Title of Policy: Guidelines for the control of tuberculosis in hospitals

Policy Reference: Issue no v06.1, September 2017

Scope: Organisation Wide

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Author: Gillian Rankin, Infection Control Nurse

Policy application / Target Audience Throughout NHS Ayrshire and Arran

Policy Statement: It is the responsibility of all staff to ensure that the information contained in this guidance is implemented in order to minimise the risk from infectious tuberculosis in the hospital setting. It is essential that good communication is maintained with the Consultant in Public Health Medicine (CPH(M)) who has statutory responsibility for the investigation, management and control of tuberculosis.

Last reviewed: September 2017

Agreed by: Infection Prevention and Control Policy Review Group

Electronic approval of review process by: Professor Hazel Borland
Nurse Director

Date: September 2017
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## 1.0 GENERAL INFORMATION

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<tr>
<th>Introduction</th>
<th>Human tuberculosis (TB) is caused by infection with <em>Mycobacterium tuberculosis</em>. TB can affect almost any part of the body. TB commonly affects the lungs (pulmonary TB); however, there have recently been increasing numbers of TB infections in other body sites. Transmission of TB is a recognised risk in healthcare settings.</th>
</tr>
</thead>
</table>
| **Definitions** | **Active TB:** When a person is currently unwell with TB disease which is cross transmissible to others and should be managed as per this policy.  

**Latent TB:** When a person is infected with TB but showing no signs or symptoms of TB disease. Latent TB is not cross transmissible to others and should be managed using Standard Infection Control Precautions (SICPs) as per the [National Infection Prevention and Control Manual](#). This policy does not cover latent TB. |
| **Incubation period** | Generally 2 – 10 weeks. Latent TB reactivation can occur years after initial infection. |
| **Period of communicability** | As long as viable tuberculosis bacilli are present in clinical specimens e.g. sputum, wound swab |
| **Individuals most at risk** |  
- HIV positive  
- History of alcohol or substance abuse  
- History of solid organ transplant  
- Chronic renal failure or receiving haemodialysis  
- History of gastrectomy  
- Receiving anti Tumour Necrosis Factor (TNF) alpha treatment  
- Diabetics  
- Receiving chemotherapy  
- Receiving immunosuppressants  
- Very old and very young  
- Individuals born in a country with high TB prevalence  
- Individuals who have visited a country with high TB prevalence |
| **Notifiable disease** | **Tuberculosis (Respiratory and Non-respiratory) is a notifiable disease.**  

Initial notification should be made by telephone to the Health Protection Team (HPT) at Afton House, Ailsa Campus on 01292 885858 or, *out of hours*, contact the Consultant Public Health Medicine (CPHM) via University Hospital Crosshouse switchboard on 01563 521133. |
Informing the IPCT

As a general principle, all patients with suspected or confirmed active TB should be considered potentially infectious until proven otherwise. Following implementation of all relevant infection prevention and control precautions you must inform the Infection Prevention and Control Team (IPCT) by phoning (01563) 825765 or by emailing the IPCT mailbox InfectionControl@aapct.scot.nhs.uk

Clinical Responsibility

- Pulmonary TB – Respiratory Consultant (TB Lead)
- HIV positive TB – Infectious Diseases Team
- Extra-Pulmonary TB – Infectious Diseases Team
- Extensive Drug Resistant TB – Refer to Respiratory Team at Queen Elizabeth University Hospital (QEUH)

2.0 DRUG RESISTANCE

TB may be resistant to one or more drugs used to treat the disease. To assess whether the case may be drug resistant and to ensure appropriate treatment, the patient should be appropriately assessed for the following risk factors:

- History of prior TB drug therapy; prior TB treatment failure
- Contact with a known case of drug resistant TB
- Birth in a foreign country (particularly high incidence countries)
- HIV infection
- Residence in London
- Travel or residence (3 months or more) in another area with a known prevalence of greater than 40 cases per 100,000 population (advice can be obtained from the CPHM)
- Age profile, with highest rates between ages 25 and 44
- Male gender

If assessed as a possible drug resistant case, then seek advice from CPHM, Consultant Respiratory Physician in Infectious Diseases or a Consultant Microbiologist.

<table>
<thead>
<tr>
<th>Multi drug resistance (MDR)</th>
<th>Extensive drug resistance (XDR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Drug resistance to 2 or more first line anti-TB drugs (Rifampicin and Isoniazid)</td>
<td>- Resistance to at least Rifampicin and Isoniazid, in addition to any fluroquinolone</td>
</tr>
<tr>
<td>- Contact of an MDR TB case</td>
<td>And (at least one of):</td>
</tr>
<tr>
<td>- Foreign born person from a country with high incidence of MDR TB</td>
<td>- Capreomycin</td>
</tr>
<tr>
<td>- Travel or residence (3 months or more) in a country or setting with high incidence of MDR TB</td>
<td>- Kanamycin</td>
</tr>
<tr>
<td></td>
<td>- Amikacin</td>
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</tbody>
</table>
3.0 INFECTION CONTROL PRECAUTIONS FOR TUBERCULOSIS

3.1 Standard Infection Control Precautions (SICPs)

Standard Infection Control Precautions (SICPs), Section 1 of the Health Protection Scotland (HPS) National Infection Prevention and Control Manual, must be used by all staff, in all care settings, at all times, for all patients whether infection is known to be present or not to ensure the safety of those being cared for, as well as staff and visitors in the care environment.

SICPs are the fundamental IPC measures necessary to reduce the risk of transmission of infectious agents from both recognised and unrecognised sources of infection.

Potential sources of infection include blood and other body fluids secretions or excretions (excluding sweat), non-intact skin or mucous membranes and any equipment or items in the care environment that could have become contaminated.

3.2 Transmission Based Precautions (TBPs)

TBPs are implemented in addition to SICPs to provide further protection when TB is known or suspected. TBPs are categorised by the route of transmission of the infectious agents (some infectious agents can be transmitted by more than one route). TB is cross transmitted via airborne routes; therefore the following TBPs are required:

**Airborne precautions**

Used to prevent and control infections spread without necessarily having close patient contact via aerosols (≤5μm) from the respiratory tract of one individual directly onto a mucosal surface or conjunctivae of another individual. Aerosols penetrate the respiratory system to the alveolar level.

<table>
<thead>
<tr>
<th>Patient placement (see Appendix 1)</th>
<th>If no clinical suspicion of drug resistant TB</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>Manage locally and ensure:</strong></td>
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<td></td>
<td>- Patients with suspected/confirmed infection are isolated in a single room with en-suite facilities (including emergency departments and outpatient settings)</td>
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<td></td>
<td>- The isolation room door remains closed. If this is not possible, a risk assessment must be documented in the nursing notes e.g. patient at risk of falls</td>
</tr>
<tr>
<td></td>
<td>- An isolation notice must be placed on the outside of the door</td>
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</tbody>
</table>

**Note:** Do not admit people with suspected/confirmed TB into a ward/department with immunocompromised patients (including HIV) unless they are placed within a negative pressure single room.
<table>
<thead>
<tr>
<th>Patient placement (continued)</th>
<th>Discontinuing Isolation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Smear positive patients (Acid and alcohol fast bacilli (AAFB) seen on microscopy using Ziehl Neelsen (ZN) staining isolated from sputum) without risk factors for MDR or XDR TB (see section 2.0 above) may leave isolation after 2 weeks treatment, taking into account the risks and benefits, if</td>
</tr>
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<td></td>
<td>- the person is showing tolerance to the prescribed treatment</td>
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<td>- there is agreement to adhere to treatment</td>
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<td></td>
<td>- there is definite clinical improvement on treatment</td>
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<tr>
<td></td>
<td>- there are no immunocompromised people, including those with HIV, in the same ward/department</td>
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</tbody>
</table>

Respiratory TB should include:
- cough has resolved
- there is not extensive pulmonary involvement, including cavitation
- there is no laryngeal TB

**OR** on discharge (even if they remain smear positive).

If clinical suspicion of Multi drug resistance (MDR), Extensive drug resistance (XDR), or Total drug resistance (TDR) TB:
The patient must be transferred to a negative pressure isolation suite in the Infectious Disease (ID) Unit at University Hospital Crosshouse until:
- **Suspected multidrug-resistant TB** - until non-resistance is confirmed
- **Confirmed multidrug-resistant TB** - until they have 3 negative smears at weekly intervals and ideally have a negative culture
- **Confirmed XDR or TDR TB** – transfer to Infectious Diseases Unit at QEUH

**Additional Considerations**
- Patients who share a home with anyone who is immunocompromised should remain isolated in hospital until the above criteria have been met
- Only carry out aerosol-generating procedures (AGPs) such as bronchoscopy and sputum induction (including nebuliser treatment) in an appropriately engineered and ventilated area (ideally a negative pressure room)

**Outpatient Areas**
- Minimise the number and duration of visits a person with TB makes to an outpatient department while they are still infectious. To minimise the risk of infection, people with infectious TB should be seen at times or in places away from other people
### Personal Protective Equipment (PPE)

Plastic aprons and disposable gloves must be worn when in direct contact with the patient or the patient’s immediate environment.

See table below for Respiratory Protective Equipment
- Face Fit Protection level 3 (FFP3) masks require Fit Testing
- Staff must only wear the FFP3 mask they have been successfully fit tested for

### Respiratory Protective Equipment

<table>
<thead>
<tr>
<th>Task</th>
<th>TB</th>
<th>Drug resistant TB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entering room</strong></td>
<td>Surgical Face mask within 3 foot radius of patient</td>
<td>FFP3 mask at all times</td>
</tr>
<tr>
<td><strong>Aerosol Generating Procedure (AGP)</strong></td>
<td>FFP3 mask during procedure and for one hour afterwards within affected room</td>
<td>FFP3 mask at all times</td>
</tr>
<tr>
<td><strong>Close contact (if cumulative total TB exposure is likely to be greater than 8 hours during hospital admission i.e. in the same room).</strong></td>
<td>If there is any doubt as to what cumulative contact will be, then FFP3 mask at all times</td>
<td>FFP3 mask at all times</td>
</tr>
<tr>
<td><strong>This applies to all staff</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Patient leaving room</strong></td>
<td>Discourage where possible&lt;br&gt;Patient to wear surgical face mask during transfer (respiratory TB)</td>
<td>Discourage where possible&lt;br&gt;Patient to wear surgical face mask during transfer (respiratory TB)&lt;br&gt;Staff in close contact FFP3 mask</td>
</tr>
</tbody>
</table>
| **Hand Hygiene** | Hands must be decontaminated as per your 5 moments for Hand Hygiene:  
1. Before touching a patient  
2. Before clean/aseptic procedure  
3. After body fluid exposure risk  
4. After touching a patient  
5. After touching patient surroundings |
| **Patient Care Equipment** | • Where available, use single use/single patient use equipment. All single use/single patient use equipment must be discarded as clinical waste  
• Equipment should be kept to a minimum  
• All shared or reusable equipment must be decontaminated between patients using a chlorine releasing agent e.g. Actichlor Plus™ 1 tablet in 1 litre of water (concentration = 1,000 PPM). Please refer to manufacturers’ instructions for compatibility of product  
• Communal facilities such as baths, bidets and showers should be cleaned and/or decontaminated between all patients |
| **Environmental cleaning by Hotel Services** | • Enhanced routine cleaning of the patient’s accommodation with a chlorine releasing agent e.g. Actichlor Plus™ 1 tablet in 1 litre of water (concentration = 1,000 PPM), should be undertaken by hotel service staff until instructed otherwise (see Actichlor Plus™ General Environment Poster). It is the responsibility of nursing staff to ensure that domestic assistants are aware of this requirement  
• Following the removal of the patient, the room should have a terminal clean carried out prior to the next patient being admitted |
| **Clinical Waste** | All waste must be discarded as clinical waste. |
| **Linen** | All linen should be discarded as infected i.e. placed in a water soluble bag then into a clear plastic bag and lastly into a red laundry bag  
Labels should be attached to each red linen bag on sealing, clearly stating:  
- Hospital of Origin  
- Ward or Department |
**Safe management of blood and body fluid spillages**

Spillages must be decontaminated immediately with a chlorine releasing agent e.g. Actichlor Plus™ using the following dilutions:

- Blood spillages (or bodily fluid with associated blood): 10 Actichlor tablets in 1 litre of water (concentration = 10,000 parts per million (PPM))
- Body fluid spillages (with no associated blood): 1 Actichlor tablet in 1 litre of water (concentration = 1,000 PPM). **Remove spillage with disposable paper roll prior to applying a chlorine releasing agent to reduce the risk of chemical reaction**

**Occupational exposure**

- Occupational exposure to TB can be prevented by adhering to precautions outlined above
- Contact the Occupational Health Department if you have any concerns regarding exposure to TB or require information regarding your current immunisation status, if applicable

**Respiratory Hygiene and Cough Etiquette**

- Patient should be encouraged to cover their nose and mouth with a tissue when coughing, sneezing or blowing their nose
- If transferring patient, the patient must wear a surgical face mask (unless they are wearing an oxygen mask)

### 4.0 OTHER RELEVANT INFORMATION

**Transferring Patients**

- If possible, do not transfer patient until TBPs are no longer required
- Prior to transfer, staff must inform any receiving ward/department that the patient has a suspected/confirmed infection, as well as a history of specimens taken and Infection Prevention and Control precautions taken
- Prior to transfer, you must ensure the ward receiving the patient has suitable accommodation

**Specimens**

- 3 early morning sputum samples from separate expectorates should be sent at the earliest possible opportunity for AAFB testing (respiratory TB)
- Ensure microbiology are notified of samples being sent for TB screening
- Those at high risk/suspected to have of MDR-TB should have specimens sent for rapid diagnostic tests, such as nucleic acid amplification tests
- Document reason for sample on Microbiology form e.g. possible TB or query MDR-TB
- Other samples should be sent as clinically indicated (also refer to the [Laboratory Handbook](#))
<table>
<thead>
<tr>
<th><strong>Care After Death</strong></th>
<th>A body bag is advised if the patient is suffering from active TB.</th>
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<tbody>
<tr>
<td><strong>Patient Clothing</strong></td>
<td>Laundry going home, must be placed into a clear bag and then into a patient clothing bag. The <a href="#">Washing Clothes at Home Information Leaflet</a> must be issued.</td>
</tr>
<tr>
<td><strong>Visitors</strong></td>
<td>▪ While patients are infectious, visitors should be limited to those who have already been in contact with the patient prior to their diagnosis. This is to prevent further transmission&lt;br&gt;▪ <strong>Visitors to patients with MDRTB or XDRTB will be restricted</strong> with only authorised visitors (as agreed with the Consultant Physician in Respiratory Medicine, Consultant Physician in Infectious Diseases or a Consultant Microbiologist), allowed to visit. These visitors will require fit testing for FFP3 masks before entering the patient environment. Alternatively, powered respirators may be used once visitors have been instructed on their use. The Health and Safety Department must be contacted as soon as possible for this to be arranged&lt;br&gt;▪ Visitors to a child with suspected active TB in hospital who themselves are symptomatic of infectious TB, must be kept separate from other people until they have been excluded as a source of infection</td>
</tr>
<tr>
<td><strong>Documentation</strong></td>
<td>Ensure that the patient is fully aware of their infectious status and that the provision of this information has been documented in the notes.</td>
</tr>
<tr>
<td><strong>Action to be taken</strong></td>
<td>Patient confidentiality must be maintained at all times. Information concerning any infection must only be given to others on a need to know basis.</td>
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<tr>
<td><strong>Outbreaks and incidents</strong></td>
<td>In the event of a suspected outbreak/incident in hospital, an Incident Management Team (IMT) will be convened. This meeting will normally be chaired by the CPHM and will include representatives from all departments involved in the investigation and management of TB.</td>
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</tbody>
</table>

### 5.0 REFERRAL TO CONSULTANT PHYSICIAN IN RESPIRATORY MEDICINE

All hospital in-patients suspected of having respiratory TB should be referred to the care of a Consultant Physician in Respiratory Medicine who will arrange appropriate investigation and treatment.
6.0 CONTACT TRACING

Patient Contacts: Where a patient with suspected/confirmed TB is identified within the hospital setting, the Infection Control Nurse (ICN) will liaise with the clinical area(s) concerned to assess whether there have been any significant patient contacts (e.g. sharing the same room for greater than 8 hours) prior to the patient being identified.

The ICN will use PMS (Patient Management System) to identify patient contacts. It is the responsibility of clinical staff to review the patient contacts and identify patients who are immunosuppressed. The names of all significant patient contacts and details of immunosuppression will be forwarded to the CPHM by the ICN.

Staff Contacts: The ICN will inform the Occupational Health Department (OHD) whenever a patient with suspected/confirmed TB has been in hospital. The OHD will in turn obtain a list of significant staff contacts from the ward/department and assess each case, including immune status, where applicable. The OHD will liaise closely with the CPHM in these cases.
APPENDIX 1  ISOLATION FLOWCHART

Note: Patients with confirmed or suspected TB should only be admitted for care or diagnostic tests if there is a clear clinical or socioeconomic (e.g. homelessness) need.

The flow chart below will assist in the decision making process for patient isolation:

Isolation Decisions for Patients with suspected Tuberculosis (TB)

Patient admitted with suspected TB

Admit to a negative pressure room or single room with restrictions, if negative pressure room not available

Microscopic smear positive (AAFB / Mycobacteria)

Risk for multi drug resistant TB

YES

NO / PENDING

Risk for multi drug resistant TB

YES

NO

Immunocompromised or HIV +ve individuals on ward

YES

NO

Patient must be isolated in a negative pressure room.

Patient must be isolated in a single room (negative pressure room preferable)

Patient must be isolated in a negative pressure room. Discontinue if sample -VE

Single room isolation (negative pressure room preferable). Discontinue if sample -VE

Where negative pressure isolation rooms are unavailable or not functioning then arrangements must be made with neighbouring NHS boards to transfer patients to their facilities.