CONTROL OF TUBERCULOSIS IN HOSPITAL

Author: The Infection Control Team

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History
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ASHFORD & ST PETER’S HOSPITALS NHS FOUNDATION TRUST
1. **AIM OF THIS POLICY**
   
   This policy is to ensure that all healthcare workers across the Trust are able to appropriately manage a patient with known or suspected Tuberculosis using the correct infection control procedures.

2. **PURPOSE**
   
   To prevent the spread of infection to other patients, visitors and staff.

3. **PATIENTS WITH TUBERCULOSIS (TB)**
   
   As a general principle, tuberculosis should be considered in any patient in an “at risk” group who has a pleural effusion or upper lobe disease on CXR, or a persistent cough with or without haemoptysis lasting more than three weeks, especially if there is weight loss, anorexia, fever, night sweats, or malaise.

   Such patients should be admitted to a single room until infectious tuberculosis has been excluded. Adult patients with, or suspected of having multi-drug resistant tuberculosis (MDR TB) must be nursed in a negative pressure room on Aspen ward. See Appendix 1.

   Infection is almost always acquired by inhaling infective droplets coughed by a person with infectious tuberculosis of the lung. An individual who is coughing up so many Mycobacterium tuberculosis bacteria that they are visible by microscopy of a smear of sputum (smear positive) will be more infectious than an individual who is coughing up too few bacteria to be seen by microscopy (smear negative). The bacteria seen on microscopy are referred to as ‘acid fast bacilli’ or ‘acid-alcohol fast bacilli’ because they retain stains despite an attempt to decolonise them with acid or alcohol.

   If a patient nursed on an open ward is diagnosed with infectious TB, the risk to others is small. Tuberculosis usually requires prolonged close contact for transmission of infection from person to person. Generally patients at risk are those in the same bay as the index case and in contact for longer than eight hours. Unless there is a clear clinical or socioeconomic need, people with TB should not be admitted to the hospital for diagnostic tests or care.

   3.1 **Pulmonary TB (and Laryngeal TB)**
   
    Patients with sputum smear positive tuberculosis are said to have ‘open’ pulmonary TB and should be regarded as infectious and require isolation in a single room. Patients whose bronchial washings are smear positive are less infectious unless their sputum is also smear positive or becomes so after bronchoscopic. However patients who are smear negative should also be isolated as they may be a risk to immunosuppressed contacts. Staff who are Mantoux/Interferon-Gamma Release Assay (IGRA) negative and not BCG vaccinated should not work where there is a risk of exposure to TB. (NICE 2006, amended 2016)

   3.2 **Non-pulmonary TB**
Those with non-pulmonary disease (ie who do not have pulmonary TB) need not be regarded as infectious, but it should be borne in mind that they may become infectious and do not need isolation unless there is an open tuberculosis wound/abscess.

Any aerosol-generated procedures (e.g. suctioning, abscess/wound irrigation) should **NOT** be carried out on an open ward, but in an appropriately engineered and ventilated area.

### 3.3 Patients with atypical mycobacterial infections

Patients with atypical mycobacterial infections need **NOT** be regarded as infectious and do not need to be isolated or notified to the Consultant in Communicable Disease Control (CCDC).

### 4. ISOLATION PRECAUTIONS

#### 4.1 ADULT PATIENTS WITH DRUG SENSITIVE PULMONARY TB Accommodation

Patients with pulmonary tuberculosis should be isolated in a single room, ideally a negative pressure room, if available. Priority is to be given to patients WITH smear positive TB and those with suspected or confirmed MDR TB (see 4.2). The most appropriate rooms are the single rooms on Aspen ward (cubicle 7 and 8 negative pressure rooms). Isolation should continue for two weeks after starting anti-tuberculous chemotherapy assuming there is definite clinical improvement which indicates that the TB is sensitive. The door to the room should be kept shut as much as possible. The patient should not routinely visit other areas of the hospital unless for medical treatment/investigation and then should not be transported through areas of the hospital without wearing a surgical mask (see below). They should not use any communal areas in the Trust.

The person who cleans the room is not at special risk, nor are other members of staff who attend the patient in a routine manner.

**Aprons and gloves**

Staff need not wear aprons or gloves unless dealing with body fluids (see Standard Precautions Policy).

** Masks**

Wearing of masks is indicated when:

- MDR TB is suspected/confirmed: FFP3 masks must be used while the patient is considered infectious
- Aerosol-generating procedures are being performed: FFP3 masks must be used
- The patient has infectious TB (not-MDR): FFP3 mask must be used

When such personal respiratory protective equipment is required the reason must be explained to the patient, their relatives/carers and visitors.

Staff working on respiratory/ID wards and areas where TB patients are likely to be
admitted should ensure they are FIT tested to enable them to wear the correct fitting FFP3 mask.

All single use respiratory equipment used on patients must be disposed of as clinical waste. Staff must be fit tested to ensure masks are fitting correctly to prevent air from entering around the sides of the mask.

Patients who are considered infectious should not leave the isolation room for any reason without wearing a surgical mask, for example if they are being transported through the ward to another department for good clinical reasons.

The patient should receive training and supplies to ensure that he/she turns away from staff whilst coughing and into tissues (which should be immediately discarded into a clinical waste bag) or cover the mouth fully whilst coughing, then wash hands.

**Disposal of clinical waste**
Disposal of infected material, such as tissues should be into a clinical waste bag. The lids of sputum pots must be firmly closed and then placed in a clinical waste bag. Sputum pots should be discarded daily.

**Crockery, linen etc.**
Marked crockery and separate washing up facilities are unnecessary, and no special precautions are needed for bed linen, books etc.

**Visitors**
Where possible, visitors should be limited to those who have already had close contact with the patient. The elderly and children should be discouraged from visiting infectious cases.

**Duration of isolation**
The vast majority of patients with sputum smear positive disease will be non-infectious after two weeks compliant standard multi-drug chemotherapy. In some circumstances, three negative sputum smear examinations should be confirmed before removing a patient from isolation, for example if the patient may have drug resistant disease or is HIV positive or has not improved on anti tuberculosis treatment.

### 4.2 PATIENTS WITH DRUG RESISTANT TUBERCULOSIS
Drug resistant TB is more difficult to treat compared with drug sensitive TB and treatment takes longer. These more serious consequences of infection make prevention of transmission to others vital. Multi-drug resistant TB (MDRTB) is defined as resistance to isoniazid and rifampicin, with or without resistance to other drugs. Extremely drug resistant TB (XDRTB), is even more resistant and is an emerging global threat. The global threat of multi drug resistance derives from the breakdown of the Former Soviet Union in the 1990's and also comes from India, China and Africa.

The possibility of drug resistant disease should be considered if there is:

- history of previous TB drug treatment, particularly if there was known to be poor adherence to that treatment contact with a known case of drug resistant TB
- birth or residence in a country in which the World Health Organization reports that
a high proportion (5% or more) of new TB cases are multidrug-resistant. 

- disease not responding to treatment i.e. persistently positive sputum
  smears after two months treatment, or positive culture from sputum taken
  after three months treatment
- HIV infection
- Previous history of incarceration

**Accommodation**
Infectious patients with MDRTB must be isolated in a negative pressure isolation room, i.e. Aspen ward cubicle 7 or 8. If no negative pressure room is available, transfer to a hospital which has one available.

**Protective clothing**
If multi-drug resistant TB (MDRTB) is suspected or confirmed, FFP3 masks must be worn for all contact with the patient until the patient has been confirmed to be non-infectious by the physician in charge or Consultant Microbiologist.

**Duration of isolation**
Isolation should be continued until the consultant physician in charge of the patient and the Consultant Microbiologist agree that it may be discontinued, ideally when cultures are negative.

**Discharge from hospital**
Before a patient is discharged ensure arrangements have been made for supervision/administration of TB chemotherapy and case management by the TB Nursing Service. The decision to discharge should be discussed with the Consultant Microbiologist, TB service and CCDC.

4.3 **CHILDREN WITH TUBERCULOSIS**
ALL children with tuberculosis and their visitors 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 child's infection and hence be a risk to other patients if the child is in an open ward. Visitors should be referred to the TB nurse for contact screening.

5. **RETRASPECTIVE DIAGNOSIS OF TUBERCULOSIS**

5.1 **Patient contacts**
If a patient on an open ward is diagnosed as having infectious tuberculosis, particularly after a delay of several days, other patients should have their exposure documented and their GPs and consultants informed if there has been significant contact i.e. patient in the same bay as coughing index patient for more than eight hours. Further advice can be obtained from Public Health England. Sample letters are given in appendix 3 and this will be co-ordinated by the Infection Control Team.

5.2 **Staff contacts**
Immuno-competent staff do not usually require follow up unless they were regular carers for the patient and thus had prolonged close contact, or
carried out a high risk procedure. The Occupational Health Department will follow up staff contacts in conjunction with the respective ward/department sister and departmental managers i.e. physio, housekeeping.

5.3 Visitor contacts
Visitors to the ward would not usually be followed up.

6. TREATMENT COMPLIANCE
When compliance is likely to be an issue then the nursing staff should use Directly Observed Therapy (DOT) and immediately refer to the TB nursing service for Enhanced Case Management (RCN 2012).

7. NOTIFICATION
All forms of Tuberculosis are compulsorily notifiable and the Consultant in Communicable Disease Control (CCDC) should be informed when a case is identified, in order to trigger contact tracing, provide surveillance data, and outbreak control (if required). This can be done by referring to the TB Nursing Service where details will be entered onto the Enhanced Tuberculosis Surveillance Database.

8. RESPONSIBILITIES FOR COMMUNICATION

Ward Manager or Nurse in charge of shift - inform Clinical Nurse Leader, CSNP at weekends and Infection Control Team when a patient with suspected TB is admitted to the ward.

Medical team - Notify the appropriate Consultant in Communicable Disease Control (CCDC) and/or the TB Nursing Service. This is a statutory requirement. The paper forms are also available on TrustNet under forms. Inform the TB nursing service to avoid delays in following up contacts and to prevent delay in case management (RCN 2012). If the diagnosis is suspected but not proven, discuss with the Consultant Microbiologist or CCDC by telephone. Suspected cases also need to be Notified but should be de-notified by the TB nurses at a later stage if necessary.

Infection Control Team - report positive laboratory results to CCDC, TB nurse, patient’s clinical team and ward staff.

Histology Consultants - report positive histological or post mortem findings to CCDC and patient’s clinician.

TB Specialist Nurse - employed to case manage patients with tuberculosis and their contacts. Case management should start as soon as possible from the first presentation for all suspected cases to ensure a timely diagnostic conclusion (RCN 2012).

Public Health England - provides advice on all aspects of health protection.

9. DISSEMINATION AND IMPLEMENTATION

The policy has been written by the Infection Control Team in agreement with the Trust Respiratory Physicians, been agreed by the Control of Infection Committee and ratified by the Clinical Governance Committee. The policy will be available on
10. PROCESS FOR MONITORING COMPLIANCE WITH THE EFFECTIVENESS OF POLICIES

Monitoring compliance of the policy will be undertaken with individual cases as they occur. This would be undertaken by the Infection Control Team. Any failings will be immediately addressed.

11. EQUALITY IMPACT ASSESSMENT

The Trust has a statutory duty to carry out an Equality Impact Assessment (EIA) and an overarching assessment has been undertaken for all infection control policies.

12. ARCHIVING ARRANGEMENTS

This is a Trust-wide document and archiving arrangements are managed by Quality Dept. who can be contacted to request master/archived copies.

13. REFERENCES


- Tuberculosis case management and cohort review. Guidance for Health Professionals. RCN. (2012)

- Public Health England (PHE) 2014: Tuberculosis (TB) and other mycobacterial diseases: diagnosis, screening, management and data.
APPENDIX 1

Infection control
For more details, see section 1.1.2 of the NICE guideline, www.nice.org.uk/CG033NICEguideline

Known or suspected MDR TB, based on risk assessment?

Yes
Admit to negative-pressure room

No
Admit to single room

Sputum smear positive (one or more from three samples)?

Yes
Risk for MDR TB?

Yes
Does ward have immunocompromised patients?

Negative-pressure room (irrespective of HIV status). Rapid diagnostic check for rifampicin resistance

No
Single room on ward

Risk for MDR TB?

No

Yes
Does ward have immunocompromised patients?

Yes
Negative-pressure room

No
Standard ward
Use of high burden country lists for TB by WHO in the post-2015 era: Summary

During the period 1998 to 2015, the concept of a “high burden country” (HBC) became familiar and widely used in the context of TB. In 2015, three lists – for TB, TB-HIV and MDR-TB - were in use. The TB HBC list (22 countries) had remained unchanged since 2002, and the HBC lists for TB-HIV (41 countries) and MDR-TB (27 countries) had not been updated since 2009 and 2008, respectively. With 2015 marking the end of the Millennium Development Goal (MDG) era and its replacement with a set of Sustainable Development Goals (SDGs) for 2016–2030, as well as the last year of the Stop TB Strategy 2006–2015 and its replacement with the End TB Strategy 2016–2035, it was an ideal year to revisit the three HBC lists and consider their future.

A draft discussion document was developed in April 2015, circulated across the WHO TB network and to external partners for feedback and updated accordingly. An online survey to solicit input from a wide range of stakeholders was run for two weeks in May 2015. An updated version of the document including results from the survey was prepared for consideration at the June 2015 meeting of WHO Strategic and Technical Advisory Group for TB (STAG-TB), alongside a presentation at this meeting. The final version, which includes definition and explanation of the three lists to be used by WHO post-2015, was prepared in October 2015 according to the recommendations from the STAG-TB meeting and using the latest TB burden estimates published in the 2015 global TB report.

Three new HBC lists have been defined and they will be used for the period 2016–2020 (Figure 1). Each list contains 30 countries, defined as the top 20 in terms of absolute numbers of cases plus the additional 10 countries with the most severe burden in terms of case rates per capita that do not already appear in the “top 20” and that meet a minimum threshold of absolute numbers of cases (10,000 in terms of TB, and 1,000 per year for TB-HIV and MDR-TB). Each list accounts for 85–89% of the global burden. Given overlap among the lists, there are 48 countries that are in at least one list. There are 14 countries (see central diamond in the figure and the countries highlighted in bold below) that are in all three lists.

Figure 1: The three HBC lists of 30 countries each that will be used by WHO 2016–2020

The 30 TB HBCs (those in all 3 lists in bold) are: Angola, Bangladesh, Brazil, Cambodia, China, Congo, Central African Republic, DPR Korea, DR Congo, Ethiopia, India, Indonesia, Kenya, Lesotho, Liberia, Mozambique, Myanmar, Namibia, Nigeria, Pakistan, Papua New Guinea, Philippines, Russian Federation, Sierra Leone, South Africa, Thailand, the United Republic of Tanzania, Viet Nam, Zambia and Zimbabwe.

Changes compared with the lists in use in 2015 can be summarized as follows:

- TB HBC list. Two countries are no longer in the list: Afghanistan and Uganda. Ten new countries are included: Angola, Central African Republic, Congo, DPR Korea, Lesotho, Liberia, Namibia, Papua New Guinea, Sierra Leone and Zambias.
- TB-HIV list. Fourteen countries are no longer in the list: Burkina Faso, Burundi, Cambodia, Côte d’Ivoire, Djibouti, Haiti, Mali, Russian Federation, Rwanda, Sierra Leone, Sudan, Togo, Ukraine and Viet Nam. Three new countries are included: Guinea-Bissau, Liberia and Papua New Guinea.
- MDR-TB list. Six countries are no longer in the list: Armenia, Bulgaria, Estonia, Georgia, Latvia and Lithuania. Nine new countries are included: Angola, DPR Korea, Kenya, Mozambique, Papua New Guinea, Peru, Somalia, Thailand and Zimbabwe.
APPENDIX 3

Consultant Letter
If patient still in hospital

Private and confidential

Dr ........
Title ........
Address

Date........

Dear Dr [name],

Re: Patient details

Your patient (see above) was recently an inpatient at St. Peter's Hospital at the same time as a patient who has subsequently been diagnosed as having potentially infectious tuberculosis.

We do not think that your patient is at significant risk of infection and no specific action needs to be taken unless you are aware that they are unusually susceptible to infectious diseases.

In the unlikely event of your patient consulting you in the future with persistent symptoms which are consistent with the diagnosis of tuberculosis, you will wish to keep this possible exposure to the disease in mind.

Please keep a copy of this letter in the patient's notes and notify the GP of this exposure in the patient's discharge letter.

Yours sincerely,

Dr. J. Rangaiah
Consultant Medical Microbiologist / Infection Control Doctor