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<th>Document Title:</th>
<th>PREVENTING TRANSMISSION OF TUBERCULOSIS IN HOSPITAL</th>
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<tbody>
<tr>
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<tr>
<td>Author/Contact: (Asset Administrator)</td>
<td>Jennie Keane, TB Clinical Nurse Specialist; Emma Dowling, Lead Infection Prevention MSE; Judith Holdsworth, Infection Prevention Lead Nurse</td>
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<td>Wendy Matthews, Director of Nursing</td>
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**Related Trust Policies** (to be read in conjunction with)

- 04071 Standard Infection Prevention
- 08021 Isolation Patient Transfer
- 18016 Staff HIV AIDS and Management of TB Screening for Healthcare workers policies

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### Document Review History:

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<td>27th August 2019</td>
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**Appendix 1** Tuberculosis (TB) Pathway

**Appendix 2** Paediatric Tuberculosis (TB) / Latent (LTBI) Pathway

**Appendix 3** Flowchart for patients presenting to a & e with known / suspected pulmonary tuberculosis

**Appendix 4** South East, South West & Mid Essex Directly Observed Therapy (DOT)

**Appendix 5** Case management for patients with active TB

**Appendix 6** TB Service

**Appendix 7** Preliminary Equality Analysis
1. Introduction


1.2 The Joint Tuberculosis Committee of the British Thoracic Society produced an updated code of practice for the control and prevention of tuberculosis in the United Kingdom in 2000. This code of practice takes into account evidence in relation to control of infection in hospitals, protection of health care workers, contact tracing, multidrug-resistant disease and the possible effects of HIV on tuberculosis. In 1998 the Interdepartmental Working Group on Tuberculosis produced guidance on the control and transmission of HIV related tuberculosis and multiple drug resistant tuberculosis. The guidance given in this document is taken from these two codes of practice.

1.3 Since the publication of the previous British Thoracic Society guidelines in 1994 the epidemiology of tuberculosis in Britain has continued to change with increases in the number of notifications, mostly in large urban areas. While the rates of tuberculosis in HIV cases have continued to rise, the rate for drug resistant tuberculosis has not risen but resistance remains an important issue.

2. Purpose

2.1 To provide Mid Essex Hospital Services staff with a policy to provide practical guidance for the control and prevention of tuberculosis (TB) within our facilities following NICE Guidelines (2016).

3. Definitions

<table>
<thead>
<tr>
<th>TERM</th>
<th>DEFINITION</th>
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<tbody>
<tr>
<td>AFB</td>
<td>Acid fast bacilli</td>
</tr>
<tr>
<td>AFB (acid fast bacilli)</td>
<td>A type of bacillus that resists decolorizing by acid after a stain. Examples include M tuberculosis</td>
</tr>
<tr>
<td>BCG</td>
<td>Bacille Calmette Guérin (vaccine)</td>
</tr>
<tr>
<td>CCDC</td>
<td>Consultant for Communicable Disease Control</td>
</tr>
<tr>
<td>Closed TB</td>
<td>The term used to describe pulmonary TB where acid fast bacilli are not seen in the sputum. This term also sometimes applied to TB at other body sites, e.g.: lymph nodes.</td>
</tr>
<tr>
<td>Culture positive</td>
<td>Organisms are isolated from a specimen, thereby confirming the diagnosis. This may take several weeks</td>
</tr>
<tr>
<td>DIPC</td>
<td>The Director for Infection Prevention and Control</td>
</tr>
<tr>
<td>DOT</td>
<td>Directly Observed Therapy</td>
</tr>
<tr>
<td>ED</td>
<td>Emergency Department</td>
</tr>
<tr>
<td>FFP3</td>
<td>Fine Filter Particulate 3</td>
</tr>
<tr>
<td>HEPA</td>
<td>High-Efficiency Particulate Air</td>
</tr>
<tr>
<td>IPCC</td>
<td>Infection Prevention and Control Committee</td>
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</tbody>
</table>
### Open pulmonary TB

The term used to describe tuberculosis in an individual whose sputum is positive for AFB (Acid Fast Bacilli). Patients whose bronchial lavage specimens alone are ZN stain-positive are not considered to have open TB provided sputum specimens are negative on microscopy.

### Smear positive

Organisms of the mycobacterium group have been demonstrated by the use of an Auramine stain of sputum or clinical specimens. This is the initial indication of possible TB.

### 4. Duties

4.1 It is the responsibility of individual health care workers to ensure they follow this policy.

4.1 **Duties within the Infection Prevention and Control Committee (IPCC)** is responsible for the review of this policy at least every two years, but more frequently if there are changes to Infection Prevention and Control Legislation or guidance.

4.2 **Duties of Individuals within Trust:**

4.2.1 **The Chief Executive** has overall responsibility for the implementation of this policy. The Chief Executive delegates this responsibility to the Director for Infection Prevention and Control.

4.2.2 **The Director for Infection Prevention and Control (DIPC)** has the responsibility to ensure there are adequate resources available to manage TB infection within Mid Essex Hospital Services.

4.2.3 **Infection Prevention and Control Team (IPCT)** responsibilities are to:

- Promote evidence-based infection prevention and control practices in line with Trust policies;
- Be responsible for the review of the policy in conjunction with the TB Specialist Nurse and TB MDT;
- Liaise and seek advice in conjunction with the Occupational Health Department, TB Specialist Nurse, and PHE in the event of an incident/outbreak.

4.2.4 **TB Clinical Nurse specialist (CNS)** responsibilities are:

- Provide expert clinical advice on TB across South, Mid and West Essex Hospital Trusts and PCT well as statutory and voluntary organisations;
- To manage and be responsible for a clinical caseload with clinical accountability to the Consultants with clinical leads in TB;
- Facilitates a multi-professional approach to the management of TB patients across South, Mid and West Essex;
• Initiate and implement changes in clinical practice based on current initiatives and research, but also to provide a ‘leading edge’ service based on local and national initiatives;
• Identify demographic factors that influence health care needs of the client group – undertake a comprehensive health needs assessment of the client group in order to identify key social needs;
• By clarifying health care needs, to act as an advocate for the client group with the application of ethnic, legal and professional knowledge and skills;
• Develop a teaching strategy to communicate with Health Visitors, Community Nurses, School Nurses, Hospital Nurses as well as Nurses and Health Care Assistants in statutory and private nursing and residential homes on all issues relating to safe and effective delivery of TB services;
• To build up useful links with non-statutory bodies to achieve better comprehensive service delivery to patients;
• Provide support and counselling to staff, patients and carers;
• Identify and organise contact screening.

4.2.5 **Occupational Health Department** have responsibility to:

• Screen and monitor staff as clinically necessary;
• Appropriate management of care of staff members;
• Liaise with the IPCT and TB Specialist Nurse as and when required.

4.2.6 **Employees** have the responsibility to:

• Adhere to this policy and procedures;
• Attend relevant training as appropriate to their individual role;
• Participate in any relevant audit as part of the Infection Prevention and Control Audit Programme;
• Identify to their line manager any problems or failings associated with the management of TB;
• Promptly report all incidents concerning the risks or exposure to TB in accordance with the Trust’s Incident Reporting Policy.

5. **Main Procedural Document Points**

5.1 **Tuberculosis** is caused by a bacterium called *Mycobacterium tuberculosis* (‘*M. tuberculosis*’ or ‘*M.Tb*’). It is spread by one person inhaling the bacterium in droplets coughed or sneezed out by someone with infectious tuberculosis. Not all forms of tuberculosis are infectious. Those with TB in organs other than the lungs are rarely infectious to others, and nor are people with just latent tuberculosis (see below). Some people with respiratory tuberculosis are infectious, particularly those with bacteria which can be seen on simple microscope examination of the sputum, who are termed ‘smear positive’. The risk of becoming infected depends principally on how long and how intense the exposure to the bacterium is. The risk is greatest in those with prolonged, close household exposure to a person with infectious TB. (NICE 2016).

5.2 Because TB can affect many sites in the body, there can be a wide range of symptoms, some of which are not specific and may delay diagnosis. Typical symptoms of pulmonary TB include chronic cough, weight loss, intermittent fever, night sweats and coughing blood. TB in parts other than the lungs has symptoms which depend on the site, and these
symptoms may be accompanied by intermittent fever or weight loss. TB is a possible diagnosis to be considered in anyone with intermittent fever, weight loss and other unexplained symptoms. Latent tuberculosis without disease, however, has no symptoms. (NICE 2016).

5.3 Patients with sputum smears positive for AFB (acid fast bacilli) are infectious and must be isolated in single rooms until they have been adequately treated. They should not be nursed with immunocompromised patients e.g. those who are HIV positive. Pulmonary smear-negative patients may also be infectious although less so than those with positive smears. In general, suspected TB patients should not be nursed on wards with immunocompromised patients.

5.4 Resistance to TB drug treatment can develop, and, in some cases, there is multi drug resistance (MDR TB), particularly if patients are not compliant with medication.

5.5 A risk assessment for drug resistance should be made for each patient with TB, based on the risk factors listed below:

- History of prior TB drug treatment; prior TB treatment failure;
- Contact with a known case of drug-resistant TB;
- Birth in a foreign country, particularly high-incidence countries as where the incidence of MDR TB is >5% (see Global Tuberculosis Report 2017 for numbers of cases and numbers of MDR cases by country);
- HIV infection;
- Residence in London;
- Age profile, with highest rates between ages 25 and 44;
- Male gender.

5.6 MDR TB can be acquired by contact with other cases in the same way as ordinary TB. Patients with suspected or known infectious MDR TB who are admitted to hospital should be admitted to a negative-pressure room. If none is available locally, the patient should be transferred to a hospital that has these facilities and a clinician experienced in managing complex drug-resistant cases. Care should be carried out in the negative-pressure room until the patient is found to be non-infectious or non-resistant, and ideally until cultures are negative.

5.7 Notification and Contact Tracing

5.7.1 TB is a notifiable disease and the clinician in charge of the patient is responsible for notification to the Consultant for Communicable Disease Control (CCDC) and to a TB Specialist of all forms of suspected or confirmed TB cases in accordance with the Health Protection (Notifications) Regulations 2010. If the patient is later found to be negative they can be de-notified.

5.7.2 Contact tracing will be carried out by the TB Nurse Specialist.

5.7.3 All suspected TB cases should also be notified to the Infection Prevention and Control team. Staff cases should be referred to Occupational Health.

5.7.4 Anyone can contract TB. Those at particular risk are those that have been exposed to an open case, particularly if they are immunocompromised. They include:

- Close, prolonged contacts of infectious cases;
• Those who have lived in, or have travelled to or received visitors from places where
TB is still endemic of high incidence;
• Those who live in ethnic minority communities originating from places where TB is
endemic or of high incidence;
• Those who have a weakened immune system i.e. those with medical problems or HIV;
• The very young and the very elderly, as their immune systems are less robust;
• Those with chronic poor health and nutrition because of lifestyle problems such as
homelessness, drug abuse or alcoholism;
• Those living in poor or crowded housing conditions, including those living in hostels
(NICE 2016).

5.8 Occupational Health Protocols
Refer to the 18016 Staff HIV AIDS and Management of TB Screening for Healthcare
workers policies.

5.9 Diagnosis
(Please see appendices 1, 2, 3, 4 & 5 for Care Pathways and treatment
recommendations). The diagnosis of TB is suspected from a combination of context,
symptoms, clinical signs and investigations. A diagnosis is rarely made from a single piece
of evidence. If respiratory TB is suspected patients should have the following
investigations carried out:

• Chest x-ray;
• At least 3 sputum specimens (one early morning) for AFB TB microscopy and culture.
(Smear positive rates are higher for spontaneously produced sputum than for induced
sputum, and the diagnosis of a positive sputum microscopy is improved by an
adequate sputum sample, i.e. 5ml or more).

5.9.1 Rapid diagnosis using molecular techniques can be carried out whenever indicated for
clinical or public health purposes (contact laboratory to discuss).

Note that no TB specimens should be sent via the Pneumatic Tube System.

5.9.2 Antipsychotic medication that causes night sweats and cough may mask TB symptoms.
Patients who have TB and that are severely immunocompromised may not exhibit all of
the signs and symptoms of TB or react to a Mantoux test.

5.9.3 For patients presenting at ED with suspected pulmonary Tuberculosis please refer to
Appendix 3.

5.10 Isolation

5.10.1 The method of isolation and precautions used for patients with TB depends on the type of
TB diagnosed. However, in some circumstances it may be desirable or essential for
patients to remain on specialist wards e.g. maternity cases or those requiring intensive
care. Following discussion with the Infection Control Nurse and the Specialist Nurse for
TB, patients may remain in those wards provided suitable accommodation is available.

5.10.2 Confirmed or suspected smear-positive TB cases are nursed in a single room. An
‘isolation precaution’ sign placed on the outer door.

5.10.3 MDR TB is important because the infection is resistant to both the main bactericidal drug
isoniazid, and to the main sterilising drug Rifampicin. Patients with MDR TB must be
nursed in a negative pressure room and an ‘isolation precaution’ sign placed on the outer door. Mid Essex Hospital Services do not have negative pressure room facilities. Therefore, as soon as the patient is identified the patient must be transferred to the nearest provider with facilities for a negative pressure room. The nearest provider is Basildon and Thurrock University Hospital. The Royal London and Addenbrooks Hospital in Cambridge also have negative pressure room facilities.

5.10.4 Patients with non-pulmonary TB normally present minimal or no risk of infection and should be managed using Standard Precautions.

5.11 Further Isolation Requirements

- Patients should receive adequate supplies of tissues into which they should cough, and active training as to how they should achieve this. A hazardous waste bag should be supplied for the disposal of used tissues;
- Staff must follow standard respiratory precautions for isolated patients. (See 5.7 for mask use). Hands must be washed and thoroughly dried before leaving the room and alcohol hand sanitizer used outside of the room;
- Equipment used to care for these patients should be single use wherever possible;
- Equipment should not leave the immediate area of the patient without being decontaminated using Clinell Universal Wipes;
- All waste from side rooms of suspected and confirmed cases must be treated as hazardous waste;
- The linen of all suspected and confirmed pulmonary TB cases should be treated as infected and disposed of appropriately. Linen to be placed into a pink alginate bag within a red plastic linen bag;
- Special crockery and washing up facilities are unnecessary.

5.10.1 Masks

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<td>• Tuberculosis: NICE guidelines (March 2011)</td>
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<tr>
<td>“Healthcare workers caring for people with tuberculosis should not use masks, gowns or barrier nursing techniques unless:</td>
</tr>
<tr>
<td>**Multi-Drug Resistant –Tuberculosis (MDR-TB) is suspected</td>
</tr>
<tr>
<td>Cough inducing procedures are being performed.”</td>
</tr>
<tr>
<td>• If staff do wear a mask it should be FFP3 (red strap) type and staff member must be “fit” tested.</td>
</tr>
<tr>
<td>• It may be appropriate to ask patients with suspected open TB to wear a <strong>Standard Surgical Mask</strong> during transfers</td>
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5.11.2 A fine filter particulate 3 (FFP3) mask should only be worn by healthcare workers when carrying out cough producing procedures. A fit check should be carried out each time a mask is worn. Clinical staff who are required to wear an FFP3 mask should contact the IPC team, and arrange to be fit tested. Visitors entering the room of a patient suspected to have or has MDR TB must also wear FFP3 face masks.

5.11.3 Healthcare workers caring for people with TB should comply with Standard Infection Control Precautions.

5.11.4 Patients with smear positive respiratory TB should be asked (with explanation) to wear a fluid repellent surgical mask whenever they leave the room until they have had 2 weeks of
5.11.5 If the patient is suspected to be drug resistant, this must be agreed by the TB team and infection control. The ward will be notified and arrangements made as necessary to transfer patient to the nearest provider with facilities for a negative pressure room.

6. **Transfers of Patients**

6.1 When requests are made for radiology, pathology or other investigations, the request form should contain details which make clear the infectious condition of the patient. This will enable departments to make appropriate arrangements in advance. The patient with smear positive pulmonary TB should not be left with other patients.

6.2 Some patients may require transfer to another hospital while still infectious. The nurse in charge of the ward must inform the receiving unit of the patient’s infectious status before the transfer is agreed. The ambulance staff must be informed that the patient is infectious when the request for transport is made to ensure appropriate control measures are taken. The Clinical Nurse Specialist for Infection Control and the Tuberculosis Nurse Specialist must be informed of the transfer.

7. **Advice to Patients, Staff and Visitors**

7.1 Staff should explain to the patient why they are in isolation and why they will require antibiotic therapy. For those patients who have difficulty understanding the English language, the switchboard can be contacted to arrange for a translator.

7.2 Only staff with evidence of BCG vaccination should nurse the patient. Immuno-compromised staff should not look after patients with TB.

7.3 Visitors will need to check with the nurse in charge before they enter the patient’s room. In the case of smear positive TB; visitors should be restricted to adults who have been in close contact with the patient in the period immediately prior to a diagnosis (i.e. those who have already had considerable exposure).

8. **Respiratory Intervention**

8.1 If a patient with smear positive or MDR TB requires assisted ventilation in either Critical Care or Theatre, the ventilator must be fitted with a disposable bacterial HEPA filter.

8.2 Suction via an endotracheal tube or tracheostomy should be undertaken using a closed suction system. All respiratory equipment must be disposable, single use or autoclavable.

8.3 Disposable products should be placed inside an orange hazardous waste bag, the bags sealed and tagged before being sent for incineration.

8.4 Heat sensitive non-disposable items such as bronchoscopes should be decontaminated according to the Endoscopy Decontamination Unit (EDU) Operational Policy (12040) after use.

8.5 Mycobacterium spp are more resistant to disinfection than most other micro-organisms;
however, thorough cleaning has been shown to reduce most of the risk. All equipment must be decontaminated and disinfected in accordance with the Trust’s Decontamination Policy (04070).

9. Children

9.1 Most children with pulmonary TB are not a high risk of infection to others. However, they may have acquired their TB from someone who is a parent or close relative. To reduce the chance of this (unidentified) adult passing on the infection, children with or suspecting of having TB should be isolated in all cases. No masks or other protective clothing are needed unless MDR TB is suspected or confirmed or another medical condition warrants otherwise.

9.2 Only the immediate next-of-kin should visit or stay with the child, as the index case may be unknown. Visitors should stay in the room during their visit. Extended family and friends should not visit until the Tuberculosis Nurse Specialist has undertaken contact tracing, and has liaised with the Consultant Physician / Paediatrician.

10. Drug Treatment

10.1 A six-month, four drug initial regime should be used to treat active pulmonary TB.

10.2 The regime consists of 6 months of isoniazid and rifampicin supplemented in the first 2 months with pyrazinamide and ethambutol. This is referred to as ‘Standard Treatment’. 

10.3 Smear positive TB patients without risk factors for MDR TB can be taken out of isolation after they have completed 2 weeks of the standard treatment, or they are discharged from hospital.

10.4 Directly observed therapy (DOT), if required, is usually carried out in the community setting to ensure that patients are compliant with the six-month treatment regime. The Tuberculosis Nurse Specialist can give more information if a patient requires this therapy. The Tuberculosis Nurse Specialist can be contacted on 01702 372008. (Refer to DOT protocol appendix 6)

11. Discharge of a Patient from Isolation

11.1 Smear-positive TB patients without risk factors for MDR TB should be cared for in a single room, until:

- They have completed two weeks of the standard treatment regimen or
- They are discharged from hospital.

11.2 Before the decision is made to discharge a patient with suspected or known MDR TB from hospital:

- Care should be carried out in the negative-pressure room until the patient is found to be non-infectious or non-resistant, and ideally until cultures are negative;
- Secure arrangements for the supervision and administration of all anti-TB therapy should have been agreed with the patient, carers and DOT supervisor;
• The decision to discharge a patient with suspected or known MDR TB should be discussed with the infection control team, the microbiologist, the TB team, and the consultant in communicable disease control.

12. Contact Tracing for Patients with Exposure

12.1 If a pulmonary smear positive index case was nursed on an open ward prior to diagnosis inform Infection Prevention Team ASAP. A risk assessment will include:

• Degree of infectivity of the index case
• Length of time before the infectious patient was isolated
• Proximity of the contact
• Any unusual susceptibility of the other patients (immunosuppressed individuals)

TBCNS and consultants will discuss case by case and organise screening as appropriate.

13. Monitoring Compliance

<table>
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<th>Monitoring method</th>
<th>Individual/department responsible for the monitoring</th>
<th>Frequency of the monitoring activity</th>
<th>Group/committee/forum which will receive the findings/monitoring report</th>
<th>Committee/individual responsible for ensuring that the actions are completed</th>
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<td>Audit</td>
<td>Infection Prevention and Control Team</td>
<td>Yearly</td>
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14. Equality Impact Assessment

14.1 This policy has undergone an Equality Impact Assessment (EIA). Due to the nature of the policy no person will be disadvantaged (Refer to Appendix 7)

15. References

Tuberculosis: January 2016 (ng33) NICE

Tuberculosis: contact tracing and testing. January 2016 NICE

Clinical Diagnosis and Management of Tuberculosis, and Measures for its Prevention and Control: March 2011: (CG117). NICE

Clinical Diagnosis and Management of Tuberculosis, and Measures for its Prevention and Control.
Control: March 2006: (CG33). NICE


Health Protection (Notifications) Regulations 2010

MDRTB clinical advice link: [https://mdrtb.brit-thoracic.org.uk](https://mdrtb.brit-thoracic.org.uk)

PHE www.gov.uk


Appendix 1 Tuberculosis (TB) Pathway

Complete for all suspected TB cases

**TUBERCULOSIS (TB) PATHWAY**

**Date (dd/mm/yy) . . . . . . . . . . . . .**

<table>
<thead>
<tr>
<th>Name</th>
<th>DOB</th>
<th>Hospital Number</th>
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**Initial presentation of TB**

<table>
<thead>
<tr>
<th>Site of Disease</th>
<th>Smear</th>
<th>Positive / Negative</th>
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</thead>
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**Symptoms**

- Persistent cough or
- Productive cough
- Fevers/night sweats
- Weight loss
- Haemoptysis
- Pleural effusion
- Abnormal CXR
- Enlarged Lymph nodes
- Social history known exposure to TB
- Previous TB
- Immunosuppression
- Other identify

<table>
<thead>
<tr>
<th>Is patient in an inpatient ☐</th>
<th>or outpatient ☐</th>
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<table>
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<th>Do they require admission to side room? Yes ☐</th>
<th>no ☐</th>
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**Inform** Infection Control Team

**Pre-treatment investigations**

**CXR**

Bloods FBC, U+E, LFT, CRP, HIV Hepatitis B & C

Sputum x 3 for AFB C+S (phone microbiology lab for urgent AFB stain 01268 968288)

Other microbiology/histology as indicated

Mycobacterial blood culture (if severely immunocompromised / miliary or disseminated TB disease)

Weight

Eye test pre-Ethambutol (phone TB nurse 01702 372008)

**Commence quadruple therapy treatment. Date commenced (dd/mm/yy). . . . . . . .**

See Tuberculosis Treatment Guide for dosage reference and patient information leaflets. (These are kept with the nurses in the Heart and Chest clinic, treatment guide also on Westcliff ward.)

<table>
<thead>
<tr>
<th>Rifater</th>
<th>Dose . . . . . . . . .</th>
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<tr>
<td>Ethambutol</td>
<td>Dose . . . . . . . . .</td>
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**Educate patient**

Treatment duration and prognosis
Side effects and action
Drug interactions including Contraceptive Pill
Contact screening organised yes | no

Complete Enhance TB Surveillance Notification form. Date completed (dd/mm/yy).

Inform TB Nurse. Telephone 01702 372008 Date informed (dd/mm/yy).
By whom

Assess for Directly Observed Therapy (DOT) see South Essex DOT protocol

HIV Status:
positive | negative | declined | date tested (dd/mm/yy).

On discharge 2 week follow up in Heart and Chest Clinic for Dr Jenkins or TB nurse
(according to discharging Doctor)

Follow Up

At 2-8 weeks

Confirm culture and sensitivities

Repeat CXR if abnormal at 8 weeks

Culture

Sensitivities:
Ethambutol Sensitive yes | no
Pyrazinamide Sensitive yes | no
Streptomycin Sensitive yes | no
Isoniazid Sensitive yes | no
Rifampicin Sensitive yes | no
Clarithromycin Sensitive yes | no

**Mycobacterium Tuberculosis (MTB)**
Drug tolerance
Repeat prescription
Urine for anti staph
Review medication at 8 weeks or before re-sensitivities if known
Seek specialist advice change medication if MDRTB

**Opportunistic Mycobacterium**
Clinical review
Review CXR
Baseline ECG and repeat 2 weeks
Review Treatment
Drug tolerance
Urine for anti staph

**Environmental Mycobacterium**
Clinical review
If CXR abnormal reassess and investigate further as required
Confirm length of treatment duration to patient; (expected) end of treatment date (dd/mm/yy)

Date of continuation phase (dd/mm/yy).

Follow up appointment every 4 weeks unless indicated otherwise. (Alternating between Doctor and TB nurse)

All prescriptions for antituberculosis treatment to be issued from Chest Clinic

Every Clinic visit check
- Drug tolerance
- Urine for anti staph
  Repeat bloods if clinically indicated (see guidelines)

Repeat LFT’s if
- Abnormal base line LFT’s
- Persistent nausea and vomiting
- Current alcohol abuse
- Remains unwell despite treatment
- Jaundice (stop treatment and follow recommended guidelines)

CXR if pulmonary TB as indicated

On completion of treatment

If sputum smear positive, repeat sputum for AFB to confirm conversion. (required for enhanced TB surveillance)
Repeat CXR if originally abnormal

J Keane, Dr S.Ansari    Dr JH Day-May 2018 to be reviewed May 2020

Appendix 2 Paediatric Tuberculosis (TB) / Latent (LTBI) Pathway

PAEDIATRIC TUBERCULOSIS (TB) / LATENT (LTBI) PATHWAY

<table>
<thead>
<tr>
<th>Name</th>
<th>DOB (dd/mm/yy)</th>
<th>Hospital Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source Case</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site of Disease</td>
<td></td>
<td>Smear positive / negative</td>
</tr>
<tr>
<td>Sensitivities</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Initial presentation of TB INFECTION;

Site of Disease ................. Smear  positive / negative

<table>
<thead>
<tr>
<th>Previous BCG</th>
<th>yes / no / scar seen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mantoux result</td>
<td>. . . mm positive / negative</td>
</tr>
<tr>
<td>T spot test reactive / non reactive</td>
<td>if indeterminate repeat 6 weeks</td>
</tr>
</tbody>
</table>

Is patient in patient yes | outpatient | yes
Do they require admission to hospital yes | No
Have the infection control team been notified yes | No
See infection control TB policy

Pre treatment investigations

CXR
- Bloods; FBC, U+E, LFT, CRP & HIV, Hepatitis B & C
- Sputa, spontaneous or induced or gastric washings x 3 for AFB C+S
- Other microbiology/histology as indicated
- Weight
- Eye test pre Ethambutol, age dependent

Commence triple / quadruple therapy treatment for TB disease (as per NICE guidelines 2016)
- See BNFC for dosage guidelines.
  - Ethambutol
  - Rifampicin
  - Isoniazid plus pyridoxine
  - Pyrazinamide

Commence dual therapy treatment for latent TB infection (3 months dual therapy, 6 months single therapy)
- See BNFC for dosage guidelines
  - Rifampicin
  - Isoniazid plus pyridoxine

Educate child and parents
- Treatment duration and prognosis
- Side effects and action
- Drug interactions including Contraceptive Pill
- Contact screening. Organised yes | no

Inform TB Nurse. Telephone 01702 372002

Date informed ............... By whom ......................
Assess for Directly Observed Therapy (DOT) see South Essex DOT protocol (TB nurse)

If an inpatient, on discharge 2 week follow up with either Dr Ranasinghe or TB Nurse

Form completed; Date (dd/mm/yy): Signature: Print Name:

At 2-8 weeks follow up

Confirm microbiology and sensitivities

Culture .................................................................

Sensitivities: Ethambutol Sensitive yes [ ] no [ ]
Isoniazid Sensitive yes [ ] no [ ]
Pyrazinamide Sensitive yes [ ] no [ ]
Rifampicin Sensitive yes [ ] no [ ]
Streptomycin Sensitive yes [ ] no [ ]

Follow up appointment every 4 weeks unless indicated otherwise.
(Alternating between Doctor and TB nurse)

All prescriptions for antituberculosis treatment to be issued from Hospital Clinic

Every Clinic visit check
Drug tolerance
Repeat bloods if clinically indicated (see guidelines)

Repeat LFT’s if
- Abnormal base line LFT’s
- Jaundice
- Persistent nausea and vomiting
- Remains unwell despite treatment
- Hepatitis B/C, Liver disease
- (Current alcohol abuse)
On completion of treatment

If sputum smear positive, repeat sputum for AFB to confirm conversion. (required for enhanced TB surveillance)
Repeat CXR if originally abnormal

Complete Enhance TB Surveillance Notification form. (TB nurse) Yes No Date completed . . . . . . . . . .

References

NICE guidelines 2016 www.nice.org.uk
BTS 1998 Chemotherapy and management of tuberculosis in the United Kingdom: recommendations
BTS Control and prevention of tuberculosis in the United Kingdom: Code of Practice 2000
BNFC

J Keane / T Ranasinghe May 2018 to be reviewed May 2020
Appendix 3 Flowchart for patients presenting to a & e with known / suspected pulmonary tuberculosis

FLOWCHART FOR PATIENTS PRESENTING TO A & E WITH KNOWN / SUSPECTED PULMONARY TUBERCULOSIS

Patient presents with confirmed/strongly suspected pulmonary tuberculosis.

Admit to side room in a/e
Are they at risk of multi drug resistant TB?

NO

YES

Patient presents with symptoms that could be extra pulmonary tuberculosis, no respiratory symptoms, or radiological evidence,

Patient should be admitted to a negative-pressure room. If none is available locally, the patient should be transferred to a hospital that has these facilities (see 5.0)

Admit to single side room on Westcliff ward if possible or other side-room (not Elizabeth Loury ward)

Infection Control Nurse
Record advice on use of masks etc. in patient’s notes.

Day 1

Ideally nurse in side room can be nursed in bay

Day 2

Normal working hours:
Inform Infection Control Nurse on Ext. 6649 or page via switchboard who will carry out risk assessment for patient placement and advise on mask use as necessary and liaise with TB Services 01702 372002

Out of hours:
Inform site co-ordinator who will liaise with Infection Control who will advise on appropriate placement and mask use.

Ward Staff
Ensure early referral to; Dr Jenkins

USE OF MASKS IN RELATION TO TUBERCULOSIS

- Tuberculosis: NICE guidelines (March 2011)
  “Healthcare workers caring for people with tuberculosis should not use masks, gowns or barrier nursing techniques unless:
  Multi-Drug Resistant –Tuberculosis (MDR-TB) is suspected
  Cough inducing procedures are being performed.”

- If staff do wear a mask it should be FFP3 (red strap) type and staff member must be “fit” tested.
- It may be appropriate to ask patients with suspected open TB to wear a Standard Surgical Mask during transfers
Appendix 4 South East, South West & Mid Essex Directly Observed Therapy (DOT)

SOUTH EAST, SOUTH WEST, WEST & MID ESSEX DIRECTLY OBSERVED THERAPY (DOT)

This protocol has been prepared by Jennie Keane TB nurse and outlines the principles which are to be used when planning Directly Observed Therapy for patients on tuberculosis (TB) treatment. Prepared December 2004
Reviewed February 2010
Reviewed July 2011
Reviewed February 2014
Reviewed February 2016
Reviewed March 2018

Introduction

As a solution to aid compliance the World Health Organisation advocates the DOT strategy. NICE TB guidelines 2016 recommend assessing all patients for adherence and provision of DOT for those who are unlikely to or have difficulty adhering. This protocol provides information to ensure effective implementation of this practice.

Aim

To improve treatment completion rates for patients who may have difficulties completing a course of treatment.

Objectives

➤ Improve cure rates
➤ Prevention of drug resistance
➤ Prevention of relapse of disease
➤ Reduction in prolonged infectiousness and hence transmission
➤ Prevention of avoidable death from TB
➤ Reduction in the rates of TB

Rationale

To ensure that those patients who may have potential difficulties adhering to their TB treatment are managed in accordance to NICE guidelines 2016.
To support patients and ensure successful completion of their course of TB treatment.

Inclusion Criteria

Patients will be recommended for DOT either by the TB nurse specialist, the HIV nurse specialist, the respiratory consultant, the infectious disease consultant or identified by the patient
themselves.

- History of non-compliance to previous treatment
- Known or suspected multi drug resistance / extensive drug resistance
- Known North London Isoniazid TB outbreak resistant case
- Suspicion of poor compliance
- Known alcohol or substance abuse
- Homeless or no fixed address
- Previous prison record
- Mental health illness
- Individuals suffering with psychiatric disorders / learning difficulties / memory loss
- Communication difficulties i.e. new entrants / asylum seekers / refugees
- Unable to supervise own treatment
- Those under 16 years old

**Agencies that may be involved**

- TB specialist nurse
- HIV specialist nurse
- Local pharmacist
- Respiratory nursing team
- GP / Practice Nurse
- Community / District nurses
- Intermediate care team
- Support workers
- Volunteers / Advocates
- Family members / Friends

**Method**

Prior to the commencement of DOT, a discussion and agreement must take place between the patient, TB nurse, consultant and supervisor. With clear documentation of the management plan, treatment regime, and alternative care pathway if DOT is not implemented.

DOT is where a member of one or more of the identified agencies observes the patient swallowing the prescribed medication.

The method requires observing, confirming and documenting that the patient has taken the prescribed medication.

The supervisor is **not** the administrator of the medication. Their role is to observe the medication being swallowed.

From commencement of DOT the TB nurse will evaluate progress weekly by liaising with the supervisor / patient via telephone or direct contact to review documentation.

Treatment Chart / DOT management Chart.

The patient remains responsible for obtaining, storing and ensuring that the TB medication remains correctly identifiable, unless the supervisor is the pharmacist, when the medication will be kept and stored in the pharmacy.
Review

1. The TB nurse will also review the patient for adherence to treatment plan, clinical improvement, and side effects.
2. The TB nurse and the consultant will review the management plan on a monthly basis, and may implement changes. They will also make a decision to either continue with the management plan or discontinue.

For patients requiring DOT to be continued steps 1. and 2. will be followed until such a time that either DOT is discontinued or successful treatment is completed.

3. If the patient is lost to follow up or fails DOT programme; the TB nurse will liaise with the Consultant and Public Health England.

Action to be taken during Directly Observed Therapy

1. Identify and confirm identity of the patient against DOT chart
2. Identify medication to be taken according to DOT chart
3. Observe patient preparation of identified medication
4. Observe patient swallowing the medication
5. Confirm and document by signing the DOT chart
6. Ensure patient is aware of date and time of next supervision. Supply written confirmation.
7. Ensure patient has contact details, in case of emergency.

Outcomes

- Patients with potential difficulties completing a successful course of TB treatment.
- By adopting DOT strategy, completion rates for TB are improved, reducing the rates of TB locally, nationally and globally.

These measures will be overseen with the TB nurse, HIV nurse, the respiratory consultant and the infectious disease consultant.

Reviewed by A. Hare & J Keane March 2018 next review date March 2020
Essex Partnership University Trust TB Service
Willow Ward,  
Rochford Hospital,  
Union Lane,  
Rochford,  
Essex,  
SS4 1RB  
Telephone: 01702 372008

Consultant………………………………………………………………………………..

TB Nurse Specialist……………………………………………………………..

➢  **Patient Details**

Surname…………………………..First Name…………………………
Address……………………………………………………………………………………
Date of Birth…………………………Telephone…………………………...

Supervisor’s name…………………………..Telephone………………
DOT location…………………………
DOT days Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday

**Medication details**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethambutol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rifater</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I agree to the DOT management plan as outlined and understand my responsibilities with regards to my treatment regime.

Signed……………………………………………………………………………….. Patient

Signed……………………………………………………………………………….. Supervisor

Signed………………………………………………………………………………..
Appendix 5 Case management for patients with active TB

Case management for patients with active TB

Targets/Key performance indicators:

- Potential PTB cases should be seen in a TB or screening clinic by 2 weeks from receipt of referral
- Initial sputum smear results should be available within 1 working day (usually)

This minimal pathway applies to non-complex cases and medical or TB CNS review may be increased dependent on case or DOT regime

| 0 – Starts TB treatment | Medical review | TB nurse review | TB and Rx information session with patient  
| | | | Weight  
| | | | Adherence/DOT assessment  
| | | | Care plan (for treatment delivery, LFTs, and monitoring other bloods specific to patient e.g. phenytoin levels, liaise with warfarin clinic)  
| | | | Discuss/ Offer HIV test  
| | | | Coordinate notification and ensure entry onto the Enhanced Tuberculosis Surveillance System (ETS)  
| | | | Initiate contact tracing process and liaise with the PHE as required  
| 2 weeks | TB nurse review | Home visit  
| | | Review progress, side effects, adherence*  
| | | Follow up contact tracing  
| 4 weeks | TB nurse review | Review progress, side effects, adherence  
| | | Weight  
| | | Review blood results  
| | | Follow up contact tracing  
| | | Check drug sensitivities  
| | | Arrange / coordinate repeat prescription  
| | | Coordinate repeat CXR for to 2 months if required  
| 2 months | Medical review | TB nurse review | CXR if initial abnormal or PTB  
| | | | Weight  
| | | | Check drug sensitivities  
| | | | Change of Rx information session with patient  
| | | | Follow up contact tracing and screening outcomes  
| | | | Arrange / coordinate repeat prescription  
| 3-5 months | TB nurse monthly review | Review progress, side effects, adherence  
| | | Follow up contact tracing and screening outcomes  
| | | Arrange / coordinate repeat prescription  
| | | Coordinate repeat CXR prior to 6 months as per plan  
| | | Repeat sputum cultures, for smear positive patients only  
| 6 months | Medical review | TB nurse review | CXR if initial abnormal or PTB  
| | | | Weight  
| | | | Ensure outcome is entered on ETS  

Page 26 of 32
Additional post 6 month reviews should be organised for:

Non-resolved CXR
No definite microbiological diagnosis
Prolonged therapy for clinical reasons
Drug resistance
Adherence issues

TB nurse specialist / key worker is responsible for:

- Reporting issues with clinical progress and side effects outside his/her scope of practice to the TB physician
- Checking the results of blood test they request and timely reporting abnormal results to the TB physician
- The follow up of patients that do not attend appointments. This includes contacting the patient by telephone, home visit (the key worker should ask the local TB service to carry out a home visit for those patients out of area), through the GP or any other services involved in the patient’s care and if this is unsuccessful, referral to PHE. The TB Nurse Specialist / key worker should provide an update at the monthly MDT meeting or weekly to Consultant if complex problems
- Reviewing and amending the adherence plan (DOT, weekly supervised therapy or monthly follow up) to support treatment completion. This may also include coordinating support letters for housing, immigration, application for hardship funds etc

*Adherence check should include - patient’s self report about adherence, number of missed doses, urine test (request anti staph activity and send to path lab) for the presence of Rifampicin.

- Ideally smear positive, coughing PTB cases should be identified and start treatment within 1 weeks from receipt of referral
- Ideally all smear positive PTB should have repeat sputums if clinically indicated or towards end of treatment
Appendix 6 TB Service

TB SERVICE

ADULT TUBERCULOSIS is treated in two phases: the initial and continuation phases

1. The initial phase (for 2 months)
   - quadruple therapy (Rifampicin, Isoniazid, Pyrazinamide and Ethambutol)

2. The continuation phase, fully sensitive cases (for 4 months)
   - dual therapy (Rifampicin and Isoniazid)

- *Pyridoxine* 10 mg daily is given to those patients who are malnourished or vegetarian

- Longer treatment is necessary for meningitis and for resistant organisms, which may also require modification of the regimen

- The drugs (daily doses) are best given as **combination preparations**, taken all together at least half an hour before breakfast

<table>
<thead>
<tr>
<th><strong>Recommended daily doses for adult standard unsupervised treatment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rifater (Rifampicin, Isoniazid and Pyrazinamide)</strong></td>
</tr>
<tr>
<td>Adult &lt;40 kg</td>
</tr>
<tr>
<td>Adult 40-49 kg</td>
</tr>
<tr>
<td>Ethambutol</td>
</tr>
<tr>
<td>Pyridoxine</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Recommended daily doses for adult standard unsupervised treatment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rifampicin</strong></td>
</tr>
<tr>
<td><strong>Isoniazid</strong></td>
</tr>
<tr>
<td><strong>Pyrazinamide</strong></td>
</tr>
<tr>
<td><strong>Ethambutol</strong></td>
</tr>
<tr>
<td><strong>Pyridoxine</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Recommended doses for adult intermittent 3 times weekly TB treatment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rifampicin</strong></td>
</tr>
<tr>
<td><strong>Isoniazid</strong></td>
</tr>
<tr>
<td><strong>Pyrazinamide</strong></td>
</tr>
</tbody>
</table>
Ethambutol 30 mg/kg 3 times a week
Pyridoxine 10 mg daily if required

| **Recommended daily doses for adult standard unsupervised TB chemoprophylaxis** |
|---------------------------------|-----------------|-----------------|-----------------|
| **REGIMEN 1: 3 months’ duration** |
| Rifinah | <50 kg | 150 x3 tablets od | >50 kg | 300 x2 tablets od |
| Pyridoxine | 10 mg daily if required |
| **REGIMEN 2: 6 months’ duration** |
| Isoniazid | 300 mg od |
| Pyridoxine | 10 mg daily if required |

IN-PATIENTS
All patients on TB treatment (confirmed or presumptive) should be referred to the TB Service 01702 372008

Arrange pre Ethambutol eye checks through TB nurse call 01702 372008 to arrange commence triple TB therapy and add Ethambutol after eye checks

- **ON DISCHARGE**
  - Prescribe 4 weeks TTAS
  - The TB CNS will arrange 2/52 nurse home visit and 4/52 clinic visit (from the date of commencement) to monitor progress, LFTs, adherence
  - Request medical (Adult TB Medical Clinic) follow-up for 8/52 from the start of treatment

- **TUBERCULIN MANTOUX REFERRALS**
This can be arranged via the TB nurse 01702 372008

- **CONTACT DETAILS**
  - TB referrals 01702 372008
  - Infection Control
  - Mid Essex Hospital Services Microbiology 01245 516103 or 01245 515092
ADULT TB MEDICAL CLINIC

Attendees:
- Internal & GP referrals
- TB contacts & recent-arrivals (UK <5 years) – symptomatic or with a positive tuberculin skin test (TST)
- Patients with AFB *culture positive* results to commence Rx
- Patients on treatment & chemoprophylaxis

This is joint medical-nurse clinic

- **PATIENT NOTES/INFORMATION**
  Patient attending the Adult TB Medical Clinic have separate medical & TB nurse record cards, if receiving TB, NMTB treatment or chemoprophylaxis

- **AFTER THE CONSULTATION**
  - Always copy correspondence to the TB team
  - Write a brief summary of the management plan on the *re-booking details* form attached to the medical notes
  - All prescriptions given by the hospital, usually one month for TB treatment and 2 months for NTM

The following **do not need to see a TB nurse**:
- Further investigations – bloods, CT (give the patient an advice note to contact the TB team if the CT is not done before the next medical OPA),
- **Patients that require a bronchoscopy or specimen pots** - please liaise with the Clinic nurse
- Completing TB Rx, chemoprophylaxis
- Discharged from Adult TB Medical Clinic

**If the diagnosis is not TB, NTM** (requiring treatment) and **LTBI** the patient should be discharged from Adult TB Medical Clinic and followed up in general chest or other relevant clinic
## MEDICAL FOLLOW UP

Many patients will be suitable for standard follow up

If a patient’s case is complicated, medical follow up can be requested in addition to the routine stages below. Patients requiring repeat x-ray or bloods may be followed up in the nurse led clinic so that medical clinic slots are available for urgent referrals and complicated cases requiring medical review.

TB contacts may be referred for medical review according to the management algorithm (laminated algorithms are available in each clinic room). If, following medical review, the patient does not commence TB treatment or chemoprophylaxis the patient should be ‘discharged’ for TB nurse follow-up, according to the algorithm.

### TB treatment

1. Assessment/commence TB Rx
2. \( \frac{2}{12} \) Medical change to dual
3. Medical \( \frac{6}{12} \) (\( \frac{9}{12} \) for longer course) to complete Rx
4. Medical OPA consider post-Rx completion for
   - Persistent CXR abnormality
   - Non-proven microbiologically CXR abnormality
   - Persistent LN palpable or radiologically
   - Dubious compliance
   - Drug resistance (single or MDR)
   - Persistent symptoms
   - Some cases of non pulmonary TB – discuss with Consultant on an individual case basis

### TB chemoprophylaxis

1. Assessment/commence chemoprophylaxis

### TB CNS FOLLOW-UP (TB Clinical Nurse Specialist’s Clinic)

#### TB treatment

1. \( \frac{2}{52} \) LFTs (selective) (if no abnormalities detected, not necessary to repeat unless patient becomes symptomatic. If LFTs abnormal, discuss at MDT and repeat as requested on individual patient basis), HIV test, monitor adherence and repeat prescription
2. \( \frac{6-8}{52} \) monitor adherence, repeat prescription, organise repeat CXR (if pulmonary or pleural site of disease).
3. Months 3-5 (months 3-7 for longer course of Rx, eg single-drug resistance, LN TB cases) follow up monitor adherence, repeat prescription. PTB patients - give form to repeat CXR (if pulmonary or pleural site of disease)
4. If sputum smear positive, repeat sputum culture to confirm conversion.
Appendix 7: Preliminary Equality Analysis

This assessment relates to: Infection Prevention and Control Assurance Framework / 08039

<table>
<thead>
<tr>
<th>Change Type</th>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>A change in a service to patients</td>
<td>1. What are you proposing to change?</td>
<td>Full Review</td>
</tr>
<tr>
<td>A change to an existing policy</td>
<td>2. Why are you making this change? (What will the change achieve?)</td>
<td>3 year review</td>
</tr>
<tr>
<td>A new policy</td>
<td>3. Who benefits from this change and how?</td>
<td>Patients and clinicians</td>
</tr>
<tr>
<td>Something else</td>
<td>4. Is anyone likely to suffer any negative impact as a result of this change?</td>
<td>No</td>
</tr>
<tr>
<td>(please give details)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. a) Will you be undertaking any consultation as part of this change?  
   b) If so, with whom?  

Refer to pages 1 and 2

Preliminary analysis completed by:

<table>
<thead>
<tr>
<th>Name</th>
<th>Job Title</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Judith Holdsworth</td>
<td>Infection Prevention Lead</td>
<td>May 2019</td>
</tr>
</tbody>
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