Clinical

Tuberculosis: Standard Operating Procedure

Document Control Summary

| Status: | Replacement. Replaces: Tuberculosis Policy |
| Version: | v1.1 | Date: April 2016 |
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| Approved by: | Policy and Procedures Committee | Date: 18/02/2016 |
| Ratified: | Policy and Procedures Committee | Date: 18/02/2016 |
| Related Trust Strategy and/or Strategic Aims: | Provide high quality services, built on best known practice and evaluated through clear process and outcome measures |
| Implementation Date: | January 2016 |
| Review Date: | January 2019 |
| Key Words: | Pulmonary TB, Non-pulmonary TB |
| Associated Policy or Standard Operating Procedures: | Hand hygiene SOP |
| | Standard Precautions SOP |
| | Isolation SOP |

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Change Control – Amendment History

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<tr>
<td>V1.0</td>
<td>January 2016</td>
<td>SOP created</td>
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<tr>
<td>V1.1</td>
<td>April 2016</td>
<td>Reference to spleen patients added</td>
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1. Introduction

Tuberculosis (TB) is caused by a bacterium called *Mycobacterium tuberculosis*. Infection with TB most commonly affects the lungs (Pulmonary TB), although it can affect any part of the body (non-pulmonary TB). The incidence of Tuberculosis is influenced by risk factors such as exposure to, and susceptibility to, TB and levels of deprivation (poverty, housing, nutrition and access to healthcare). Males have higher rates of infection than females and rates differ in different parts of England and Wales.

In most people, once the bacteria are inhaled the immune system kills the bacteria and they are removed from the body. In a small number of people TB causes no immediate illness, but remains dormant in the body. This is called TB infection or Latent TB infection (LTBI) and may develop into active disease many years after the original infection, particularly if the body is weakened by other medical problems. In some people, the initial infection will progress on to cause Tuberculosis. If this infection is in the lungs, then these people may be a risk to others.

Resistance to TB drug treatment can develop, and in some cases multi-drug resistance (MDR TB) develops if patients are not compliant with medication. All patients with TB should have risk assessments for drug resistance and all patients should be tested for HIV (NICE 2011).

Healthcare workers should be aware that certain groups of people with LTBI are at increased risk of going on to develop active TB, including people who:
- Are HIV positive
- Are injecting drug users
- Have a solid organ transplantation
- Have a haematological malignancy
- Have had a jejunooileal bypass
- Have chronic renal failure or receive haemodialysis
- Have had a gastrectomy
- Are receiving anti-tumour necrosis (TNF)-alpha treatment
- Have silicosis
- Have had a splenectomy

TB is a disease of poverty, and specific groups of the population are at heightened risk those groups at particular 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 malnutrition because of lifestyle problems such as homelessness, drug abuse or alcoholism.
• The prison population

Those living in poor or crowded housing conditions, including those living in hostels.

2. Purpose

The purpose of the SOP is to provide clinical staff with guidelines for management of TB infected patients and to identify strategies for the prevention and of infection to other patients, staff and visitors.

3. Scope

This SOP applies to healthcare personnel working within the trust. It also applies to private contractors working on Trust premises including, locum and agency staff and volunteers.

4. Symptoms

A persistent cough that can be either dry or productive, lasting three weeks or longer is the most common symptom (pulmonary TB). A productive cough can sometimes be accompanied with haemoptysis.

Other symptoms (pulmonary and non-pulmonary) include:

• Loss of appetite and weight for no obvious reason
• General lethargy and a sense of being unwell
• Night sweats and intermittent fever
• Pain at the site of infection (e.g. joint/spine or chest pains)

5. Diagnosis

Diagnosis of active respiratory TB is by chest X-ray and culture of the sputum. Evidence of acid-fast bacilli (AFB) in the sputum is necessary to confirm Mycobacterium tuberculosis.

If a diagnosis of pulmonary tuberculosis is considered for any patient at least three sputum samples including one early morning sample should be sent for TB microscopy and culture as soon as possible.

Where there is a suspicion of TB, advice may be sought from the Infection Prevention and Control (IPC) Team.
6. Treatment

Treatment advice should be sought from the Consultant Microbiologist at Queens Hospital Burton. TB treatment is complex; guidelines recommend that physicians and nurses who have substantial experience in dealing with such patients undertake the treatment and management of TB patients. People with TB at any site of disease do not require hospital admission unless there is clear clinical or socioeconomic need, such as homelessness, as necessary test or investigations can be undertaken as an outpatient.

7. Notification

Tuberculosis, whether infectious or not, is a notifiable disease. It is a statutory requirement in England, Wales and Northern Ireland for the diagnosing clinician to notify all cases of clinically diagnosed TB, whether or not microbiologically confirmed. Notification must be made to the Consultant in Communicable Disease Control (CCDC) at Public Health England, who acts as the ‘Proper Officer’ See Point 6 for contact details

8. Infectious status

Smear Positive Pulmonary Tuberculosis (Active TB)
People with tuberculosis are considered to be infectious if they have smear positive pulmonary disease. The smear is positive when sufficient tubercle bacilli are present in the sputum so that they can be seen on direct microscopic examination. Following two weeks of effective treatment and clinical improvement patients are considered to be non-infectious as long as the treatment course continues to be taken. The effectiveness of treatment is decided in consultation with the CCDC, and Consultant Microbiologist.

Smear Negative, Culture Positive Pulmonary Tuberculosis
People who have sputum samples in which no tubercle bacilli are seen on direct microscopy but in whom tubercle bacilli are eventually cultured from their sputum are still infectious although less infectious than those with smear positive disease.

People with non-pulmonary and LTBI e.g. Bone, lymph node are not infectious.

Multi-Drug Resistant Tuberculosis (MDR-TB)
If MDR-TB is suspected immediate urgent advice should be sought from the infection prevention and control team
MDR-TB is not more virulent or more infectious than any other forms of tuberculosis, but the consequences of acquiring the disease are much more serious because of the complexities and duration of the required treatment regimens.

9. Infection Control Precautions and Isolation

Inpatients with suspected or confirmed TB should be nursed in isolation until the patient has had 2 weeks of effective therapy (unless they have MDR-TB - in this case consultation with the Infectious Diseases Physician/IPC Team should take place).
**Community patients** with TB can be treated at home. It is not necessary to isolate an infectious person on treatment from other household members. Fumigation of houses is not necessary. Disposal of waste can be done through the normal waste streams. Further advice should be sought from the Infection Prevention and Control Nurse or Public Health England if required.

**Visitors**
Visitors should be limited to those who have had recent contact with the infectious patient prior to their diagnosis (i.e. household contacts). This should continue until the patient has had 2 weeks of effective drug therapy (unless they have MDR-TB - in this case consultation with the Infectious Diseases Physician/IPC Team should take place). Visitors are not required to wear masks due their previous exposure to the patient. Household contacts visiting patients with infectious tuberculosis should not visit other patients until it has been demonstrated they are free from open pulmonary tuberculosis themselves. Advice should be sought from the clinician responsible for the patient if visitors are thought to be immune compromised or children wish to visit. An individual risk assessment will need to be carried out in these circumstances.

**Use of Personal Protective Equipment**
The use of personal protective equipment (PPE) should be based on a risk assessment of the procedure to be undertaken.

**Masks**
Healthcare workers caring for people with TB should **not** routinely use masks.

**FFP3** * masks **must** be worn on the following occasions:–

All healthcare workers providing prolonged care (longer than 15 minutes) to highly dependent patients with suspected or confirmed drug sensitive tuberculosis

All persons present while sputum induction or aerosol-generating procedures (e.g. chest physiotherapy, bronchoscopy; use of nebuliser, thoracic surgery incising the lung) are performed on patients with suspected or confirmed infectious tuberculosis

All persons who are entering the room of a patient with MDR-TB

The patient with MDR-TB during transportation to other areas

FFP3 masks are effective for 8 hours when in constant use.

In-use masks should be handled as little as possible.

Masks must **not** be re-used.

Used masks must be disposed of as clinical waste.

Inpatients with drug sensitive smear-positive respiratory TB should be asked (with explanation) to wear a surgical mask whenever they leave their room until they have had two weeks’ of effective drug therapy.

When PPE is being used, the reason should be clearly explained to the person with TB and the family/carers
Fit testing and training in the use of FFP3 masks would be provided

**Hand Hygiene**

Perform hand hygiene using alcohol gel on entry and exit from the isolation area and following patient contact.

Provide hand hygiene advice to the patient and family.

If hands come into contact with sputum or other body fluids and contaminated items wash the hands. (See Standard Precautions SOP for further details).

**Gloves** (non sterile)

Wear gloves only when touching blood or body fluids or sputum contaminated items and specimens.

Care should be taken when cleaning up sputum or exudates from wounds.

Put on clean gloves just before touching mucous membranes or non-intact skin.

Change gloves between procedures on the same patient after contact with material that may contain high numbers of Bacilli.

Remove gloves (single use item) promptly after use and wash hands. Gloves should be disposed of as clinical waste. (see Standard Precautions SOP)

**Apron/ gown**

Only wear a disposable plastic apron for procedures where there is a risk of contamination of clothing from splashing or aerosolisation.

Remove the apron on completion of tasks and dispose of after use as clinical waste.

**Patient transport**

Patients should not be transferred to other units or hospitals unnecessarily. If transfer is necessary e.g. for chest X-ray the receiving department must be informed of the infectious state of the patient in advance, to prevent exposure to susceptible patients in waiting areas.

Inform ambulance staff prior to patient transfer.

**Care of Patient equipment**

Items contaminated with respiratory secretions are not associated with the transmission of *M. tuberculosis*; consequently disposable crockery and cutlery are not required.
Wear gloves and aprons to handle equipment soiled with sputum or other body fluids–decontaminate the equipment as per guidance in the disinfectant policy.

If the equipment is single use then dispose of it as clinical waste.

Re-usable equipment must be decontaminated prior to re-use on other patients.

Items of equipment used by the patient should be cleaned and decontaminated effectively between each use.

**Environment**

Daily enhanced cleaning of the isolation area should be performed by the domestic staff using dedicated colour coded equipment.

A terminal clean of the room and equipment will be required at the end of the isolation period and prior to occupation by another patient using a 1000 ppm available chlorine solution.

**Linen**

Gloves and aprons must be worn when handling used linen,

Soiled linen should be treated as infected and disposed of in a red bag as per policy.

Contaminated linen from a patient’s own home should be placed directly into the washing machine and washed on the hottest temperature the linen will allow.

**Personal clothing must not be hand sluiced by health care workers.**

**Provide infection control advice to family members taking home soiled clothing for washing**

**Specimens**

All sputum and other respiratory specimens should always be transported in biohazard specimen bags. The request form and specimens should also be clearly labelled as a ‘High Risk’ specimen.

Standard Precautions should be applied at all times.

Staff should ensure that effective hand decontamination practices are adhered to at all times.
10. Staff

All healthcare workers entering the Trust should be screened for tuberculosis. They can be split into three groups.

<table>
<thead>
<tr>
<th>Group A</th>
<th>Healthcare workers entering the NHS from areas of the world where TB is epidemic (i.e. more than 40 cases per 100,000 per year, as listed by the HPA) Areas exempt are the European Union, USA, Canada, Australia, and New Zealand.</th>
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<tbody>
<tr>
<td>Group B</td>
<td>All healthcare workers new the NHS</td>
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<tr>
<td>Group C</td>
<td>Existing healthcare workers moving from Trust to Trust, some of whom may belong to group A</td>
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</table>

Pre-employment

Prior to employment all candidates should complete a work health questionnaire and submit any vaccine history to the occupational health department prior to beginning their employment.

On receipt of the above information if there is qualified evidence that the candidate has either undergone screening and been found to be immune to TB or has been inoculated against TB a clearance form (fit form) will be issued.

If the above evidence is not available the applicant will be called into the occupational health department for a BCG scar check or mantoux test.

If Mantoux testing is required two appointments will need to be scheduled as the test needs to be read 48 hours after the test is performed.

Applicants who have a negative test will be scheduled for BCG.

Applicants who have a significant reaction to the Mantoux will be referred to the local chest clinic for screening for latent TB.

Immunosuppressed applicants

It is unsafe to carry out Mantoux testing on immunosuppressed applicants; these will be referred to the local chest clinic for interferon-gamma release assays or IGRAs.

The IGRA test is an alternative test method which is laboratory based and safe to use in immunosuppressed applicants.

- Transfers from post to post
  Where and applicant is transferring from a trust role to another role however diverse the two posts no further testing will be required, however the OHU should be informed so that a routine record check can be made.

- Fitness slips.
  The OH department will not issue fitness slips to the recruitment team until the above processes have been completed.
In Post
Any staff with symptoms suggestive of TB should report to the Occupational Health Service as soon as possible as well as seeking medical support from their primary health care provider (GP).

Action following contact with a TB positive client.
Employees who have had significant contact with an infectious client will have their vaccination status confirmed and follow up undertaken if necessary. A one off information and advice sheet will be sent to the members of staff.

All staff in contact with patients or clinical specimens must attend Occupational Health prior to commencement of employment for TB screening. The purpose of this is:

- To prevent staff with infectious TB from infecting patients
- To identify staff requiring BCG vaccination and to educate about symptoms of TB

Any staff with symptoms suggestive of TB should report to Occupational Health.

Healthcare workers who know they are HIV positive at the time of recruitment or who are found to be HIV positive during employment should inform Occupational Health. This is to allow a medical and occupational assessment of TB risk to take place. Staff should consult the Consultant in Communicable Disease Control, TB services or the Infection Prevention and Control Team if they are planning to undertake aerosol-generating procedures.

### 11. Process For Monitoring Compliance And Effectiveness

Compliance with this policy will be monitored through the mechanisms detailed in the table below. Where compliance is deemed to be insufficient and the assurance provided is limited then remedial actions will be drawn together through an action plan. This progress against the action plan will be monitored at the specified committee/group. The results of the annual audit will be escalated to the appropriate committee/group where appropriate.

<table>
<thead>
<tr>
<th>Aspect of compliance or effectiveness being monitored</th>
<th>Monitoring method</th>
<th>Individual or department responsible for the monitoring</th>
<th>Frequency of the monitoring activity</th>
<th>Group/committee/forum which will receive the findings/monitoring report</th>
<th>Committee/individual responsible for ensuring that the actions are completed</th>
</tr>
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<tr>
<td>Appropriate management of patients with suspected or confirmed tuberculosis</td>
<td>Audit of documentation</td>
<td>Audit department and Infection prevention and control team</td>
<td>Annual or as appropriate</td>
<td>Infection Prevention and Control committee</td>
<td>Matrons and Ward managers</td>
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12. Useful contact details

The trust Infection Prevention and Control Team
Telephone mobile 07971313156 or 01785 257888 8902

URGENT OUT OF HOURS advice should be obtained from
The On call Microbiologist via Queens Hospital Burton Switchboard
Tel 01283 566333

Occupational Health
Team Prevent UK
Occupational Health Department
Stonefield House
St George's Hospital
Corporation Street
Stafford
ST16 3SR

Telephone 01785 221659

West Midlands North Public Health England (Health Protection),
Public Health England
Stonefield House
St George's Hospital
Corporation Street
Stafford
ST16 3SR

Tel: 0844 225 3560 Option 1 then Option 2

Out of hours advice
For health professionals: To contact a public health professional in an emergency out...
of hours; in the evenings, at weekends or during bank holidays, please phone: 0138 4215621

13. References


Immunisation against Infectious Disease (the 'Green Book') DH (2013)


Occupational Health Standards for Occupational Health Clearance and Immunisations for Hepatitis B, Hepatitis C, HIV, Varicella, MMR and Tuberculosis West Midlands ANHOPS (Clinical Governance Group and ANHONS (March 2007)