

Livewell Southwest

Management of Tuberculosis

Version No 3:5

Review: March 2020

Notice to staff using a paper copy of this guidance

The policies and procedures page of Intranet holds the most recent version of this guidance. Staff must ensure they are using the most recent guidance.

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References/sources of information	1. Control and prevention of tuberculosis in the United Kingdom: Code of Practice 2000 BTS Guidelines at http://thorax.bmj.com/content/55/11/887.full.pdf 2. National Institute for Health and Clinical Excellence Clinical Guideline 33: Tuberculosis 13/ January 2016 at

<https://www.nice.org.uk/guidance/ng33/resources/tuberculosis-1837390683589>

3. **Tuberculosis 1** Clinical diagnosis and management of 2 tuberculosis, and measures for its 3 prevention and control

<https://www.nice.org.uk/guidance/cg117/documents/tuberculosis-interferon-gamma-tests-update-partial-update2>

4. Control and Prevention of tuberculosis in the United Kingdom: Code of practice 2000. Thorax 2000; 55: 887-901.

5. Centres for Disease Control and Prevention. Controlling Tuberculosis in the United States. Recommendations from the American Thoracic Society, CDC, and the Infectious Diseases Society of America. Morbidity and MAORTALITY Weekly Report 2005; 54: 1-82

6. The Green Book Immunisation against infectious diseases Section 32 Tuberculosis at media.dh.gov.uk/network/211/files/2012/09/Green-Book-updated-140313.pdf

7. Public Health England Tuberculosis (TB) screening and early detection methods, for professionals working with at-risk populations in the UK at <https://www.gov.uk/guidance/tuberculosis-screening>

NHS Choices Tuberculosis information available at <http://www.nhs.uk/Conditions/Tuberculosis/Pages/Introduction.aspx>

8. PHE tuberculosis information leaflet available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213843/dh_124062.pdf

9. LSW Control of Substances Hazardous to Health (COSHH) Policy

10. LSW Risk Management Strategy (including Risk Assessment)

11. LSW Health and Safety Policy

12. Health and Safety Executive (HSE) Biological Agents: Managing the risks in Laboratories and Healthcare premises. First published 05/05. Sourced 13/02/17 <http://www.hse.gov.uk/biosafety/biologagents.pdf>

	13. Immunisation of healthcare and laboratory staff https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/147882/Green-Book-Chapter-12.pdf
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Author contact details	By post: Local Care Centre Mount Gould Hospital, 200 Mount Gould Road, Plymouth, Devon. PL4 7PY. Tel: 0845 155 8085, Fax: 01752 272522 (LCC Reception).

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2		Feb. 2006	Dr P Jenks	Nothing substantive.
3	Update	Feb. 2008	Dr P Jenks	Nothing substantive
3:1	Reviewed	Nov 2010	Inf Control Nurse Lead	Reviewed, no changes made.
3:2	Reviewed	Dec 2011	PRG	Review date extended, no other changes.
V3:3	Reviewed	July 2012	Director of Infection Prevention & Control.	Changes to reflect new organisation, changing NHS Plymouth to LSW and logo.
V3:4	Reviewed	August 2014	Infection Control Nurse	Small additional comments
V3:5	Reviewed	February 2017	Infection Prevention and Control Manager	Change of policy title. Taken information from the existing policy, to make flow charts to make the policy easy to read for staff.

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Management of Tuberculosis

Introduction

Tuberculosis is an infection caused by the *Mycobacterium tuberculosis* group of bacteria. Incidence in the UK remains high compared with other Western European countries. It usually affects the respiratory tract but less commonly, TB infections develop in areas outside the lungs, such as the lymph nodes (small glands that form part of the immune system), the bones and joints, the digestive system, the bladder and reproductive system, and the nervous system (brain and nerves).

Infectious TB is a bacterial infection spread through inhaling tiny droplets from of an infected person. The bacteria are released into the air when a person with TB of the lungs or throat coughs, sneezes, speaks or sings, these bacteria can stay in the air for several hours, depending on the environment. People who breathe in the air containing these bacteria can become infected. Passing on the infection can sometimes happen with people such as family members or co-workers who spend time every day with someone with TB. TB is a serious disease that can be fatal if not treated.

Latent TB infection means that bacilli are in the body but the person is not sick as the bacilli are not active, TB disease may develop in the future.

Extrapulmonary TB Less commonly, TB infections develop in areas outside the lungs, such as the lymph nodes (small glands that form part of the immune system), the bones and joints, the digestive system, the bladder and reproductive system, and the nervous system (brain and nerves). This is known as extrapulmonary TB. Extrapulmonary TB is more common in people with a weakened immune system, such as those with HIV. Symptoms of extrapulmonary TB vary, but can include:

- persistently swollen glands
- abdominal (tummy) pain
- pain and loss of movement in an affected bone or joint
- confusion
- a persistent headache
- seizures (fits)

Symptoms of TB The general symptoms of TB disease include feelings of sickness, weakness, weight loss, fever and night sweats.

Symptoms may also include:

- A Cough that lasts 3 weeks or longer
- Pain in the chest
- Coughing up blood or sputum (phlegm from deep inside the lungs)
- Weakness or fatigue
- Weight loss

- No appetite
- Chills

Those at risk of developing active TB include:

- The elderly or frail
- People with HIV
- Those who are malnourished
- Those who have diabetes
- Those who take steroids or immunosuppressant medication
- Those who have chronic kidney disease, receive haemodialysis, or silicosis
- Those who are alcohol dependant or IV drug user
- Children younger than five years old
- People who have had solid organ transplantation
- People who have had a gastrectomy or jejunioileal bypass
- Are receiving anti-TNF therapy (e.g. infliximab, etanercept and adalimumab).

1. Purpose

1.1 This document defines Livewell Southwest (LSW) policy and procedures for the recognition and management of patients with suspected or proven tuberculosis and, for prevention of cross-infection in the hospital. Its aim is to ensure that patients infected with TB receive effective and appropriate care. This policy is based upon an assessment of risk and a review of the best available evidence. It forms a part of the LSW Infection Control Manual and has been prepared jointly by the Plymouth Hospital Trust's Chest Physicians and Occupational Health and Wellbeing Physician

1.2 This document addresses the LSW management of Health and Safety at Work, Control of Substances Hazardous to Health, Code of Practice for the Prevention of Healthcare Associated Infections and the, in accordance with relevant legislation.

2. Summary

2.1 Tuberculosis (TB) is a communicable disease with the potential for transmission in hospital. The need for procedures to recognise, treat and prevent hospital-based transmission is emphasised by the appearance of drug-resistant strains and an expansion in the HIV infected population for whom TB is particularly dangerous. Tuberculosis (TB), whether confirmed or suspected, is a notifiable disease (ref COSHH Policy page 16) The attending physician must complete a Notification Form and submit it to the Consultant in Communicable Disease Control. Notification forms are available on line <https://www.gov.uk/government/publications/notifiable-diseases-form-for-registered-medical-practitioners>

RIDDOR Reporting is required:

- If a nurse catches TB after nursing a patient with TB.
- An infected healthcare / community worker or patient incidents necessitating consideration of look back investigations (TB Contact Tracing)

If a case is subsequently shown not to be tuberculosis, de notification preferably by letter should be carried out.

3. Responsibilities

- Clinical management will be based upon best available evidence and guidelines, in particular those issued by the British Thoracic Society and the National Institute for Health and Clinical Excellence Guidance NG33 (NICE). All cases must be managed by or in collaboration with a Consultant Chest Physician, Children should be managed either by a paediatrician with special experience and training in tuberculosis, or in conjunction with a suitably trained physician.
- Appropriate steps to trace contacts will be taken when cases are identified.
- All staff should be aware that the incidence of TB is increasing locally and nationally. The possibility of TB should be considered in all those with persistent cough or compatible chest X-ray changes. Sputum-inducing procedures should only be undertaken in a negative pressure environment.
- Any patient who is suspected to have drug-resistant TB must be transferred to a negative pressure isolation room. LSW do not have these facilities and arrangements must be made for the patient to be transferred to Derriford Hospital.
- All LSW staff are responsible for complying with COSHH, Risk Management and Health and safety policies.

3.1 Hospital Doctor

- Complete a clinical risk assessment with the Ward Manager (Risk Management Strategy Appendix B and C: pages 21, 23, 24 Can be found on the intranet).
- Alert laboratory and submit appropriate samples.
- Consult Consultant in Respiratory Medicine.
- Inform Infection Control Doctor/Nurse or Microbiologist and notify the CCDC
- Instigate isolation procedures and ensure all ward staff are aware of the diagnosis and risks. Staff should wear full protective PPE including a FFP3 respirator mask.

3.2 Ward manager

- Complete a clinical risk assessment (Risk Management Strategy Appendix B and C: pages 21 , 23 , 24, Can be found on the intranet)
- Follow the guidance in the policy flow chart appendices.

- Ensure local compliance with the Infection Control policies and procedures.
- Ensure resources are available for healthcare workers to implement effective IPC measures, and, are aware of the location, contents, and have access to the local emergency Respiratory Outbreak Box (ROB) if required.
- To ensure all staff have carried out essential PPE training (available on the intranet).

3.3 a) All Health and Social Care workers

- Ensure local compliance with the Infection Control policies and procedures
- Responsible for carrying out effective IPC measures
- Follow the guidance in the policy flow charts.
- To minimise risk of cross transmission
- To have carried out essential PPE training, (available on line).
- Aware of the location and contents of the local emergency Respiratory Outbreak Box (ROB)
- Inform Infection Prevention and Control of concerns, or, if out of hours, contact the on call Co-ordinator for advice.

3.4 Chest Physician and TB Nurse Specialist

- Co-ordinate treatment and follow up of all cases of TB either as the primary attending physician or in collaboration with others.
- Advise on isolation of infectious patients.
- The TB Nurse Specialist will work closely with the Chest Physician to identify and manage contacts.

3.5 Microbiologist

When a patient is found to have laboratory evidence of tuberculosis the On-call doctor should:-

- Inform the clinician, CCDC and chest clinic. This must be by telephone in certain circumstances (e.g. MDR-TB).
- On receipt of susceptibility results from the reference laboratory, inform the ward clinician if the strain is resistant to any of the tested agents.

3.6 Infection Prevention and Control Team

- Liaise directly with nursing and medical staff caring for the patient and advise on isolation and Infection Control practices.
- If there has been potential for hospital transmission the Infection Control Team will liaise with the Occupational Health and Wellbeing Department.

3.7 Pharmacist

- Ensure that the Chest Clinic is aware of all patients in hospital being given anti-tuberculous chemotherapy.
- Liaise with the IPCT.

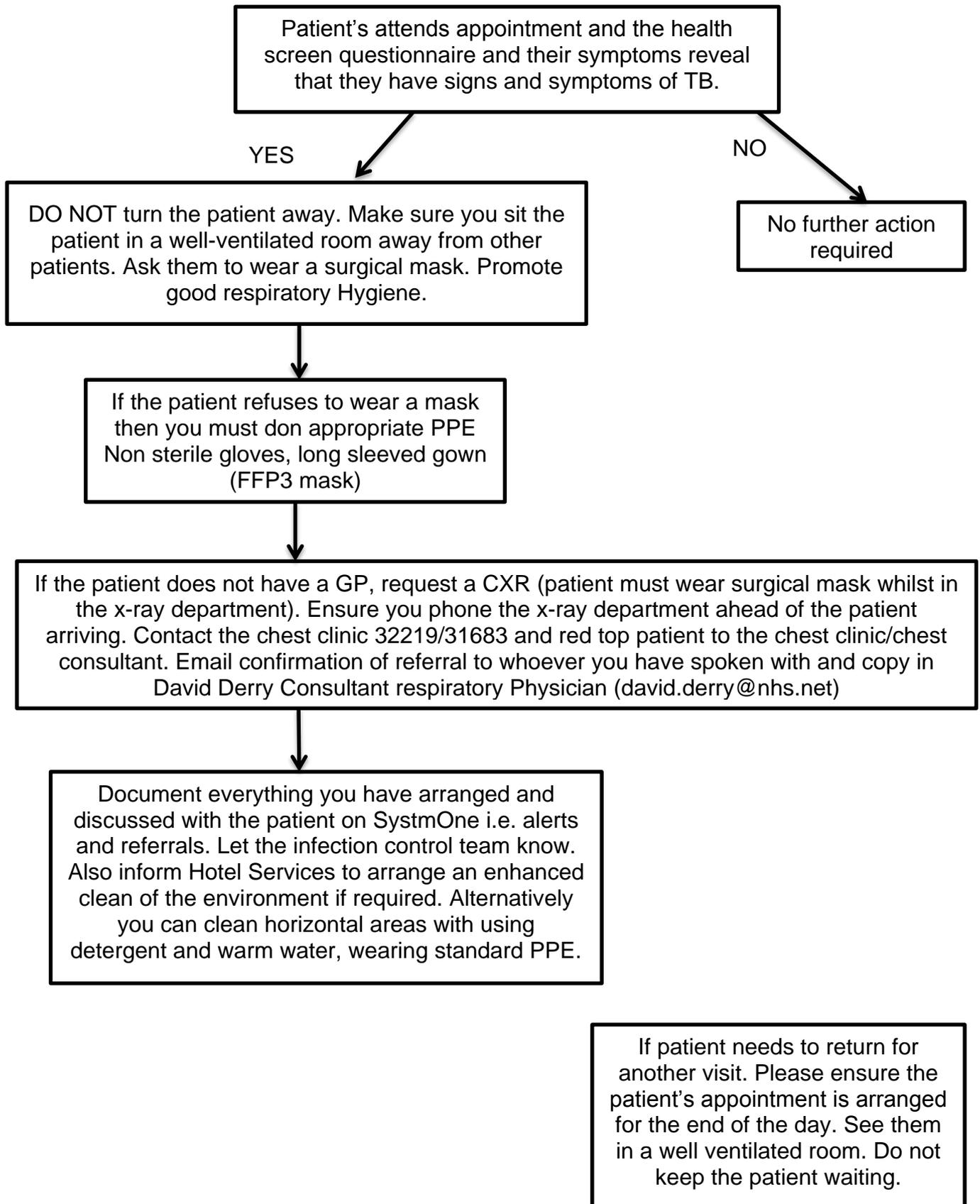
3.8 Occupational Health and Wellbeing

- Staff will be screened prior to employment and offered BCG if necessary.
- Staff will be followed up if identified as a TB contact
- Advice and guidance on Occupational Health aspects of TB control is included in the NICE guidelines for the prevention and control of TB and the Immunisation and Screening Policy.

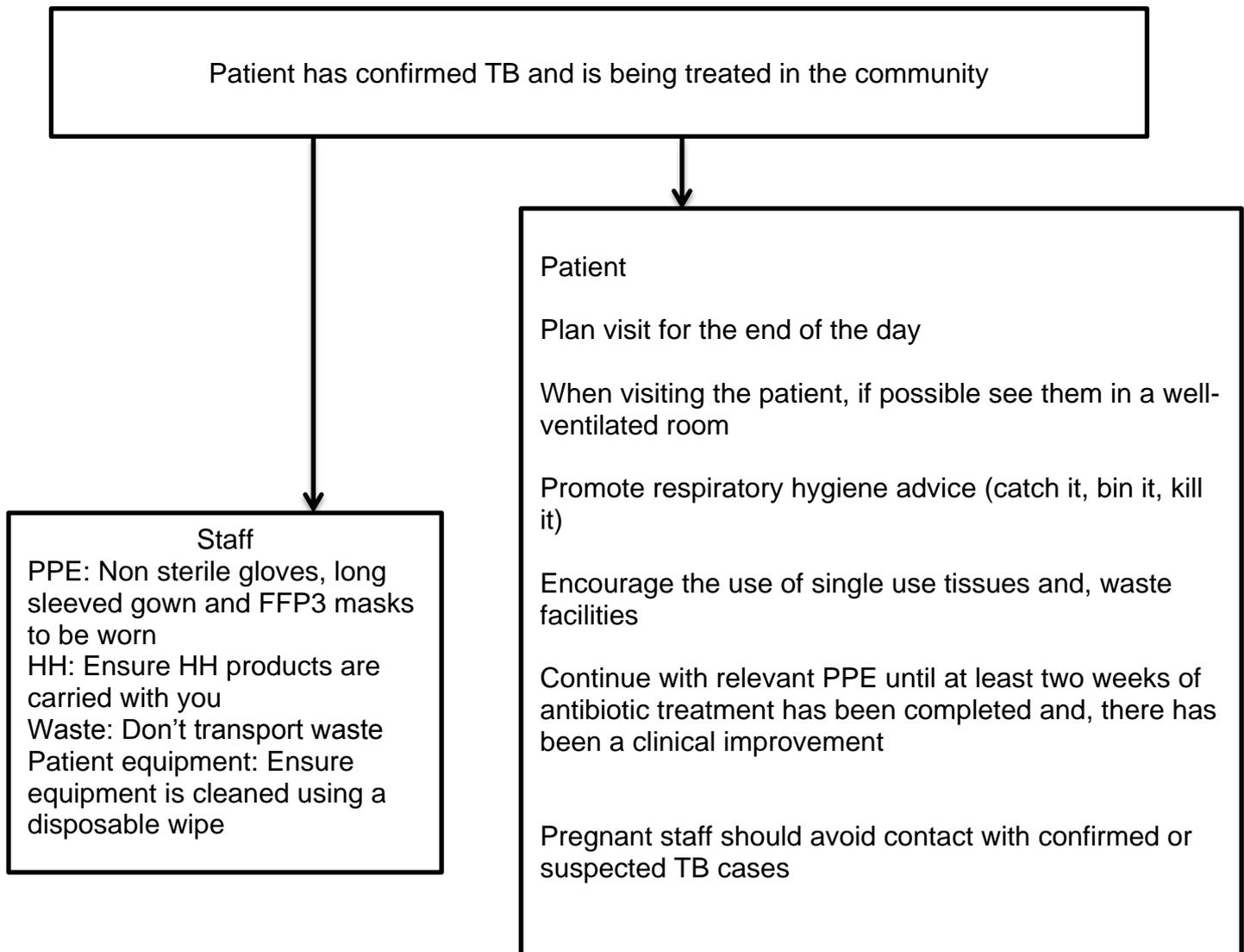
3.9 Risk Management Team

- Support the Ward Manager with the completion of the Clinical Risk Assessment (Risk Management Strategy Appendix B and C: pages 21, 23, 24, Can be found on the intranet).

4. Management of a Patient in an outpatient department



5. Management of a Patient in the Community



6. Management of an In-patient when Multi-Drug Resistant (MDR) TB is NOT suspected

When Multi-Drug Resistant (MDR) TB is not suspected, isolate in a single room with the door closed at all times.

Staff

PPE: Non sterile gloves, apron and FFP3 masks to be worn

Dedicated patient equipment

Instigate twice daily cleaning and daily isolation review care plan

Medical Staff

The TB nurse specialist and David Derry Consultant respiratory Physician must be consulted for patient management.

Posterior/anterior chest-x-ray
Thorax CT scan should be considered if pulmonary TB suspected
3 early morning sputum sample for 3 days (AAFB, Microscopy & mycobacterial culture)
May need referral for bronchoscopy
Treatment may be started whilst waiting for test results on clinical grounds

Patient

Do not leave room without permission

Promote respiratory hygiene advice (catch it, bin it, kill it)

Tissues and waste disposal facilities must be available

Hand hygiene facilities must be available

Request the patient wears a surgical face mask when leaving the isolation room

Children should be managed either by a paediatrician with special experience and training in tuberculosis, or in conjunction with a suitably trained physician

Ensure the patient isolation will continue until at least two weeks of antibiotic treatment, has been completed and there has been a clinical improvement

OR

The patient has 3 consecutive sputum smear negative samples and are asymptomatic

Restrict visitors who have not been previously in close contact, except family members who have had extreme exposure and minimise patient movement to other departments

Pregnant staff should avoid contact with confirmed or suspected TB cases

7. Management of an In-patient when Multi-Drug Resistant (MDR) TB is suspected or Confirmed

When Multi-Drug Resistant (MDR) TB is suspected or confirmed, isolate in a single room with the door closed at all times and liaise with Derriford IPCT to make arrangement for patient transfer to a negative pressure room (32115). The patient must not leave the room

Medical staff

The TB nurse specialist and David Derry Consultant respiratory Physician must be consulted for patient management

Staff

PPE: Non sterile gloves, long sleeved gown and FFP3 masks to be worn

Dedicated patient equipment

Patient

Transfer the patient to a negative pressure isolation room. Arrangements must be made with Derriford IPCT and the ambulance service

Promote respiratory hygiene advice (catch it, bin it, kill it)

Tissues and waste disposal facilities must be available

Hand hygiene facilities must be available

Request the patient wears a surgical face mask when leaving the isolation room

Children should be managed either by a paediatrician with special experience and training in tuberculosis, or in conjunction with a suitably trained physician

Pregnant staff should avoid contact with confirmed or suspected TB cases

8. Laboratory Diagnosis

8.1 Tuberculin and Gamma Interferon Testing

Gamma interferon testing (e.g. Quantiferon, Elispot) should only be performed after consultation with a Consultant Chest Physician or on-call microbiologist

- The TB Specialist Nurse Practitioner in the Chest Clinic performs tuberculin testing.

8.2 Chest Radiographs

- A typical chest x-ray would have shadowing in the upper lobes of the lungs though bronchopneumonia, consolidation, pleural/pericardial effusions and diffuse changes may all be due to TB. Active disease is more likely if **cavitation is present**.

8.3 Aerosol generating procedures

Under no circumstances should aerosol-generating procedures, such as sputum induction, use of a nebuliser or bronchoscopy, be carried out on a patient who may have TB in an open ward or poorly ventilated area. Sputum induction should be avoided altogether in a patient with suspected TB. Such procedures should be performed in an appropriate negative pressure room or using an enclosing device with adequate local exhaust ventilation.

8.4 Data on request form

Plymouth Microbiology Laboratory **does NOT routinely** examine sputum samples for TB unless requested to do so. It is essential that clinical information is included with the request and the suspicion of TB is clearly indicated.

- Urgent staining for Mycobacteria can only be done after discussion with a Microbiologist.
- All samples should have all patient and clinical details completed, be labelled with a 'Danger of Infection' sticker and be double-bagged, bagged separately from other samples, even from the same patient.

8.5 Laboratory investigations

- Microscopy for TB is performed daily for any sample considered appropriate (excluding urine samples as microscopy is unhelpful due to frequent presence of non pathogenic Mycobacteria). Positive findings will be telephoned to the requester.

- Although copies of positive reports will be sent to the Chest Clinic and CCDC it remains a legal duty of the diagnosing Doctor to inform these individuals.
- All samples for Mycobacterial culture are incubated for 8 weeks and examined for evidence of growth weekly. A significant culture will be reported to the requester and the isolate referred for identification and sensitivity testing.
- Rapid molecular diagnostic tests (e.g. PCR) are available for detection of mycobacteria and resistance to rifampicin for some clinical specimens in certain cases. Contact an On-call microbiologist for advice.

9. Personal Protective Equipment Location (Respiratory Outbreak Box)

Location
LCC Central Store (Basement)
Cumberland MIU
Lee Mill (Infection Control Cupboard)
Glenbourne (Hotel Services Manager)
Syrena (Clinic room)
Hotel Services Delivery Store (Mount Gould)
ASR Team MG (Clinic room)
Kingsbridge Hospital
Tavistock Hospital

9.1 Respiratory Mask fitting

Respirator Masks will only offer protection if fitted correctly and COSHH (Control of Substances Hazardous to Health) 2002 details the requirement for fit testing and supplies guidance as to how to carry this out. In particular, employers must provide 'suitable personal protective equipment' if they are unable to prevent or control (to below recommended levels) the exposure of employees to hazardous substances. Key individuals involved in training or working in clinical areas are trained to teach others the correct way to fit respirator masks following the manufacturer's advice. Individual members of staff must ensure they know the correct way to fit respirator masks before using them. Further information is available from the IPCT.

Staff must be mask fit tested for FFP3 respiratory masks with evidence that a qualitative fit test has been carried out, to ensure an appropriate fit has been achieved before using them. Qualitative fit test documentation must be sent to the training department for recording on staff's ESR.

9.2 Discontinuation of isolation

Appropriate isolation must be maintained for a minimum of the first 14 days of effective chemotherapy and until the physician in charge of their care, in consultation with the Chest Physician (if different) and Microbiologist, decides that the patient is no longer infectious or they are discharged home.

- **The decision to discontinue isolation must be clearly documented.**

10. Environmental cleaning

Routine environmental and equipment cleaning should adhere to basic hygiene standards and are as set out in the policy Decontamination (Cleaning & Disinfection) Guidelines and Procedures Policy

10.1 Continuing and post discharge management

- The management of tuberculosis is complex and lengthy, should come under the supervision of a chest physician and should be according to NICE and the current British Thoracic Society guidelines.
- Incorrect treatment and failure to comply with treatment are the main causes of relapse and of the emergence of drug resistant organisms. Ensuring compliance with treatment requires close collaboration between the Chest Clinic and community healthcare workers. This is particularly important for patients with MDR-TB.
- Home treatment exposes family contacts to a negligible additional risk of infection after treatment is commenced.

10.2 Discharge from hospital

It is essential that the Chest Clinic is made aware if impending discharge from hospital in order that arrangements may be made for appropriate continued care and supervision.

11. Prevention of spread

11.1 Contact tracing- Patients

Control of TB is dependent on the efficient tracing of the contacts of the index case, the purpose of which is to:

1. Identify and treat the source of infection, which resulted in disease in the index case.
2. Identify and treat infected contacts and protect those at risk of infection.

Contact tracing will be performed in line with NICE guidance . To aid contact tracing, wards should ensure that they keep a list of where on the ward individual patients have been nursed.

Contact tracing is carried out by and is the responsibility of the Specialist TB Respiratory Nurses, with assistance from the IPCT and Occupational Health and Wellbeing.

The investigation of contacts is by tuberculin testing, gamma interferon testing and/or chest x-ray as appropriate. This is carried out by the TB specialist.

Following diagnosis of TB in a hospital inpatient, a risk assessment should be undertaken. This should take into account:

- 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 contacts clinical notes, for the attention of the contacts consultant. The contact should be given 'Information and advice, 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 house hold contacts (as determined by the risk assessment), or an exposed patient known to be particularly susceptible to infection, they should be managed as equivalent to house hold 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.

11.2 Contacts in hospital – Staff

Following diagnosis of TB in a hospital inpatient, a risk assessment of the degree of exposure and risk of transmission should be undertaken.

The IPCT will arrange for the relevant clinical area to produce a list of staff exposed to TB in the light of the risk assessment.

Occupational Health and Wellbeing Department will:

- Document event in Occupational Health and Wellbeing records.
- Send a symptom questionnaire and explanatory letter those staff. Those with suspicious symptoms will be seen in the Occupational Health and Wellbeing Department.

- Identify staff without documented evidence of protection and invite such staff to attend the Occupational Health and Wellbeing Department.
- The Occupational Health and Wellbeing Department nurse or doctor will see staff with symptoms suggestive of TB. If they believe the staff may have TB, they should refer them to the designated chest physician. The chest physician or a member of their team should arrange the chest x-ray and obtain sputum for microbiology and culture. The member of staff should remain off work until these results are available.

A member of the chest clinic team should communicate the results to the Occupational Health and Wellbeing Department nurse or doctor who will advise on fitness for work.

11.3 Contacts in the community

The CCDC is responsible for contact tracing in the community. This will be initiated on notification of infection and in general is delegated to the Specialist TB Respiratory Nurse.

All policies are required to be electronically signed by the Lead Director. Proof of the electronic signature is stored in the policies database.

The Lead Director approves this document and any attached appendices. For operational policies this will be the Locality Manager.

The Executive signature is subject to the understanding that the policy owner has followed the organisation process for policy Ratification.

Signed: Director of Clinical Practice and Development

Date: 1st March 2017