

TUBERCULOSIS MANAGEMENT IN A HOSPITAL SETTING

Post holder responsible for Policy:	Lead Nurse
Directorate/Department responsible for Policy:	Infection Control, Diagnostics
Contact details:	Ext 2355
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Controlled document

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Please *specify* standard/criterion numbers and tick ✓ other boxes as appropriate

The Strategic Directions 2007-2012 were agreed by the Board of Directors in October 2007 to support the Trust's vision "Respond, Deliver, Enable". The Key Milestones below will ensure there is a shared understanding about what needs to be delivered.

Monitoring Information		Strategic Directions – Key Milestones	
Patient Experience		Waiting	
Assurance Framework		Privacy and Dignity	
Monitor/Finance/Performance		Efficiency and Effectiveness	
Care Quality Commission Outcomes:	8	Delivery of Care Closer to Home	
		Infection Control	✓
NHSLA Risk Management Standards for Acute Trusts			
NHSLA CNST Maternity Clinical Risk Management Standards:			
Other (<i>please specify</i>):			

Note: This policy has been assessed for any equality, diversity or human rights implications

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1. GENERAL INFORMATION

Tuberculosis (TB) remains a major international public health concern, even though the global incidence rate is reportedly declining, preliminary data for 2009 in the UK indicate a rise in numbers of new cases - approximately 9000 - a 5.5% increase on 2008. Despite the increase the incidence of TB in the UK is still relatively low. The rise in cases of the disease is reported to be in particular geographical locations e.g. in London. Most of the recent increase is accounted for by immigration with 73% of cases in persons born outside the UK, from areas of the world with a high prevalence of TB. The African, South East Asian and Western Pacific Regions continue to account for 80% of all notified cases. TB is a notifiable disease in England and Wales.

TB is caused by a bacterium called *Mycobacterium tuberculosis*. TB can affect any part of the body but is most common in the lungs and lymph glands. Tubercle bacilli have a thick waxy coat, are slow growing and can survive in the body for many years in a dormant or inactive state. In this instance people are infected, but non infectious and show no signs of TB disease, this is called latent TB.

TB is a notifiable disease, and all suspected cases should be notified to the Consultant in Communicable Disease Control. (CCDC) Notification forms are completed and sent to the CCDC by the respiratory department. Unless there is a clear clinical or socioeconomic need, such as homelessness, people with TB at any body site should not be admitted to hospital for diagnostic tests or for care. However, a risk assessment regarding compliance with anti TB medication must be undertaken, please contact TB specialist nurse for advice.

2. TRANSMISSION

Tubercle bacilli are transmitted in the air when they are expelled in very small droplets from an infectious person with pulmonary or laryngeal tuberculosis. Activities that can generate infectious aerosols include talking, coughing and sneezing. As these droplets evaporate, minute airborne particles consisting of viable tubercle bacilli remain and continue to drift in normal air currents for prolonged periods. These are known as "droplet nuclei" and are tiny enough when inhaled to escape removal by the ciliated epithelium in the upper respiratory passages. The risk of infection diminishes as the distance from the source patient increases due to dilution of infectious droplet nuclei in the air. The risk of infection from tuberculosis from other sites is minimal, but may follow accidental inoculation.

3. PATIENT RISK GROUPS

Anyone exposed to TB bacteria can become infected but people at particular risk are those that are less able to fight infection. Those at risk include:

- Close contacts of infectious cases
- Those who have lived in, travel to or receive visitors from places where TB is still very common
- Those who live in ethnic minority communities originating from places where TB is very common
- Those with immune systems weakened by HIV infection or other medical problems
- The very young and the elderly, as their immune systems are less robust
- Those with chronic poor health and nutrition because of lifestyle problems such as homelessness, drug abuse or alcoholism
- Those living in poor or crowded housing conditions, including those living in hostels

4. INFECTIVITY

4.1. Open Cases

Cases of pulmonary tuberculosis producing sputum that is positive on direct microscopy smears may transmit infection by droplet nuclei and should be regarded as highly infectious. Patients whose bronchial washings are positive on direct smears are usually less infectious. However, if their sputum becomes positive following bronchoscopy, if they are in contact with immunocompromised patients or are suspected of having multi-drug resistant tuberculosis, (MDRTB) see below, they should be regarded as being infectious.

Patients with laryngeal TB should be managed as open cases.

4.1.1. Open Tuberculosis in Paediatric Patients

Children with open tuberculosis are generally less likely to be infectious. However it must be remembered that infection may have been acquired from a contact with open tuberculosis who may accompany the child to hospital.

4.2. Closed Cases

Smear negative pulmonary infection and cases with infection at other sites, e.g. renal tract, joints, are much less infective and can be nursed in a bay with standard infection control precautions. However, aerosol-generating procedures such as abscess or wound irrigation, may require isolation in a single room. Please contact infection control for advice.

4.3 Visitors

Visitors of patients with open or closed TB should be segregated from other patients until they have all been screened and pronounced non infectious. One of the visitors may have been the source of the patients infection and hence be a risk to other patients in an open ward.

5. INFECTION CONTROL MEASURES FOR OPEN CASES (Smear Positive but where MDRTB is not suspected or confirmed)

5.1 Isolation

Known or suspected cases, within any healthcare facility outside the Royal Devon & Exeter Hospital, must be admitted to a single room with en-suite facilities as soon as possible and should remain there for at least two weeks following start of treatment. The door to the room must be kept shut.

Known or suspected cases within the Royal Devon & Exeter Hospital must be transferred to a lobbied negative pressure isolation room on Torridge ward. (Ideally side rooms 1, 2, 4 or 5 should be used) It is essential that all staff facilitate the maintenance of negative pressure by ensuring that all doors (except when persons need to enter or leave the rooms) and windows remain properly closed in the isolation room. Where rooms are fitted with a permanently mounted magnehelic gauge, the pressure differentials must be monitored and recorded once a day by the nursing staff. If the gauge is registering neutral or positive pressure, with the doors and windows closed, this must be reported to the estates department for urgent investigation.

Known or suspected paediatric cases within the RD&E hospital must be isolated in either side room E or F on Bramble Green ward. These rooms are under negative pressure, with an unventilated shared lobby. It is essential that the doors to the side rooms and the lobby are kept closed (except when persons need to enter or leave the rooms). When there is a child with known or suspected open pulmonary TB in one of these side rooms, the other side room should be left vacant. Immunocompromised children, or those with particular respiratory risk i.e cystic fibrosis, must not be cared for in the adjoining side rooms. (Side rooms C & D)

5.2. Protective Clothing

Standard precautions for care should be adopted.

Patients should receive training and supplies to ensure that they cough into tissues or cover their mouths when tissues are not available. The risk of staff acquiring infection is low and FFP3 respirator masks are not required for routine care. They should be worn only if performing cough inducing procedures such as physiotherapy, or bronchoscopy and on the advice of the Infection Control Team. FFP3 respirator masks should be applied and removed as per manufacturer's instructions. If the patient needs to leave their single room i.e. to visit the X-ray Department, the patient should wear a surgical mask.

FFP3 respirator masks are single use items and following use must be disposed of as clinical waste.

5.3. Period Precautions Apply

Ideally patients with TB should be treated as outpatients. If hospital care is required open cases of TB must be nursed in isolation until discharge or until all of the following have been achieved:

- two weeks of appropriate drug therapy
- tolerance of the prescribed treatment
- ability and agreement to adhere to the prescribed treatment
- Signs of clinical improvement

If patients are transferring to areas where they may come into contact with HIV positive or immunocompromised patients they must have at least three negative sputum microscopy smears taken on separate occasions over a minimum of 14 days in addition to above.

6. MULTI - DRUG RESISTANT TUBERCULOSIS (MDRTB)

A risk assessment for drug resistance should be made for each patient with TB, based on the following risk factors:

- History of previous TB drug treatment
- Failure to respond clinically to treatment with standard anti-tuberculosis therapy or remains culture positive after 4th month of treatment.
- Contact with a known case of MDRTB
- HIV infection
- Birth or residence in a foreign country, particularly high incidence countries. (Countries with more than 40 cases per 100,000 per year as listed by the Health protection agency – www.hpa.org.uk and search for 'WHO country data TB')
- Residence in London

7. INFECTION CONTROL PRECAUTIONS FOR PATIENTS WITH SUSPECTED OR CONFIRMED MDRTB

7.1. Isolation

All patients, including children, with known or suspected MDRTB must be admitted to a lobbied negative pressure ventilation room on Torridge ward at the Royal Devon & Exeter Hospital, with continuous pressure monitoring (magnehelic gauge). The pressure differentials must be monitored and recorded once a day by the nursing staff. If the gauge is registering neutral or positive pressure, with the doors and windows closed, this must be reported to the estates department for urgent investigation.

Whilst awaiting transfer to Torridge ward, patients should be admitted to single rooms with en-suite facilities. Wards should be avoided where there are immunocompromised, respiratory or HIV positive patients.

7.2. Protective Clothing

Standard precautions for care should be adopted, with respect to the use of aprons and gloves. However, FFP3 respirator masks must be worn by all staff and visitors during **all** patient contact whilst that patient is considered infectious.

7.3. Period Precautions Apply

If patients have MDRTB, precautions must only be discontinued after consultation with both the respiratory and infection control teams.

8. TB and STAFF

BCG vaccination will be offered to healthcare workers, irrespective of age, who fulfil all the following criteria:

- previously unvaccinated (that is, without adequate documentation or a characteristic scar)
- will have contact with patients or clinical materials.
- are Mantoux negative.

All staff in contact with patients with smear positive pulmonary tuberculosis should be aware of the following principles.

- The importance of BCG immunisation as a basic protection
- The need to report to Occupational Health or senior ward staff if they are unusually susceptible e.g. transplant recipient taking immunosuppressive therapy, HIV positive.
- The extremely low risk of occupationally acquired tuberculosis where appropriate precautions are taken.
- The need to report any symptoms suggestive of tuberculosis to the Occupational Health Department.

Staff in contact with open pulmonary tuberculosis do not normally need follow up. A decision on this will be made by the Occupational Health Department in conjunction with a Consultant Microbiologist or Consultant Respiratory Physician.

9. FOLLOW-UP OF PATIENTS EXPOSED TO TUBERCULOSIS

The Infection Control Nurse will liaise with the Respiratory Care Nurse. Lists of patients in contact with a smear positive pulmonary case will be drawn up. The contact should be recorded in the patient's notes and for each contact an assessment should be made of the degree of contact. In discussion with the Consultant in Respiratory Medicine, a decision will be made as to the level of follow up that is appropriate for each patient.

10. TERMINAL CLEANING

Terminal cleaning of the patients room is required on discharge. Please see terminal cleaning policy.

11. PATHOLOGY SPECIMENS

Specimen containers and request forms for sputum and other potentially infectious material e.g vomit, pus or tissue must be labelled with **danger of infection** stickers, and clinical details must indicate tuberculosis.

12. BIBLIOGRAPHY

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