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Review Lead: Lead Infection Prevention & Control Nurse

NHS
Calderdale and Huddersfield
NHS Foundation Trust

Section S - Tuberculosis Policy

Version 7

Important: This document can only be considered valid when viewed on the Trust's Intranet. If this document has been printed or saved to another location, you must check that the version number on your copy matches that of the document online.

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Document Summary Table		
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Committee Name	**Committee Chair**	**Date**
Infection Prevention & Control Committee	Consultant Microbiologist / Infection Prevention & Control Doctor	July 2017
Other Stakeholders Consulted		
All members of Infection Prevention and Control Committee		July 2017
Respiratory Consultants and TB Team		July 2017

Does this document map to other Regulator requirements?	
Regulator details	*Regulator standards/numbers etc*

Document Version Control	
Version No.	*Brief details of revisions or rationale of new Trust wide policy*
7	Revision of the content to include NICE 2016 guidance, revise references and inclusion of a IPC requirements chart.
6	Amendment Jan 2017, links updated.
5	Guidance on notifying TB cases has been included in Appendix 1. Links added to various documents in the References section. A link included in Section 17- information on notifiable diseases and the form. The PHE 'Guide for risk assessment of TB exposure incidents in hospitals' has been included in Appendix 4. The Standard Operating Procedure (Appendix 6) revised and amended.
4	The MDR-TB section has been revised and moved to the main body. NICE guidelines verified and the policy cross referenced with this. The Trust Equality Statement has been updated.
3	The document has been redesigned to the Trust format and core content. Monitoring arrangements for this document have been included.

Contents

1. Introduction

Tuberculosis (TB) is a bacterial infection spread through the inhalation of the microorganism expelled from the mouth and nose of an infectious individual after close and prolonged exposure by coughing, sneezing and talking. It is caused by organisms belonging to the *Mycobacterium tuberculosis* complex, which includes: *Mycobacterium tuberculosis, Mycobecterium africanum, and Mycobacterium bovis*. Other Mycobacterial species other than those in the *Mycobacterium tuberculosis* complex are commonly referred to as "atypical" mycobacteria. They do not pose the same infection risk as TB.

TB usually affects the lungs, but can affect other parts of the body including lymph nodes, bones and brain. It develops slowly and it may take several months for symptoms to appear. The most common symptoms include:

- Shortness of breath
- Cough
- Unexplained loss of weight
- Loss of appetite
- Fever and night sweats
- Fatigue

1.1 Key points summary

- TB is a notifiable disease and suspected and confirmed cases must be notified to Public Health England (see Appendix 1).

- Patient with confirmed or suspected MDR-TB **must** be isolated in a negative pressure room.

- Not all cases of TB require isolation, only those considered infectious or with multi-drug resistant TB – take advice from the TB team about the infection status of a known case of TB.

- Key TB team contacts (office hours only) are:
  - Calderdale (CHFT) – 01422 307330/ 07824 343770/ 07795 825 070
  - Kirklees (Locala) – 07773 202567
  - Dewsbury– 0303 3309869

- FFP3 Masks are always needed to protect staff from MDR-TB. These must be fit tested to ensure the mask is suitable for the wearer (in advance of need) and fit checked at each use.

- Do not de-escalate a TB patients isolation without consulting the IPC team, microbiologist and Lead TB Consultant

2. Purpose

The purpose of this policy is to ensure that suspected or confirmed TB cases are managed in line with best practice and the risks of cross infection to patients, staff and others are minimised.

3. Definitions

- **Acid Fast Bacilli (AFB)** – mycobacteria are shaped like rods and can be seen under the microscope. Staining mycobacteria with dye and washing them with acid and can help identify TB because the rods will remain stained – AFB positive.

- **Contact tracing -** this identifies contacts of the TB case and checks for anyone who has symptoms of TB, tests for those with latent TB infection (see below) and identifies those who would benefit from BCG vaccination.

- **Extensively drug resistant TB (XDR TB)** MDR TB **and** resistant to any fluoroquinolone and at least one of three injectable second- line drugs (*i.e* amikacin, kanamycin or capreomycin).

- **Latent TB infection (LTBI) -** is when a person has the bacteria that cause TB in their body but it is not causing disease i.e. the bacteria are dormant. It is possible that the bacteria may cause disease in the future.

- **Multi- drug resistant TB (MDR- TB) -** *M tuberculosis* resistant to isoniazid **and** rifampicin; with or without resistance to other anti-TB drugs.

- **Pulmonary tuberculosis -** a case of TB involving the lungs (including laryngeal TB).

- **Negative pressure isolation rooms -** used for patients with an airborne transmitted infection. Airflow is pulled from the corridor into the patient's room and is vented to the outside.

- **Respiratory Isolation** - is a set of measures to prevent the spread of an airborne infection. This includes isolation and, if applicable, the use of masks.

4. Duties

As a registered healthcare provider, CHFT has a duty to comply with the Health & Safety Act (1974), (HSE 2003), COSHH (HSE 2005) and the Health and Social

Care Act (DH 2008) code of practice on the prevention and control of infections and related guidance.

The Chief Executive is responsible for ensuring that there are effective infection control arrangements in the Trust.

The Lead TB Consultant is responsible for the clinical management of adult TB cases.

The TB teams support individuals affected by TB in line with NICE guidelines and Standard Operating Procedures

Consultation and Communication with Stakeholders

The Infection Prevention & Control Committee (IPCC), TB Clinical Leads and the Infection Prevention & Control Team (IPCT) comment on and contributed to this policy. The policy is ratified at the IPCC and approved by the Executive Board (EB).

5. Management of TB in hospital

Most **confirmed** TB patients are managed as outpatients, supported by the TB Team, and are generally **no longer infectious following 2 weeks of effective treatment**. However, it may be necessary for a patient to be admitted to hospital while they are infectious, either due to their TB infection or for another reasons.

Where TB is **suspected** or is considered a **differential diagnosis**, the patient will need to be managed as a TB case until laboratory tests or alternate diagnosis rules out TB.

5.1 Risk assessment – is the patient infectious?

Risk assessment identifies the risk associated with the patients TB infection and therefore what measures need to be taken to prevent transmission within the hospital.

Initial assessment should be completed without delay to assess for the risk of multi-drug resistance (MDR or XDR). If this risk assessment cannot be done expeditiously, then MDR-TB precautions should be applied until confirmed otherwise:

1. History of prior TB drug treatment; prior TB treatment failure
2. Contact with a known case of drug-resistant TB

3. Birth in a foreign country, particularly high-incidence countries as defined by Public Health England on its website: *High incidence rate is estimated incidence rate of 40 per 100,000 or greater.
4. HIV infection
5. Residence in London

A. **MDR-tuberculosis** if any of the above circumstances are known to apply at, or discovered after, the time of patient admission. **NOTE: any patient co-infected with MDR-TB and HIV MUST be transferred to LEEDS.**

Patients **without** any identified risk factors for drug resistance will fall into the following categories.

B. **Clinically and/or radiologically suspected pulmonary TB** but sputum smear results awaited (on the basis of three samples – see below).

C. **Sputum or bronchoscopy smear (AFB) positive tuberculosis** on the basis of one or more samples. These patients should be considered **significantly** infectious. Any sputum smear positive (AFB) should be assumed to be *M. tuberculosis* until confirmed otherwise.

D. **Smear negative sputum status** is on the basis of three sputum samples collected at least 8 hours apart, with at least one being an early morning sample. Each sputum sample should be at least 5 mls, and obtained from a deep productive cough (saliva and naso-pharyngeal secretions are not sputum). Patients who are sputum smear negative normally present a reduced risk of infection to others in hospital. Such patients **may** be managed on a standard ward following standard IP&C precautions, but only if there are no immunocompromised patients present and there is no risk of MDR TB. This should be discussed and agreed with the IP&C Team.

E. Non-respiratory tuberculosis is not infectious to others, but may require isolation for some procedures

5.2 Diagnosis - sample taking

- Three sputum samples collected at least 8 hours apart, with at least one being an early morning sample.

- Sputum sample should be at least 5 mls, and obtained from a deep productive cough (saliva and naso-pharyngeal secretions are not sputum).

- Sputum and bronchoalveolar lavage (BAL) specimens from known or suspected TB patients should be labelled **INFECTION RISK** and **SHOULD**

NOT UNDER ANY CIRCUMSTANCES BE TRANSPORTED BY ANY AIR TUBE SYSTEM.

* Where MDR-TB is suspected, rapid nucleic acid amplification tests for rifampicin resistance on primary specimens should be requested.

5.3 Prevention of transmission

The following section summarises the IPC measures for each of the categories above and describes each element in more detail.

		A – MDRTB confirmed or suspected	**B – suspected pulmonary TB not MDR**	**C – Smear positive**	**D – smear negative**	**E – non-pulmonary**
ISOLATION	Isolation room – negative pressure	✓		✓		
	Standard Isolation room		✓		IPC	IPC
MASKS	Mask FFP3 – staff entering room and until leaving the room	✓				
	Mask FFP3 - staff performing aerosolising procedures*	✓	✓	✓	IPC	IPC
	Mask Surgical – during cares in close proximity <3 feet		✓	✓		
	Mask Surgical - patient on transfer between depts	✓	✓	✓		
	Mask FFP3 – for visitors	✓				
	Visitors – assess for TB prior to visiting	✓	✓	✓		
	Visitors – restricted to close contacts	✓	✓	✓		
	Infection site waste managed as infectious (e.g. sputum, wound etc)	✓	✓	✓	✓	✓

IPC discuss options with IPC

* e.g bronchoscopy, chest physiotherapy, sputum induction, intubation.

5.4 Isolation of patients with confirmed or suspected TB

When in hospital, patients in categories A, B or C, including those initially sputum smear negative but sputum smear positive after bronchoscopy, must be admitted directly into an isolation room. **For MDR-TB this must be the first available negative pressure room preferably on a respiratory ward. For suspected TB this should be into a side room. For a smear positive TB this should be a negative pressure room** (see Appendix 2 for locations).

Isolation must be continued until the patient is declared non-infectious by the Consultant microbiologist and TB Consultant or is discharged.

- All staff are required to follow CHFT Isolation policy (Section K) when caring for patients within isolation.
- Staff contact should be kept to a reasonable minimum without compromising patient care.
- The door must be closed **at all times** except for necessary access.
- Patients in isolation should not visit communal or public areas of the ward or hospital, nor should they visit or pass through areas that may contain immunosuppressed patients.
- All clinical waste should be disposed of via the infectious waste stream. A lidded orange waste bin is to be available outside the isolation room.
- Where required, a supply of FFP3 masks must be available outside the isolation room.
- When TB is confirmed or suspected (even if considered non-infectious), cough inducing procedures and production of sputum must NEVER be performed on the open ward or bay. They should be performed in the isolation room or a treatment room with the door closed.
- Patients with MDR-TB take **absolute priority** in the allocation of the negative pressure rooms. In order for the negative pressure to work correctly the isolation room door, en-suite door and window must remain closed.
    - Before the patient is admitted to the negative pressure room the ventilation and pressure record reading is to be documented in the patient's EPR record and advice given as to whether the room is suitable for use. This information can be obtained from Engie. Throughout the

patient's stay, the negative pressure reading should be documented on a daily basis within the patient's notes.

- Out of hours / weekends the Site Coordinator or Duty Matron are able to arrange the switching of a side room to negative pressure room.
- If it is necessary for the patient to go to Theatre, the Theatre pressure should be set to neutral.

5.5 DOL (deprivation of Liberty)

Patients with inadequately controlled TB may pose a significant infection risk to others, especially if they are sputum smear positive, and noncompliant with prescribed oral therapy, or have MDR-TB. The isolation of such patients is paramount to protect other individuals. In **very occasional** circumstances a Court Order restricting a patient's location/movements may be required in the interests of the wider public health. Any individual CHFT patient case where such legal restrictions might be required should be discussed with Public Health England. The IPCT should also be informed.

5.6 Termination of Isolation

The decision to terminate isolation is made by the supervising physician in collaboration with the Infection Prevention and Control Team and the Consultant Microbiologist only.

Uncomplicated (sensitive) pulmonary TB will become non-infectious after two weeks of compliant anti-TB therapy. The results of sputum cultures and the response to treatment will be taken into account.

In the circumstances outlined below, three negative sputum smear examinations on successive days must be confirmed before removing a patient from isolation:

- If the patient was particularly infectious (infection transmitted to more than 10% of close household and/or casual contacts).
- If MDR-TB is possible or confirmed
- If the patient is to be transferred to an open ward containing immunocompromised or HIV positive patients.

5.7 Visitors

Visitors should be limited to those who have already been in close contact with the patient before diagnosis (such as persons living in the same house).

In addition:

- **Visitors** of children should be isolated from other patients until they have been screened and pronounced non-infectious. One of the visitors may be the source of the child's TB and pose a significant infection risk to other patients on the ward.

- Children under two years of age should **not** visit unless the children have had significant contact with the patient and are being followed up as a "close contact".

- MDR-TB patient visitors who refuse to wear masks on the grounds that they have been, or may continue to be, exposed outside the hospital should not be prevented from visiting but such refusal should be documented.

- MDR-TB patient close contacts must be assessed by the TB team for possible active tuberculosis and declared non-infectious before being allowed to visit. Visitors who have yet to be assessed as above, and who have a persistent cough should be asked not to visit until declared clear as above.

5.8 Personal protective equipment including the use of Masks

Standard Infection Prevention and Control Precautions (Infection Control Policies & Guidelines, Section C) must be maintained for all patients e.g. hand hygiene, single use gloves and aprons where appropriate.

Masks are used to protect staff from inhalation of TB mycobacteria or when worn by the patient with TB, to contain the infection if transit between hospital areas is required. The requirements depend upon the type of TB being managed.

- **FFP 3 Masks** are recommended for staff when:

    - Exposure to large numbers *of M. tuberculosis* bacilli is possible, e.g. bronchoscopy and aerosol generating procedures, including chest physiotherapy, sputum induction etc.
    - Prolonged (>8hrs/shift) high dependency care of a coughing TB patient
    - Entering the isolation room of an MDR TB patient

The patient should wear a surgical mask if they need to attend another department.

All clinical staff for in-patient areas should ensure they are 'fit tested' for an FFP 3 masks **prior to use**. Further information about fit testing can be found on the intranet.

If FFP 3 masks are urgently required, a very small stock is available in the Infection Prevention and Control Emergency Cupboard**. At the earliest opportunity the ward must ensure they have ordered and have an adequate supply of FFP3 masks.**

5.9 Respiratory hygiene/cough etiquette:

Patients are to be advised on respiratory etiquette as part of their care.

- to use tissues to cover their mouth and nose when coughing/sneezing to contain respiratory secretions.
- to dispose of tissues into an appropriate waste receptacle for them prior to discarding into an orange clinical waste bag.
- to perform hand hygiene after contact with respiratory secretions and contaminated items.

5.10 Operating Theatres & Respiratory / Invasive Intervention

- Infectious TB patients (confirmed or suspected) should be placed last on the operating/scoping list. Consideration should be given as to whether the procedure can be deferred (especially if involving a general anaesthetic) until the patient is deemed “non-infectious”.
- The operating theatre should be cleaned as normal following the list.
- If patients with confirmed or suspected pulmonary TB require assisted ventilation in either ICU or theatre, the ventilator must be fitted with a bacterial filter.
- If patients require suction via an endotracheal tube or tracheostomy a closed suction system must be used. All respiratory equipment (endotracheal tubes, ventilator circuits etc.) must be single use.
- Bronchoscopes should be decontaminated according to local policy for TB.

5.11 Discharge or transfer of known or suspected TB

Consideration must be given to any infection risk the patient may pose on discharge. The discharge plan should be made in consultation with the TB team

supporting the patient through treatment as well as those involved in the patients' management in hospital.

For cases of MDR-TB a Consultant Microbiologist, Public Health England CCDC, and the IPCT should be involved in the decision.

- The Inter healthcare Infection Control Transfer Form must be completed for all patients being permanently transferred to another area (IPC Policy for Bed Management and Movement of Patients section W).

- The isolation room requires a terminal clean and curtain change (amber) using a chlorine based disinfectant (e.g. Tristel).

5.12 Death of a patient with TB

If a patient with confirmed or suspected TB **of any type and from any body site** dies, the mortuary must be informed and the patient placed in a cadaver bag with INFECTION RISK stickers attached to the mortuary labels (Care of the Deceased Body, Section P).

For notification after death, please see Section B Notifiable Diseases Policy.

6. Notification

All cases of confirmed or suspected TB infection are notifiable as described below, including following death (including post mortem diagnoses).

Notification is required for:

1. Culture confirmed case due to *M. tuberculosis* complex (including *M. tuberculosis, M. bovis, M. africanum or M.microti).*
2. In the absence of culture confirmation, a case that meets the following criteria:
   a clinician's judgement that the patient's clinical and/or radiological signs and/or symptoms are compatible with tuberculosis,
   AND
   a clinician's decision to treat the patient with a full course of anti-TB therapy.

- Notification also applies to UK residents who are diagnosed abroad but continue with their anti-TB therapy in the UK and to non-UK residents diagnosed in the UK, even if anti-TB therapy is not initiated in the UK.

- Locally the Lead TB Consultant will notify all cases of TB started on treatment. Please see Appendix 1 for more detailed guidance on notifying TB cases.

- For sputum smear positive patients especially if they have been in contact with children or others at a high risk of acquiring TB, the **TB nurses should also be informed promptly**. This does NOT remove the need for statutory notification, but enables efficient case management and contact tracing.

- **MDR-TB additional notification requirements -** The IPCT, Lead TB Consultant and if appropriate the TB physician who specialises in MDR-TB at St. James University Hospital, Leeds, must be informed of the admission as soon as possible. In addition, the BTS MDRTB Forum are notified by the Lead TB Consultant.

- If a staff member is suspected to have acquired TB during the course of their work at CHFT, this should be reported to the Health and Safety Executive as a disease identified under the Reporting of Injuries, Disease and Dangerous Occurrences Regulations (RIDDOR).

7. Staff Screening/Immunity

Staff must comply with Occupational Health Service procedures for TB. In particular:

- Attending Occupational Health if they have been requested to do so: for example.

- For TB screening/immunisation on commencement of employment
  - If they have been working clinically in countries with a high TB incidence (WHO definition >40 cases per hundred thousand)
  - If advised screening is required following exposure to an infectious TB case at work.
  - If they have reason to believe they have been exposed to TB.

- Staff who do not have evidence of protection/immunity are advised to avoid contact with known or suspected cases of TB.

- Staff who have suppressed immunity MUST avoid contact with known or suspected cases of TB.

- Managers should ensure that staff comply with the above requirements.

- If unsure of their status, staff can refer themselves to CHFT Occupational Health Service.

  Any CHFT staff member who develop symptoms of TB are to seek medical advice from their GP and report to Occupational Health Services as soon as possible.

7.1 Staff contacts of a TB patient

Most occupational contacts are considered to be casual contacts. Further examination is only necessary if:

- The index case is smear positive and the contact is unusually susceptible, e.g. immunocompromised.
- The index case is considered highly infectious as shown by transmission to more than 10% of close contacts.

8.0 Management of Outbreaks & Incidents

Where an infectious patient has been nursed with other patients in a ward area for more than 8 hours a risk assessment must be carried out. Public Health England (PHE) must be involved in the risk assessment process (Appendix 4)

The Infection Prevention & Control Doctor (IPCD) has overall responsibility for co-ordinating the management of an outbreak of TB or an incident involving TB. The IPCD will co-ordinate immediate action to:

- Prevent or reduce the risk of further cases.

- Arrange collection and recording of microbiological and epidemiological information as required.

- Convene an urgent Outbreak Control Team (OCT) meeting.

- With support from the IPCT, the Ward Manager will collate a list of patient contacts.
- Initial risk assessment would take place between an IPCN, the patient's clinical team and the CHFT Microbiologist. This list is then passed onto the TB team to contact patients.

- The IPCT or TB Specialist Nurses will advise ward or work area manager to collate a list of staff potentially exposed to the patient with undiagnosed pulmonary tuberculosis. It is important the list includes all health care workers

e.g physiotherapists. The list should include the nature of the exposure (e.g. during CPR) but does not need to include the susceptibility of individual health care workers.

- Information about the signs and symptoms of TB and the action to be taken if these occur, to be cascaded to staff via the Ward Manager, Matron and the TB Team.

Any required follow-up of contacts (including provision of "Inform and Advise" information) will be done via the CHFT Chest Clinic**.**

For MDR-TB, contacts should have an IGRA (interferon gamma release assay) test.

9. Tuberculosis Management Contacts:

Lead TB Consultant's Secretary	Tel: 01422 224144
Paediatric cases: Consultant	Tel: 01422 224687
Consultant's secretary:	Tel: 01422 224450

TB teams

Huddersfield Patients	
TB Team	Tel: 01484 344322
TB Nurse Specialist (in office hours)	Mob: 07970 754219
TB Nurse Specialist (in office hours)	Mob: 07534 265793
Calderdale Patients	
TB Team	Tel: 01422 307307
TB Nurse Specialist	Mob: 07824 343770

Public Health England

Consultant in Communicable Disease Control	
West Yorkshire HPU, Leeds	Tel: 0113 3860300

Occupational Health Department

Calderdale Royal Hospital	Tel: 01422 222037

10. Training and Implementation

IPC precautions required when caring for all patients is included in the 'Right from the Start' mandatory training sessions which are to be attended by all staff commencing employment with CHFT who will work in a clinical area. The IPCT also delivers targeted training sessions to key personnel / areas including Link Infection Prevention and Control Practitioners in departments and wards across the Trust who will then cascade the information to appropriate colleagues within their area / departments.

11. Trust Equalities Statement

Calderdale and Huddersfield NHS Foundation Trust aims to design and implement services, policies and measures that meet the diverse needs of our service, population and workforce, ensuring that none are placed at a disadvantage over others. We therefore aim to ensure that in both employment and services no individual is discriminated against by reason of their gender, gender reassignment, race, disability, age, sexual orientation, religion or religious/philosophical belief, marital status or civil partnerships.

This policy has been through the Trust's EQUIP (Equality Impact Assessment Process) to assess the effects that it is likely to have on people from different protected groups, as defined in the Equality Act 2010.

12. Process for Monitoring Compliance/Effectiveness

If a patient cannot be isolated appropriately, this must be reported in Datix by the clinical staff and communicated to the IPCT.

Records of non-availability of single rooms compliance is monitored by the Divisions.

Incidents and outbreaks are monitored by the Infection Prevention and Control Team and where there is staff involvement by the Occupational Health Service and reported via the Infection Control Committee.

13. References and Further Reading

PHE (2016) Tuberculosis in England 2016 report (presenting data to the end of 2015)

CDC. Notice to readers: revised definition of extensively drug-resistant tuberculosis. *MMWR* 2006; 55:1176.

Collaborative Tuberculosis Strategy for England 2015-2020. Public Health England, NHS England. London. 2015. The Collaborative Tuberculosis Strategy for England 2015-2020 can be accessed via the link:
https://www.gov.uk/government/publications/collaborative-tuberculosis-strategy-for-england

Health and Safety Executive. A guide to the Reporting of Injuries, Disease and Dangerous Occurrences Regulations 1995. HSE Reprinted with amendments 2009.

Public Health England TB Strategy Monitoring Indicators Tool:
http://fingertips.phe.org.uk/profile/tb-monitoring

NICE (2016) Tuberculosis: NICE guideline.

Ventilation in Healthcare Premises: Please follow the link below for more information about ventilation in healthcare premises HTM 03-01
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/144029/HTM_03-01_Part_A.pdf

UNIQUE IDENTIFIER NO: C-67-2013
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Review Lead: Lead Infection Prevention & Control Nurse

Appendix 1

Public Health England

Guidance on notifying Tuberculosis (TB) cases

Statutory notification of Tuberculosis (TB)	**All forms of active TB are statutorily notifiable[1].** The notification of cases prompts timely risk assessment for appropriate clinical and public health responses to cases and their contacts. The information provided through notification is used for epidemiological surveillance to control TB and to identify cases for cohort review.
What to notify	**All new tuberculosis cases that meet one of the two following case definitions** Culture confirmed case due to *M. tuberculosis* complex (including *M. tuberculosis, M. bovis, M. africanum or M.microti).* In the absence of culture confirmation, a case that meets the following criteria: • a clinician's judgement that the patient's clinical and/or radiological signs and/or symptoms are compatible with tuberculosis, AND • a clinician's decision to treat the patient with a full course of anti-TB therapy. The requirement to notify applies if there is reasonable ground for suspecting that a patient has died with, but not necessarily from, active TB (including post mortem diagnoses) Notification requirement applies also to UK residents who are diagnosed abroad but continue with their anti-TB therapy in the UK and to non-UK residents diagnosed in the UK, even if anti-TB therapy is not initiated in the UK
What NOT to notify	• mycobacterium cases not belonging to the *M. tuberculosis* complex • latent TB infection cases receiving anti TB chemoprophylaxis • cases with disseminated disease resulting from BCG
Mechanism for notification	Statutory notification for TB cases is made through the Enhanced TB Surveillance system (ETS) (or the London TB Register, LTBR, in London). Both systems are accessible online for timely notification. For those without online access, paper forms exist and can be requested from the local PHE Health Protection Team.
When to notify	• TB cases should be notified within 3 working days of making or suspecting the diagnosis • notification should not be delayed if full case information (including laboratory confirmation) is not available, as additional information can be added later • a case can be subsequently de-notified if an alternative diagnosis or contamination is confirmed • if a case requires immediate public health action, the local PHE Health Protection Team should be contacted as soon as possible, and always within 24 hours • any urgent verbal notification must be followed up through ETS/LTBR
Roles & responsibilities	**Registered Medical Practitioner (RMP)** There is a legal requirement for NHS & private sector Registered Medical Practitioners (RMPs) to notify, where they suspect a case of TB. **Specialist Nurses** TB/respiratory/infectious disease specialist nurses should liaise with the appropriate RMP to ensure that cases are notified in a timely manner.
Mechanisms to improve notification	• move from paper-based to electronic notification through ETS/LTBR • local agreement for designated nurses to notify cases on behalf of the RMP • microbiologists / pathologists to inform the local TB team of positive results received from non-TB specialists to ensure notification occurs

PHE publications gateway number: 2014370

1. Health Protection Legislation (England) Guidance 2010: http://webarchive.nationalarchives.gov.uk/20130107105354/http:/www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@ps/documents/digitalasset/dh_114589.pdf

For queries relating to this guidance, please contact: tbsection@phe.gov.uk

Issue by TB section (Surinder Tamne): Sept 2014. Review date: TB section (Surinder Tamne): Sept 2015

Appendix 2

Location of Negative Pressure Rooms

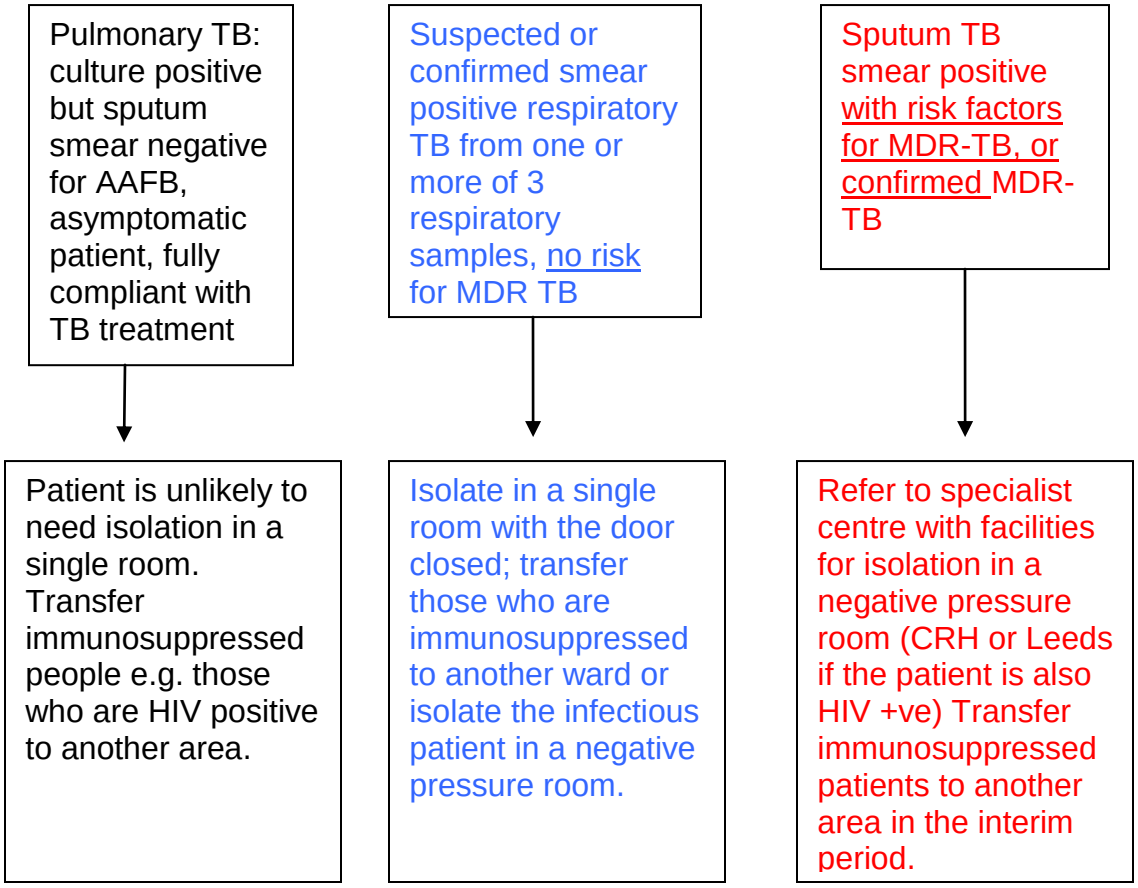
NB: There are **NO** negative pressure rooms at HRI. If patients require negative pressure facilities, arrangements must be made to transfer the patient to CRH as soon as possible.

Ward 1	**-**	**1D – Room 074**
Ward 2	**-**	**2C – Room 073** **2D – Room 072**
Ward 3C	**-**	**Room 005**
Ward 4	**-**	**4C – Room 071, 075** **4D – Room 094**
Ward 5	**-**	**5C – Rooms 068, 054, 072, 058** **5D – Rooms 073, 069**
Ward 6	**-**	**6C – Room 074** **6D – Room 075**
Ward 7	**-**	**7C – Room 072** **7D – Room 073**
Ward 8	**-**	**8C – Room 074** **8D – Room 073**
SCBU	**-**	**Rooms 015, 016**
ICU/HDU	**-**	**Rooms 006, 013, 015, 025**
CCU	**-**	**Room 013**

Total number of negative pressure rooms = 26

Appendix 3

Assessment of Isolation Requirements (applies to pulmonary TB only). (as per NICE Guidelines March 2011)



Guide for risk assessment of TB exposure incidents in hospitals

Produced in Yorkshire & The Humber by a joint HPA and NHS Working Group, Final draft, September 2012

Introduction

Who is this for?

This guide is intended for anyone involved in the risk assessment and management of TB exposure incidents in a hospital setting.

Background

Healthcare settings are the most common environment for non-household TB exposure incidents. A recent retrospective review of TB incidents in schools, prisons and hospital settings in 2010 found that out of these three settings, most incidents occurred in hospital settings[1]. However, the yield of positives per 100 people screened was significantly lower in the hospital setting compared to the other settings suggesting that there may be inconsistencies with contact screening. Also anecdotal evidence from the Yorkshire and Humber region suggested that there were instances of a lack of clarity in decision making. As a result this tool was developed by West Yorkshire Health Protection Unit to help improve the management of TB exposure incidents in hospital. TB exposure incidents are any incidents where a potential for TB transmission is identified within hospital setting which may necessitate public health action.

This tool was developed based on a literature review, current best practice guidance and feedback from experts in the field of TB from the Health Protection Agency, nationally, and the Yorkshire and Humber TB professionals network. The literature review focussed on the risk and risk factors associated with hospital TB exposure incidents in high resource, low TB burden countries. Research in this area is sparse, and there is a distinct lack of good quality epidemiological studies, probably due to the fact it is a relatively rare event which makes cohort studies impractical and case control studies difficult due to identifying an appropriate control group. It is also difficult to measure the precise impact of individual and environmental control measures as many were introduced simultaneously. Most of the literature on nosocomial transmission in low incidence settings is based on the risk of patient-to-healthcare worker transmission and not patient-to-patient transmission. In fact, this literature review only identified one systematic review of the risk factors associated with TB exposure incidents and this was based on a neonatal population[2].

The tool focuses on the factors that are associated with transmission namely: the infectiousness of the case, duration of exposure and characteristics of those exposed to the case. These factors are the same whatever the setting, but what makes the hospital setting distinct from a community setting are: the potential for a concentration of susceptible patients; the exposure opportunities posed by certain types of procedures and the opportunities for unwittingly sharing a closed environment (ward) with an infectious case of TB.

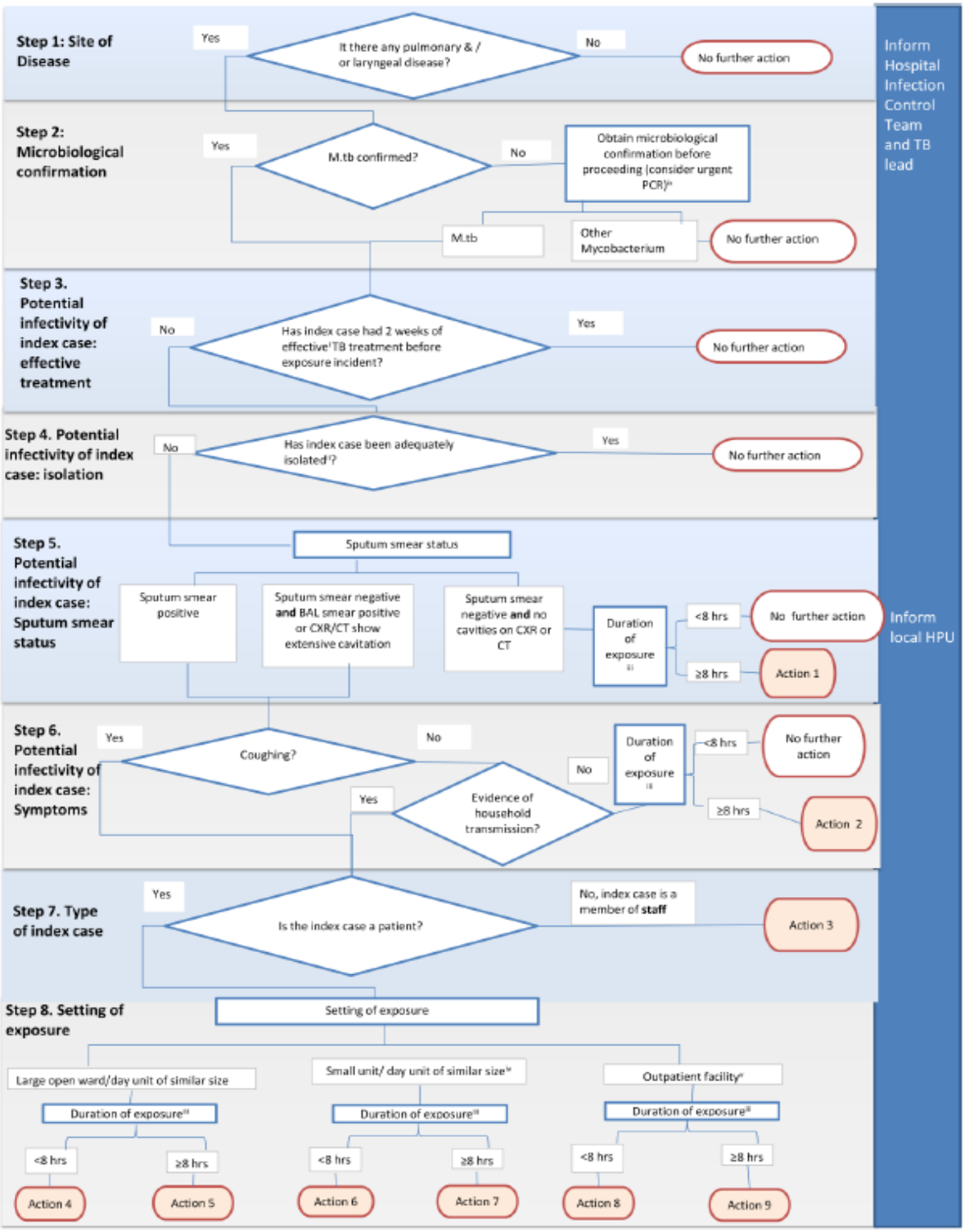
NICE guidance: Contact tracing: cases in hospital inpatients[3]

- Following diagnosis of TB in a hospital inpatient, a risk assessment should be undertaken. This should take into account:
  - of the degree of infectivity of the index case;
  - the length of time before the infectious patient was isolated;
  - whether other patients are unusually susceptible to infection
  - the proximity of contact.
- Contact tracing and testing should be carried out only for patients for whom the risk is regarded as significant.
- Patients should be regarded as at risk of infection if they **spent more than 8 hours in the same bay as an inpatient with sputum smear-positive TB who had a cough**. The risk should be documented in the contact's clinical notes, for the attention of the contact's consultant. The contact should be given 'inform and advise' information, and their GP should be informed.
- **If patients were exposed to a patient with sputum smear-positive TB for long enough to be equivalent to household contacts (as determined by the risk assessment), OR an exposed patient is known to be particularly susceptible to infection, they should be managed as equivalent to household contacts.**
- If an inpatient with sputum smear-positive TB is found to have MDR TB, or if exposed patients are HIV-positive, contact tracing should be in line with The Interdepartmental Working Group on Tuberculosis guidelines[4].
- In cases of doubt when planning contact tracing after diagnosing sputum smear-positive TB in an inpatient, further advice should be sought from the regional or national Health Protection Agency and/or people experienced in the field.

Disclaimer: This tool is still in development. It is intended to be used to assist the risk assessment process for a hospital TB exposure incident. However there may be some complicated circumstances of TB exposure in a hospital setting where use of this tool may not be appropriate.

Feedback: Developing the guide has been an iterative process. It is still a working document and comments would be gratefully received. Please direct comments to Dr Ebere Okereke, TB lead Yorkshire & Humber Region: ebere.okereke@hpa.org.uk

Guide


Step 1: Site of Disease
Yes
It there any pulmonary & / or laryngeal disease?
No
No further action
Step 2: Microbiological confirmation
Yes
M.tb confirmed?
No
Obtain microbiological confirmation before proceeding (consider urgent PCR)[v]
M.tb
Other Mycobacterium
No further action
Step 3. Potential infectivity of index case: effective treatment
No
Has index case had 2 weeks of effective[i] TB treatment before exposure incident?
Yes
No further action
Step 4. Potential infectivity of index case: isolation
No
Has index case been adequately isolated[i]?
Yes
No further action
Step 5. Potential infectivity of index case: Sputum smear status
Sputum smear status
Sputum smear positive
Sputum smear negative and BAL smear positive or CXR/CT show extensive cavitation
Sputum smear negative and no cavities on CXR or CT
Duration of exposure[iii]
<8 hrs
No further action
≥8 hrs
Action 1
Step 6. Potential infectivity of index case: Symptoms
Yes
Coughing?
No
Yes
Evidence of household transmission?
No
Duration of exposure[iii]
<8 hrs
No further action
≥8 hrs
Action 2
Step 7. Type of index case
Yes
Is the index case a patient?
No, index case is a member of staff
Action 3
Step 8. Setting of exposure
Setting of exposure
Large open ward/day unit of similar size
Small unit/ day unit of similar size[iv]
Outpatient facility[v]
Duration of exposure[iii]
Duration of exposure[iii]
Duration of exposure[iii]
<8 hrs
≥8 hrs
<8 hrs
≥8 hrs
<8 hrs
≥8 hrs
Action 4
Action 5
Action 6
Action 7
Action 8
Action 9
Inform Hospital Infection Control Team and TB lead
Inform local HPU

Action		
1	a)	Consider inform and advice to vulnerable (in groups 1[vi] and 2[vii]), close contacts on the ward.
2	a)	Inform and advice only to all patients and staff on the ward.
	b)	Consider screening any vulnerable contacts in group 1[vi] on the ward.
	c)	Consider screening HCWs involved in aerosol generating procedures without appropriate PPE.
3	a)	Screen all patients for whom the HCW is named HCW and for whom he/she provided close clinical care[viii].
	b)	Consider screening for vulnerable patients in groups 1 [vi] and 2[vii] on the ward where index case worked.
	c)	Screen staff who are regularly on the same shifts with index case.
	d)	Inform and advice to rest of staff on the ward.
	e)	Inform and advice to patients who have been on the ward for more than 8 hours cumulatively where index case worked.
4	a)	Consider screening vulnerable contacts.
	b)	Inform and advice to patients in closest 2 beds on either side of the index case and staff.
	c)	Screen staff involved in aerosol generating procedures without appropriate PPE.
5	a)	Screen all patients in closest 2 beds on either side of the index case.
	b)	Consider screening all vulnerable contacts in groups 1[vi] and 2[vii] on the ward.
	c)	Screen staff involved in close clinical care [viii] of index case.
	d)	Inform and advice to rest of staff and patients on the ward.
6	a)	Consider screening vulnerable contacts in groups 1 [vi] and 2[vii].
	b)	Inform and advice to patients in unit / bay and staff.
	c)	Screen staff involved in aerosol generating procedures without appropriate PPE.
7	a)	Screen all patients and contacts in the unit / bay.
	b)	Screen staff involved in close clinical care[viii] of index case.
	c)	Inform and advice to rest of staff on the unit.
8	a)	Consider screening vulnerable contacts in groups 1[vi] and 2[vii] who regularly attended the same outpatient clinic on same dates as index case.
	b)	Inform and advice to patients who regularly attended the same outpatient clinic at same dates as index case and staff.
	c)	Screen staff involved in aerosol generating procedures without appropriate PPE.
9	a)	Screen all vulnerable contacts in groups 1[vi] and 2[vii] who regularly attended the same outpatient clinic on the same dates and times as the index case.
	b)	Inform and advice to other patients who attended the same outpatient clinic on the same dates and times as index case.
	c)	Screen staff involved in repeated close prolonged care of index case or involved in aerosol generating procedures without appropriate PPE.
	d)	Inform and advice to rest of the staff

Consider – discretionary based on local circumstances

Footnotes

[i.] Effective TB treatment: Standard 4 drug regime where disease is known to be fully sensitive disease from standard culture-based drug sensitively testing or PCR-based tests or where there is no reason to suspect drug-resistant disease AND patient adherence to treatment is not in doubt. In the case of MDR/XDR TB, 3 x smear negative sputum samples are required to establish effectiveness of treatment.

[ii.] Adequate isolation: en-suite single occupancy room or negative pressure room for MDR TB and appropriate PPE for any staff procedures for the duration of the infectious period

[iii.] Duration of exposure refers to cumulative exposure over one week period. For identifying contacts, consider the infectious period for the index case – onset of symptoms for symptomatic index case or 4 weeks prior to diagnosis for asymptomatic index case. [5]

[iv.] Small unit: Include ICU/HDU/NICU/ renal dialysis unit, ward bay with 8 or less beds. If patients in ICU-type setting are on closed ventilation system, screening may not be required

[v.] In outpatient settings, it is unlikely that patients attending outpatient clinics would achieve up to 8 hours cumulative exposure except in day units such as day case surgery units, dialysis and other outpatient treatment units such as might be used for transfusions and chemotherapy.

[vi.] Group 1: High risk individuals in any of these groups:

- HIV positive
- Child aged 5 year or under (including neonates)
- Injecting drug users and alcohol misusers
- Recipient of solid organ transplant
- Receiving anti-tumour necrosis factor(TNF) - alpha treatment
- Jejunoileal bypass
- Haematological malignancy
- On high corticosteroid therapy (>15mg of prednisolone or equivalents/day for >2-4 weeks)
- Other immunosuppressive treatment such as chemotherapy for cancer or transplants
- Silicosis

[vii.] Group 2: Medium risk individuals in any of these groups:

- Chronic renal failure or receiving haemodialysis,
- Gastrectomy
- Diabetes Mellitus
- Head and neck cancer
- Significantly underweight
- Radiographic findings consistent with prior TB
- Chronic malabsorption syndrome

[viii.] Close nursing care involving regular or prolonged close contact within 3 feet/ 1 metre of the patient or staff who are involved in aerosol producing procedures without appropriate PPE.

[ix.] In exceptional circumstances where microbiological confirmation is not possible, if an experienced TB specialist is satisfied that the diagnosis is TB, for purposes of risk assessment, treat as if microbiologically confirmed TB.

Action – additional information

Inform and advice letters (samples to be included, under development)

- These should contain a clear explanation of the degree of risk and actions to take e.g. – speak to GP
- Letters should be copied to the GP and hospital consultant in charge of any continuing care for the patient and a copy put in the patient's hospital records
- For staff, letters should be placed in occupational health records
- The letters should be signed by the Hospital Infection Control Doctor or TB lead

Screening

Where screening is indicated:

- **Step 1: Check for active disease:**
  - Symptom check: If still inpatient, do this on the ward. If discharged, do by communication with GP or hospital consultant in charge of their care
  - Chest x-ray: Arrange a CXR no sooner than 6 weeks after exposure. For high risk patients in Groups 1 & 2, consider repeat CXR at 3 – 6 months
- **Step 2: Testing for Latent TB infection:**
  - Tests for Latent TB infection should be considered for patients for whom TB chemoprophylaxis would be considered appropriate. This would include contacts aged 35 years or less, or at very high risk of TB (group 1[4]) or healthcare workers.
  - If using a tuberculin skin test (Mantoux), positive tests should be confirmed with IGRA test (QuantiFERON / T-Spot-TB). IGRA test confirmation of positive Mantoux may not be necessary for children under 5.
  - For children aged 2 years and under: Follow NICE guidance for close contacts (NICE, 2011)
- **Screening HCW:** Occupational health services should be involved in any screening of HCWs.

MDR/XDR TB

Although these cases may not be more infectious than fully drug sensitive TB cases, the consequences of transmission could be more significant. Therefore, consideration should be given to sending out inform and advice letters to a wider group of contacts.

Extended contact screening

Factors that may lead to a consideration of extended contact screening may include:

- Evidence of extensive transmission to those screened
- Evidence of transmission to others outside the groups screened

Suspicion of wider transmission should be verified where possible using TB strain typing. The decision to extend screening should be made with an incident management team including regional and national experts.

Acronyms

BAL:	Broncho-alveolar lavage	CXR:	Chest X-Ray	CT:	Computed tomography
HCW:	Healthcare worker	HDU:	High Dependency Unit	ICU:	Intensive Care Unit
MDR:	Multi Drug Resistant	NICU:	Neonatal Intensive Care Unit	PCR:	Polymerase Chain Reaction
PPE:	Personal Protective Equipment	XDR:	eXtensively Drug Resistant		

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[1] Dabke G, Barnicle T, and Morton S. Retrospective Review of TB incidents in Hospitals, Schools and Prisons – 2010 HPA. March 2012
[2] Millership SE, Anderson C, Cummans AJ, Bracebridge S and Abudskar I. The risk to infants from nosocomial exposure to tuberculosis. Paediatric Infectious Disease Journal. Volume 28. Number 10 October 2009.
[3] NICE Guidance. National Collaborating Centre for Chronic Conditions. Tuberculosis: clinical diagnosis and management of tuberculosis, and measures for its prevention and control. London: Royal College of Physicians, 2006
[4] Prevention and Control of Tuberculosis in the United Kingdom: The UK Guidance on the Prevention and Control of Transmission of 1. HIV-related Tuberculosis 2. Drug-resistant, including Multiple Drug-resistant Tuberculosis. The Interdepartmental Working Group on Tuberculosis September 1998
[5] Centers for Disease Control and Prevention. Guidelines for the investigation of contacts of persons with infectious tuberculosis; recommendations from the National Tuberculosis Controllers Association and CDC, and Guidelines for using the QuantiFERON®-TB Gold test for detecting *Mycobacterium tuberculosis* infection, United States. MMWR 2005;54(No. RR-15)

Appendix 5

Patients Who Have Come into Contact with Index Case

Index case- Initials and Unit Number…….
Ward/Department…….
Admission Date……..
Discharge Date…….

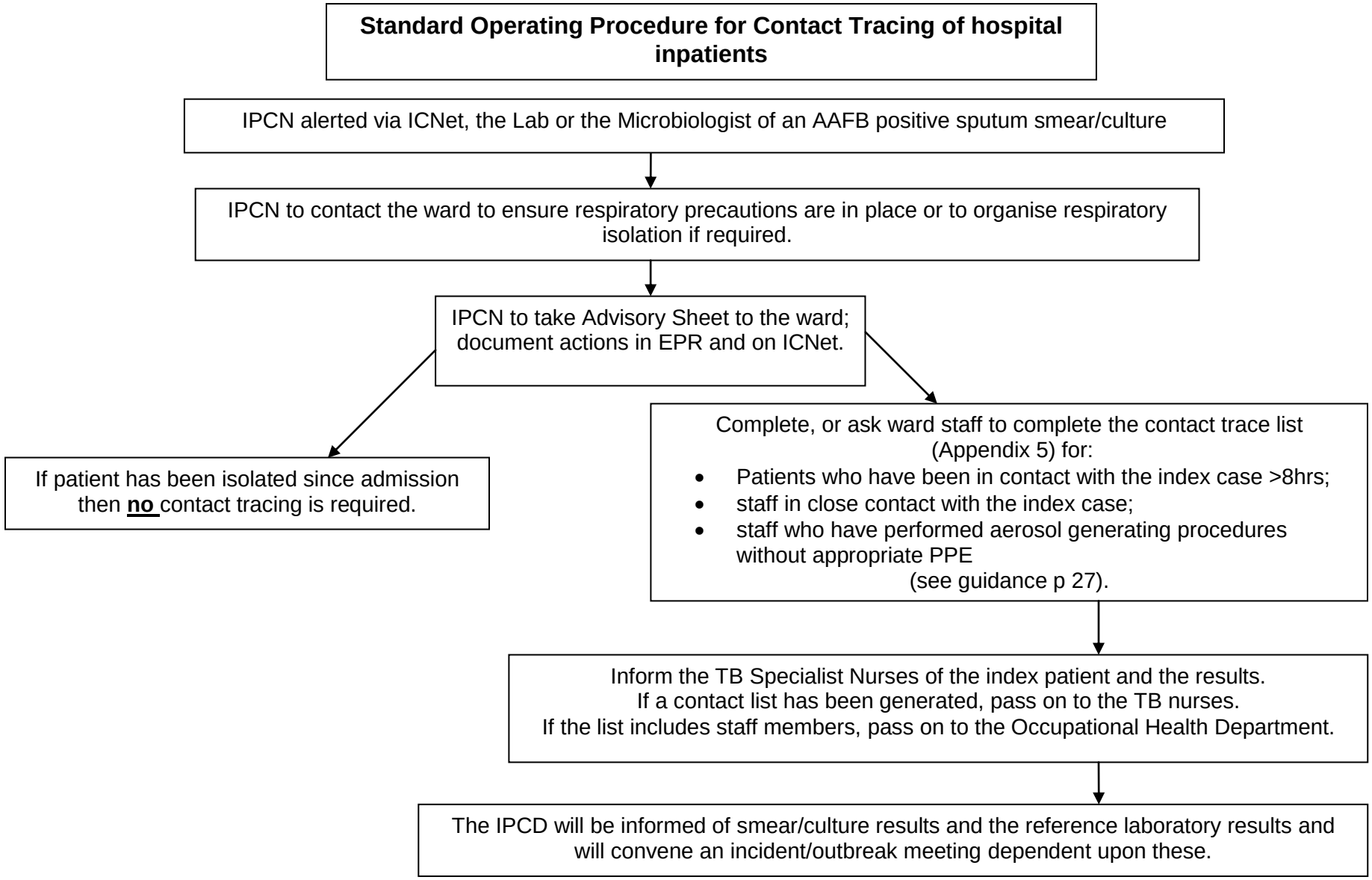
Patients Name	Date of Admission	Patients Address	Unit Number	DOB	Consultant	Date of Discharge	Discharged To

Staff Who Have Come into Contact with Index Case

Index case- Initials and Unit Number…….
Ward/Department…….
Admission Date……..
Discharge Date…….

Staff member name/DOB	Date of Contact	Nature of exposure	PPE worn	

Appendix 6


Standard Operating Procedure for Contact Tracing of hospital inpatients
IPCN alerted via ICNet, the Lab or the Microbiologist of an AAFB positive sputum smear/culture
IPCN to contact the ward to ensure respiratory precautions are in place or to organise respiratory isolation if required.
IPCN to take Advisory Sheet to the ward; document actions in EPR and on ICNet.
If patient has been isolated since admission then no contact tracing is required.
Complete, or ask ward staff to complete the contact trace list (Appendix 5) for:
Patients who have been in contact with the index case >8hrs;
staff in close contact with the index case;
staff who have performed aerosol generating procedures without appropriate PPE
(see guidance p 27).
Inform the TB Specialist Nurses of the index patient and the results.
If a contact list has been generated, pass on to the TB nurses.
If the list includes staff members, pass on to the Occupational Health Department.
The IPCD will be informed of smear/culture results and the reference laboratory results and will convene an incident/outbreak meeting dependent upon these.