because an aerosol is generated deliberately. This procedure must be done in a room with proper ventilation away from susceptible patients.

UNEXPECTED TUBERCULOSIS IN A PATIENT IN AN OPEN WARD

- When a patient with infectious tuberculosis is discovered on an open ward, a list of all patient contacts will be drawn up and the Consultants and General Practitioners of these contacts will be informed about the exposure. The information will include the data about "**Contact with tuberculosis on ward between and**" (See website for Contact Tracing Form). Any other information about drug resistance will be included in the letter. This shall be the responsibility of the Managers.

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SURGERY

Sometimes it is necessary to resect part of a lung in a patient with tuberculosis, particularly when the organism is resistant to antibiotics. Such procedures are very risky to the operators and staff in the immediate vicinity of the patient. For this reason, special respirators will be provided for staff. The operation should be done last on the list. The minimum essential staff should be present. The patient should be recovered in the operating theatre and must be transferred immediately to a negatively ventilated side room during the recovery phase and before discharge from hospital.

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