# Tuberculosis: prevention, diagnosis, management and service organisation

## NICE guideline: short version

## Draft for consultation, June 2015

If you wish to comment on this version of the guideline, please be aware that all the supporting information and evidence for the recommendations is contained in the full version of the guideline.

# Contents

# Introduction

Tuberculosis (TB) is a curable infectious disease caused by a type of bacterium called *Mycobacterium tuberculosis* (*M. tuberculosis*). It is spread by droplets containing the bacteria being coughed or sneezed out by someone with infectious TB, which are then inhaled by other people.

The initial infection clears in over 80% of people, but in a few cases a defensive barrier is built round the infection and the TB bacteria lie dormant. This is called latent TB; the person is not ill and is not infectious. If the immune system fails to build the defensive barrier, or the barrier fails later, latent TB can spread within the lung (pulmonary TB) or develop in the other parts of the body it has spread to (extrapulmonary TB). Only some people with latent TB will develop symptoms (this is known as ‘active TB’).

Many cases of TB can be prevented by public health measures and, when clinical disease does occur, most people can be cured if treated properly. Taking medication in the wrong dose or combination, irregularly or for too short a time can lead to drug resistance. Drug resistant strains of TB are much harder to treat and significantly increase a person's risk of long-term complications or death. If left untreated, 1 person with active pulmonary TB may infect as many as 10 to 15 people every year.

TB incidence in the UK has increased since the early 1990s, but has remained relatively stable since 2005. Despite this, it remains high compared with many other western European countries. Cases tend to cluster in urban areas where populations of at-risk groups are high. These include areas with many people born in countries with a high incidence of TB, areas with a high level of homelessness, poor housing or poverty, and areas with high rates of problem drug use.

The NHS and Public Health England have already begun work to reduce the harm caused by TB to many individuals and communities. TB is now a notifiable disease, meaning that clinicians have a statutory duty to notify local authorities or a local Public Health England centre of suspected cases, and efforts have been made to strengthen services and ensure clear lines of

accountability and responsibility. However, a stronger approach to TB control is now needed to build on this work. Indicators of TB incidence and TB treatment outcomes have been included in the Public Health Outcomes Framework. In addition, Public Health England and NHS England have designed a collaborative tuberculosis strategy for England that brings together best practice in clinical care, social support and public health. Agencies at all levels – including national and local government, clinical commissioning groups and third sector partners – are now committed to working in partnership to decrease the incidence of TB, fight the spread of drug resistant forms of the disease, reduce current health inequality and, ultimately, eliminate TB as a public health problem in England.

This guideline makes recommendations on the prevention, diagnosis and management of latent and active TB, including both drug-susceptible and drug-resistant forms of the disease. It covers the organisation of relevant TB services. It relates to activities in any setting in which NHS or public health services for TB are received, provided or commissioned in the public, private and voluntary sectors. It updates and replaces NICE's guideline on 'Tuberculosis: clinical diagnosis and management of tuberculosis, and measures for its prevention and control' and incorporates and adapts 'Identifying and managing tuberculosis among hard-to-reach groups'.

## *Medicines*

The guideline will assume that prescribers will use a medicine's summary of product characteristics to inform decisions made with individual patients.

## *Safeguarding children*

Remember that child maltreatment is common, can present anywhere and may co-exist with other health problems, including tuberculosis. See the NICE guideline on child maltreatment for clinical features that may be associated with maltreatment.

# Patient-centred care

This guideline offers best practice advice on the care of people with, or at risk of contracting, TB.

Patients and healthcare professionals have rights and responsibilities as set out in the NHS Constitution for England – all NICE guidance is written to reflect these. Treatment and care should take into account individual needs and preferences. Patients should have the opportunity to make informed decisions about their care and treatment, in partnership with their healthcare professionals. If the patient is under 16, their family or carers should also be given information and support to help the child or young person to make decisions about their treatment. If it is clear that the child or young person fully understands the treatment and does not want their family or carers to be involved, they can give their own consent. Healthcare professionals should follow the Department of Health's advice on consent. If someone does not have capacity to make decisions, healthcare professionals should follow the code of practice that accompanies the Mental Capacity Act and the supplementary code of practice on deprivation of liberty safeguards.

NICE has produced guidance on the components of good patient experience in adult NHS services. All healthcare professionals should follow the recommendations in Patient experience in adult NHS services.

If a young person is moving between paediatric and adult services, care should be planned and managed according to the best practice guidance described in the Department of Health's Transition: getting it right for young people.

Adult and paediatric healthcare teams should work jointly to provide assessment and services to young people with TB. Diagnosis and management should be reviewed throughout the transition process, and there should be clarity about who is the lead clinician to ensure continuity of care.

# Strength of recommendations

### *Recommendation wording in guideline updates*

NICE began using this approach to denote the strength of recommendations in guidelines that started development after publication of the 2009 version of 'The guidelines manual' (January 2009). This does not apply to any recommendations shaded in grey and ending **[2006]** and **[2012]** (see 'Update information' box below for details about how recommendations are labelled). In particular, for recommendations labelled **[2006]** and **[2012]**, the word 'consider' may not necessarily be used to denote the strength of the recommendation.

Some recommendations can be made with more certainty than others. The Guideline Committee makes a recommendation based on the trade-off between the benefits and harms of an intervention, taking into account the quality of the underpinning evidence. For some interventions, the Guideline Committee is confident that, given the information it has looked at, most patients would choose the intervention. The wording used in the recommendations in this guideline denotes the certainty with which the recommendation is made (the strength of the recommendation).

For all recommendations, NICE expects that there is discussion with the patient about the risks and benefits of the interventions, and their values and preferences. This discussion aims to help them to reach a fully informed decision (see also 'Patient-centred care').

### *Interventions that must (or must not) be used*

We usually use 'must' or 'must not' only if there is a legal duty to apply the recommendation. Occasionally we use 'must' (or 'must not') if the consequences of not following the recommendation could be extremely serious or potentially life threatening.

### *Interventions that should (or should not) be used – a 'strong' recommendation*

We use 'offer' (and similar words such as 'refer' or 'advise') when we are confident that, for the vast majority of patients, an intervention will do more good than harm, and be cost effective. We use similar forms of words (for example, 'Do not offer…') when we are confident that an intervention will not be of benefit for most patients.

### *Interventions that could be used*

We use 'consider' when we are confident that an intervention will do more good than harm for most patients, and be cost effective, but other options may be similarly cost effective. The choice of intervention, and whether or not to have the intervention at all, is more likely to depend on the patient's values and preferences than for a strong recommendation, and so the healthcare professional should spend more time considering and discussing the options with the patient.

## Update information

Our first guideline on TB was published in 2006. This was updated in 2011. This guideline is an update of tuberculosis: clinical diagnosis and management of tuberculosis, and measures for its prevention and control (published March 2011) and will replace it. It also incorporates and adapts the guideline on identifying and managing TB in hard-to-reach groups published in March 2012.

It has not been possible to update all sections and recommendations in this update of the guideline. This means some of the recommendations that have not been reviewed may not reflect current practice. Areas for review and update were identified, prioritised and agreed through the scoping process.

Areas that have not been reviewed in this update may be addressed 2 years after publication, when NICE next considers updating this guideline. NICE may undertake a more rapid update of discrete areas of the guideline if new and relevant evidence is published.

Recommendations in the guideline update have been labelled to show:

- the year each recommendation was written and the year(s) of any updates
- which parts of the guideline are open for stakeholder comment at consultation.

The sections below explain this labelling in more detail.

### *Recommendations open for comment (with an evidence review)*

New recommendations have been added for the diagnosis, treatment, monitoring and support of people with TB, as well as the prevention of the transmission of infection. New recommendations have also been added on organising TB services.

You are invited to comment on the new and updated recommendations in this

guideline. These are marked as:

- **[new 2015]** if the evidence has been reviewed and the recommendation has been added or updated
- **[2015]** if the evidence has been reviewed as part of the update but no change has been made to the recommended action.

You are also invited to comment on recommendations that NICE proposes to delete from the 2011 and 2012 guidelines, which are set out in Appendix A. The Appendix includes details of replacement recommendations, or if there is no replacement recommendation, an explanation for the proposed deletion.

### *Recommendations not open for comment (no evidence review)*

Recommendations where the evidence has not been reviewed for the 2015 update are not open for comment. These recommendations are shaded in grey and end **[2006], [2006, amended 2011], [2011] or [2012]**. Yellow shading in these recommendations indicates wording changes that have been made for the purposes of clarification only.

Where recommendations are shaded in grey and end **[2006, amended 2011, amended 2015]**, **[2006, 2012, amended 2015]**, **[2011, amended 2015]** or **[2012, amended 2015]**, the evidence has not been reviewed but changes have been made to the recommendation wording that change the meaning (for example, because of equalities duties or a change in the availability of medicines, or incorporated guidance has been updated). These changes are marked with yellow shading, and explanations of the reasons for the changes are given in appendix A for information. We will not be able to accept comments on these recommendations.

The original NICE guideline and supporting documents are available here.

# 1 Recommendations

The following guidance is based on the best available evidence. The full guideline [hyperlink to be added for final publication] gives details of the methods and the evidence used to develop the guidance.

## *1.1 Preventing TB*

### 1.1.1 Raising and sustaining awareness of TB

***Among health professionals and those working with high-risk groups***

1.1.1.1 Multidisciplinary TB teams (in collaboration with Public Health England, primary care, the voluntary sector and Health Education England) should identify and support an ongoing TB education programme for local professionals in contact with the general public, and at-risk groups in particular. This includes, for example, staff in emergency departments, GPs and wider primary care staff, people who work in housing support services, staff who support migrants and those working in walk-in centres, hostels, substance misuse projects and prisons. **[2012, amended 2015]**

1.1.1.2 Multidisciplinary TB teams should ensure the education programme increases other professionals' awareness of the possibility of TB and reduces the stigma associated with it. The programme should include detail on:

- causes of TB, how it is transmitted, and the signs and symptoms
- lifestyle factors that may mask symptoms
- local epidemiology, highlighting under-served groups, other high-risk groups and the fact that TB also occurs in people without risk factors
- principles of TB control:
  - early diagnosis and active case-finding

- how to support treatment (including directly observed therapy)
- drug resistance
- awareness of drug interactions (including factors such as effect on contraception efficacy)
- contact investigation after diagnosing an active case
- the importance of adhering to treatment
- treatment for TB is free for everyone (irrespective of eligibility for other NHS care)
- social and cultural barriers to accessing health services (for example, fear of stigma and staff attitudes)
- local referral pathways, including details of who to refer and how
- the role of allied professionals in awareness-raising, identifying cases and helping people complete treatment
- misinformation that causes fear about TB, including concerns about housing people with the condition
- the best ways to effectively communicate all the above topics with different groups. **[2012, amended 2015]**

1.1.1.3 Statutory, community and voluntary organisations and advocates working with the general public, and under-served and high-risk groups in particular, should share information on TB education and awareness training with all frontline staff. (They should get information on this from the local multidisciplinary TB team.) **[2012, amended 2015]**

1.1.1.4 If possible, statutory, community and voluntary organisations should ensure peers from under-served groups and anyone else with experience of TB contribute to, or lead, awareness-raising activities. (Peers who lead such activities will need training and support.) **[2012, amended 2015]**

***Among high-risk groups***

1.1.1.5 Multidisciplinary TB teams should help professionals working in relevant statutory, community and voluntary organisations to raise awareness of TB among under-served and other high-risk groups. These professionals should be able to explain that treatment for TB is free and confidential for everyone (irrespective of eligibility for other NHS care). They should also be able to provide people with details of:

- how to recognise symptoms in adults and children
- how people get TB
- the benefits of diagnosis and treatment (including the fact that TB is treatable and curable)
- location and opening hours of testing services
- referral pathways, including self-referral
- the potential interaction of TB medication with other drugs, for example, oral contraceptives and opioids (especially methadone) and HIV treatment
- TB/HIV co-infection
- how to address the myths about TB infection and treatment (for example, to counter the belief that TB is hereditary)
- how to address the stigma associated with TB
- the risk of migrants from high-incidence countries developing active TB – even if they have already screened negative for it
- contact tracing. **[2012, amended 2015]**

1.1.1.6 Multidisciplinary TB teams and others working with at-risk groups should use high quality material to raise awareness of TB (see section 1.1.2). **[2012, amended 2015]**

1.1.1.7 Multidisciplinary TB teams and others working with the general public, and with under-served and other high-risk groups in particular, should include information on TB with other health-

related messages and existing health promotion programmes tailored to the target group. **[2012, amended 2015]**

1.1.1.8 Multidisciplinary TB teams should work in partnership with voluntary organisations and 'community champions' to increase awareness of TB, in particular among under-served groups at risk of infection but also in the general population. If possible, peers who have experience of TB should contribute to awareness-raising activities and support people in treatment. **[2012, amended 2015]**

### 1.1.2 Providing information for the public about TB

1.1.2.1 National organisations (for example, National Knowledge Service – Tuberculosis, TB Alert, Public Health England, Department of Health and NHS Choices) should work together to develop generic, quality-assured template materials with consistent up-to-date messages. These materials should be made freely available and designed so that they can be adapted to local needs. **[new 2015]**

1.1.2.2 Multidisciplinary TB teams should use these templates for general awareness raising and targeted activities in under-served and other high-risk groups. Involve the target group in developing and piloting the materials. **[new 2015]**

1.1.2.3 The content of any materials should:

- be up-to-date and attractively designed, including pictures and colour where possible
- be culturally appropriate, taking into account the language, actions, customs, beliefs and values of the group they are aimed at
- be tailored to the target population’s needs
- include risks and benefits of treatment, and how to access services, advice and support
- dispel myths

- show that, by deciding to be tested and treated for TB, a person can be empowered to take responsibility for their own health
- use language that encourages the person to believe that they can change their behaviour
- be simple and succinct. **[new 2015]**

1.1.2.4 Make the material available in a range of formats such as written, braille, text messages, electronic, audio (including podcasts), pictorial and video. Make them freely available in a variety of ways, for example, online, as print materials or on memory sticks. **[new 2015]**

1.1.2.5 Disseminate materials in ways likely to reach target groups, for example, via culturally specific radio or TV stations, at shelters, and at community, commercial or religious venues that target groups attend regularly. **[new 2015]**

### 1.1.3 BCG vaccination

1.1.3.1 To improve the uptake of BCG vaccination, identify eligible groups (in line with the Department of Health's Green Book) opportunistically through several routes, for example:

- new registrations in primary care and with antenatal services
- people entering education, including university
- links with statutory and voluntary groups working with new entrants and looked-after children and young people
- during contact investigations. **[new 2015]**

1.1.3.2 When BCG is being recommended, discuss the benefits and risks of vaccination or remaining unvaccinated with the person (or, if a child, with the parents), so that they can make an informed decision. Tailor this discussion to the person, use appropriate language, and take into account cultural sensitivities and stigma. **[2006]**

1.1.3.3 If people identified for BCG vaccination through occupational health, contact tracing or new entrant screening are also considered to be at increased risk of being HIV positive, offer them HIV testing before BCG vaccination[1]. **[2006]**

***BCG vaccination in neonates (0–4 weeks)***

1.1.3.4 Identify babies eligible for vaccination (in line with the Green Book) before birth, ideally through antenatal services. **[new 2015]**

1.1.3.5 Discuss neonatal BCG vaccination for any baby at increased risk of TB with the parents or legal guardian. **[2006]**

1.1.3.6 Preferably vaccinate babies at increased risk of TB before discharge from hospital or before handover from midwifery to primary care. Otherwise, vaccinate as soon as possible afterwards, for example, at the 6-week postnatal check. **[new 2015]**

1.1.3.7 Incorporate computer reminders into maternity service (obstetrics) IT systems for staff, to identify and offer BCG vaccination to babies eligible for vaccination. **[new 2015]**

1.1.3.8 Provide education and training for postnatal ward staff, midwives, health visitors and other clinicians on identifying babies eligible for vaccination, local service information and providing BCG vaccination, including:

- case definition for at-risk groups to be offered vaccination
- information about the local BCG vaccination policy that can be given verbally, in writing or in any other appropriate format (see sections 1.1.1 and 1.1.2) to parents and carers at the routine examination of the baby before discharge
- local service information about BCG vaccination, such as pre-discharge availability of neonatal vaccination, local BCG

[1] See the British HIV Association guideline for details of further action in HIV-positive patients.

clinics and referral for BCG vaccination if this is not available in maternity services

- administration of BCG vaccination and contraindications.

**[new 2015]**

1.1.3.9 Primary care organisations with a high incidence of TB should consider vaccinating all neonates soon after birth. **[2006]**

1.1.3.10 In areas with a low incidence of TB (see Public Health England's tuberculosis rate bands), primary care organisations should offer BCG vaccination to selected neonates who:

- were born in an area with a high incidence of TB, or
- have 1 or more parents or grandparents who were born in a high-incidence country, or
- have a family history of TB in the past 5 years. **[2006]**

***BCG vaccination for infants (0–5 years) and older children (6–16 years)***

1.1.3.11 Routine BCG vaccination is not recommended for children aged 10–14 years.

- Healthcare professionals should opportunistically identify unvaccinated children older than 4 weeks and younger than 16 years at increased risk of TB (see section 1.2.1) who would have qualified for neonatal BCG and provide Mantoux testing and BCG vaccination (if Mantoux negative).
- This opportunistic vaccination should be in line with the Green Book. **[2006]**

1.1.3.12 Mantoux testing should not be done routinely before BCG vaccination in children younger than 6 years unless they have a history of residence or prolonged stay (more than 1 month) in a country with a high incidence of TB. **[2006]**

***BCG vaccination for new entrants from high-incidence areas***

1.1.3.13 Offer BCG vaccination to new entrants[2] who are Mantoux-negative who:

- are from high-incidence countries, and
- are previously unvaccinated (that is, without adequate documentation or a BCG scar), and
- are aged:
  - younger than 16 years, or
  - 16–35 years[3] from sub-Saharan Africa or a country with a TB incidence of 500 per 100,000 or more. **[2006]**

***Encouraging uptake among infants, older children and new entrants***

1.1.3.14 Deliver the following interventions in primary care settings to improve uptake of BCG vaccination in people from eligible groups (as outlined in the Green Book):

- education and support for practice staff, including:
  - raising awareness of relevant guidelines and case definition for at-risk groups
  - promoting BCG and TB testing in eligible groups
- incorporating reminders for staff (prompts about eligibility for BCG) on practice computers (for example, embedded in medical records)
- consider financial incentives for practices for identifying eligible groups for BCG and TB testing
- reminders ('immunisations due') and recall ('immunisations overdue') for people who are eligible for vaccination or for parents of infants and children who are eligible, as outlined in

[2] People who have recently arrived in or returned to the UK from high-incidence countries.
[3] The Green Book recommends BCG for new entrants only up to the age of 16 years. However, in this guideline BCG is recommended for those up to 35 years who come from the countries with the very highest rates of TB because there is some evidence of cost effectiveness.

the Green Book. (This could include written reminders, telephone calls from a member of staff or a computerised auto dialler, text messages or a combination of these approaches.) **[new 2015]**

1.1.3.15 If infants or older children are from disadvantaged families, also offer interventions that provide face-to-face information and advice on the importance of immunisation. These should be delivered by trained lay health workers, community-based healthcare staff or nurses, using community outreach and home visits. **[new 2015]**

***BCG vaccination for healthcare workers***

1.1.3.16 Offer BCG vaccination to healthcare workers and other NHS employees who have contact with patients or clinical specimens, irrespective of age, who:

- are previously unvaccinated (that is, without adequate documentation or a BCG scar), and
- are Mantoux (or interferon-gamma release assay) negative (see section 1.2.1). **[2006, amended 2015]**

***BCG vaccination for contacts of people with active TB***

1.1.3.17 Offer BCG vaccination to Mantoux-negative contacts of people with pulmonary TB (see section 1.6.1 for details of contact tracing) if they have not been vaccinated previously (that is, there is no adequate documentation or a BCG scar) and are:

- aged 35 years or younger, or
- aged 36 years and older and a healthcare or laboratory worker who has contact with patients or clinical materials. **[2006, amended 2015]**

***BCG vaccination for other groups***

1.1.3.18 Offer BCG vaccination to previously unvaccinated, Mantoux-negative people aged 35 years or younger in the following groups

at increased risk of exposure to TB, in accordance with the Green Book:

- veterinary and other staff such as abattoir workers who handle animal species known to be susceptible to TB, such as simians
- prison staff working directly with prisoners
- staff of care homes for older people
- staff of hostels for people who are homeless and facilities accommodating refugees and asylum seekers
- people going to live or work with local people for more than 1 month in a high-incidence country. **[2006]**

### 1.1.4 Preventing infection in specific settings

***Healthcare environments: new NHS employees***

1.1.4.1 Employees new to the NHS who will be working with patients or clinical specimens should not start work until they have completed a TB screen or health check, or documentary evidence is provided of such screening having taken place within the preceding 12 months. **[2006]**

1.1.4.2 Employees new to the NHS who will not have contact with patients or clinical specimens should not start work if they have signs or symptoms of TB. **[2006]**

1.1.4.3 Health checks for employees new to the NHS who will have contact with patients or clinical materials should include:

- assessment of personal or family history of TB
- asking about symptoms and signs, possibly by questionnaire
- documentary evidence of TB skin (or interferon-gamma release assay) testing and/or BCG scar check by an occupational health professional, not relying on the applicant's personal assessment
- Mantoux result within the past 5 years, if available. **[2006]**

1.1.4.4 See recommendations 1.2.1.17 to 1.2.1.19 for screening new NHS employees for latent TB. **[2006, amended 2011]**

1.1.4.5 Employees who will be working with patients or clinical specimens and who are Mantoux negative[4] (see section 1.2.1) should have an individual risk assessment for HIV infection before BCG vaccination is given. **[2006, amended 2015]**

1.1.4.6 Employees of any age who are new to the NHS and are from countries of high TB incidence, or who have had contact with patients in settings with a high TB prevalence should have an interferon-gamma release assay. If negative, offer BCG vaccination as with a negative Mantoux result[5] (see section 1.2.1). If positive, refer the person for clinical assessment for diagnosis and possible treatment of latent infection or active disease. **[2006, amended 2011]**

1.1.4.7 If a new employee from the UK or other low-incidence setting, who has not had a BCG vaccination, has a positive Mantoux test[6] (see

[4] Although not updated by a new review, the Committee felt strongly that the threshold for test positivity in healthcare workers should be brought in line with both international guidance and the other recommendations in this section. The threshold for test positivity of 6 mm from the 2011 NICE guideline is inconsistent with the new recommendations, which opted for a threshold of 5 mm, as well as with the new clinical- and cost-effectiveness reviews and the new health economic modelling on which these were based. This is particularly an issue given that the 2011 recommendations were consensus-based, not driven by evidence. For this reason, the recommendation now simply references the recommendations on the diagnosis of latent TB infection. See section 4.1.3.4 of the full guideline for further information.

[5] Although not updated by a new review, the Committee felt strongly that the threshold for test positivity in healthcare workers should be brought in line with both international guidance and the other recommendations in this section. The threshold for test positivity of 6 mm from the 2011 NICE guideline is inconsistent with the new recommendations, which opted for a threshold of 5 mm, as well as with the new clinical- and cost-effectiveness reviews and the new health economic modelling on which these were based. This is particularly an issue given that the 2011 recommendations were consensus-based, not driven by evidence. For this reason, the recommendation now simply references the recommendations on the diagnosis of latent TB infection. See section 4.1.3.4 of the full guideline for further information.

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section 1.2.1) and a positive interferon-gamma release assay, they should have a medical assessment and a posterior–anterior chest X-ray. They should be referred to a TB clinic to determine whether they need TB treatment if the chest X-ray is abnormal, or to determine whether they need treatment of latent TB infection if the chest X-ray is normal. **[2006, amended 2011, amended 2015]**

1.1.4.8 If a prospective or current healthcare worker who is Mantoux negative[7] (see recommendations 1.2.1.17 to 1.2.1.19) declines BCG vaccination, explain the risks and supplement the oral explanation with written advice. If the person still declines BCG vaccination, he or she should not work where there is a risk of exposure to TB. The employer will need to consider each case individually, taking account of employment and health and safety obligations. **[2006]**

1.1.4.9 Screen clinical students, agency and locum staff and contract ancillary workers who have contact with patients or clinical materials for TB to the same standard as new employees in healthcare environments, according to the recommendations set out above. Seek documentary evidence of screening to this standard from locum agencies and contractors who carry out their own screening. **[2006]**

1.1.4.10 NHS trusts arranging care for NHS patients in non-NHS settings should ensure that healthcare workers who have contact with

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this reason, the recommendation now simply references the recommendations on the diagnosis of latent TB infection. See section 4.1.3.4 of the full guideline for further information.

[7] Although not updated by a new review, the Committee felt strongly that the threshold for test positivity in healthcare workers should be brought in line with both international guidance and the other recommendations in this section. The threshold for test positivity of 6 mm from the 2011 NICE guideline is inconsistent with the new recommendations, which opted for a threshold of 5 mm, as well as with the new clinical- and cost-effectiveness reviews and the new health economic modelling on which these were based. This is particularly an issue given that the 2011 recommendations were consensus-based, not driven by evidence. For this reason, the recommendation now simply references the recommendations on the diagnosis of latent TB infection. See section 4.1.3.4 of the full guideline for further information.

patients or clinical materials in these settings have been screened for TB to the same standard as new employees in NHS settings. **[2006]**

***Healthcare environments: occupational health***

1.1.4.11 Include reminders of the symptoms of TB, and the need for prompt reporting of such symptoms, with annual reminders about occupational health for staff who:

- are in regular contact with TB patients or clinical materials, or
- have worked in a high-risk clinical setting for 4 weeks or longer.

Give one-off reminders after a TB incident on a ward. **[2006]**

1.1.4.12 If no documentary evidence of previous screening is available, screen staff in contact with patients or clinical material who are transferring jobs within the NHS as for new employees (see recommendations 1.2.1.17 to 1.2.1.19). **[2006]**

1.1.4.13 Assess the risk of TB for a new healthcare worker who knows he or she is HIV positive at the time of recruitment as part of the occupational health checks. **[2006]**

1.1.4.14 The employer, through the occupational health department, should be aware of the settings with increased risk of exposure to TB, and that these pose increased risks to HIV-positive healthcare workers. **[2006]**

1.1.4.15 Healthcare workers who are found to be HIV positive during employment should have medical and occupational assessments of TB risk, and may need to modify their work to reduce exposure. **[2006]**

## *1.2 Latent TB*

### 1.2.1 Diagnosing latent TB

***Adults***

1.2.1.1 Offer Mantoux testing to diagnose latent TB in adults aged 18 to 65[8] who are:

- household contacts of a person with pulmonary TB[9]
- non-household contacts (other close contacts for example, in workplaces) of people with pulmonary TB[10].

An induration of 5 mm or larger, regardless of BCG history, is considered a positive test result.[11] **[2011, amended 2015]**

1.2.1.2 Consider interferon-gamma testing for adults aged 18 to 65[12] whose Mantoux test shows positive results (5 mm or larger,

[8] The upper age limit for offering testing to diagnose latent TB was previously 35 years, but has been increased to 65 years. Although evidence on contact tracing in adults of different ages was not reviewed as part of the 2015 update, the age threshold for testing is directly dependent on evidence of the benefits, harms and costs of treating latent TB. The Committee has reviewed this evidence and concluded that people should be offered treatment up to the age of 65 years. Therefore, it is necessary to update this recommendation to reflect the revised upper age-limit for treatment.

[9] The Committee has revised this recommendation – which previously referred to 'all people with active TB' – to limit testing to contacts of people with potentially infectious TB.

[10] The Committee has revised this recommendation – which previously referred to 'all people with active TB' – to limit testing to contacts of people with potentially infectious TB.

[11] Although not updated by a new review, the Committee felt strongly that the threshold for test positivity in adults should be brought in line with both international guidance and the other recommendations in this section. The threshold for test positivity of 6 mm in the previous NICE guideline (which was taken from the Department of Health's Green Book) is inconsistent with the new recommendations, which opted for a threshold of 5 mm, as well as with the new clinical- and cost-effectiveness reviews and the new health economic modelling on which these were based. This is particularly an issue given that the previous NICE guideline recommendations were consensus-based, not driven by evidence. See section 4.1.3.4 of the full guideline for further information.

[12] The upper age limit for offering testing to diagnose latent TB was previously 35 years, but has been increased to 65 years. Although evidence on contact tracing in adults of different ages was not reviewed as part of the 2015 update, the age threshold for testing is directly dependent on evidence of the benefits, harms and costs of treating latent TB. The Committee has reviewed this evidence and concluded that people should be offered treatment up to the age of 65 years. Therefore, it is necessary to update this recommendation to reflect the revised upper age-limit for treatment.

regardless of BCG history)[13], or in people for whom Mantoux testing may be less reliable, for example, BCG-vaccinated people. **[2011, amended 2015]**

1.2.1.3 If Mantoux test is inconclusive, refer the person to a TB specialist. **[2011]**

***Children and young people***

1.2.1.4 Only consider using interferon-gamma release assays in children and young people if Mantoux testing is not available or is impractical (for example, situations in which large numbers need to be tested). **[new 2015]**

1.2.1.5 If a neonate has been in close contact with people with pulmonary TB and has not had at least 2 weeks of anti-TB treatment:

- Assess for active TB.
- Start isoniazid for 3 months.
- Carry out a Mantoux test after 3 months of treatment.
- If the Mantoux test is positive (5 mm or larger, regardless of BCG history), reassess for active TB (see section 1.3.1). If this assessment for active TB is negative, continue isoniazid for a total of 6 months.
- If the Mantoux test is negative, consider an interferon-gamma release assay:
  - if both are negative then stop isoniazid and give a BCG vaccination (see section 1.1.3)

[13] Although not updated by a new review, the Committee felt strongly that the threshold for test positivity in healthcare workers should be brought in line with both international guidance and the other recommendations in this section. The threshold for test positivity of 6 mm from the 2011 NICE guideline is inconsistent with the new recommendations, which opted for a threshold of 5 mm, as well as with the new clinical- and cost-effectiveness reviews and the new health economic modelling on which these were based. This is particularly an issue given that the 2011 recommendations were consensus-based, not driven by evidence. For this reason, the recommendation now simply references the recommendations on the diagnosis of latent TB infection. See section 4.1.3.4 of the full guideline for further information.

  - if the interferon-gamma release assay is positive, reassess for active TB (see section 1.3.1); if the test for active TB is negative, continue isoniazid treatment for a total of 6 months. **[new 2015]**

1.2.1.6 Treat children aged between 4 weeks and 2 years and in close contact with people with pulmonary TB as follows:

- Start isoniazid and carry out a Mantoux test.
- If the Mantoux test is positive (5 mm or larger, regardless of BCG history), assess for active TB (see section 1.3.1).
- If active TB is ruled out, give full treatment for latent TB infection (see section 1.2.2).
- If the Mantoux test is negative, continue isoniazid for 6 weeks, then repeat the Mantoux test and consider an interferon-gamma release assay:
  - if the repeat tests are negative, isoniazid may be stopped; give a BCG vaccination if the child has not already had one (see section 1.1.3)
  - if either repeat test is positive, assess for active TB (see section 1.3.1) and if the assessment is negative, complete treatment for latent TB. **[new 2015]**

1.2.1.7 Refer children younger than 2 years and in close contact with people with smear-negative pulmonary TB to a specialist to determine what testing strategy for latent TB would be most appropriate. **[new 2015]**

1.2.1.8 Offer Mantoux testing for latent TB in people aged between 2 and 17 years who are:

- household contacts of a person with pulmonary TB
- non-household contacts (other close contacts, for example, in workplaces and schools) of people with pulmonary TB. **[new 2015]**

1.2.1.9 If the Mantoux test is positive (5 mm or larger, regardless of BCG history) in people aged between 2 and 17 years:

- assess for active TB (see section 1.3.1), and
- consider treating them for latent TB infection (see section 1.2.2). **[new 2015]**

1.2.1.10 If the initial Mantoux test is negative but the child is a contact of a person with sputum-smear-positive disease, offer an interferon-gamma test after 6 weeks and repeat the Mantoux test to increase the sensitivity (to reduce false negative results). **[new 2015]**

***New entrants from high-incidence countries***

1.2.1.11 Offer Mantoux testing as the initial diagnostic test for latent TB infection in people who have recently arrived from a high-incidence country. If the Mantoux test is positive (5 mm or larger, regardless of BCG history):

- assess for active TB *(*see section 1.3.1), and
- consider treating them for latent TB infection (see section 1.2.2).

If this is unavailable offer an interferon-gamma release assay test. **[new 2015]**

***People who are immunocompromised***

1.2.1.12 If latent TB is suspected in children and young people who are immunocompromised, refer to a TB specialist. **[2015]**

1.2.1.13 In adults who are anticipated to be or are currently immunocompromised, do a risk assessment to establish whether testing should be offered, taking into account their:

- risk of progression to active TB based on how severely they are immunocompromised and for how long they have been immunocompromised

- risk factors for TB infection, such as country of birth or recent contact with an index case with suspected infectious or confirmed pulmonary or laryngeal TB. **[new 2015]**

1.2.1.14 For adults who are severely immunocompromised, such as those with HIV and CD4 counts of fewer than 200 cells/mm$^3$, or after solid organ or allogeneic stem cell transplant, offer an interferon-gamma release assay and a concurrent Mantoux test. If either test is positive (for Mantoux, this is an induration of 5 mm or larger, regardless of BCG history):

- assess for active TB (see section 1.3.1), and
- consider treating them for latent TB infection (see section 1.2.2). **[new 2015]**

1.2.1.15 For other adults who are immunocompromised, consider an interferon-gamma release assay alone or an interferon-gamma release assay with a concurrent Mantoux test. If either test is positive (for Mantoux, this is an induration of 5 mm or larger, regardless of BCG history):

- assess for active TB (see section 1.3.1), and
- consider treating them for latent TB infection (see section 1.2.2). **[new 2015]**

***Contacts – outbreak situation***

1.2.1.16 In an outbreak situation when large numbers of people may need to be screened, consider a single interferon-gamma release assay for people aged 18–65 years[14]. **[2011, amended 2015]**

[14] The upper age limit for offering testing to diagnose latent TB was previously 35 years, but has been increased to 65 years. Although evidence on contact tracing in adults of different ages was not reviewed as part of the 2015 update, the age threshold for testing is directly dependent on evidence of the benefits, harms and costs of treating latent TB. The Committee has reviewed this evidence and concluded that people should be offered treatment up to the age of 65 years. Therefore, it is necessary to update this recommendation to reflect the revised upper age-limit for treatment.

***Healthcare workers***

1.2.1.17 Offer a Mantoux test to new NHS employees who will be in contact with patients or clinical materials, if the employees:

- are not new entrants from high-incidence countries and
- have not had BCG vaccination (for example, they are without a BCG scar, other documentation or a reliable history). **[2011]**

1.2.1.18 Offer Mantoux testing as the initial diagnostic test for latent TB infection in new NHS employees who have recently arrived from a high-incidence country. If the Mantoux test is positive (5 mm or larger, regardless of BCG history):

- assess for active TB *(*see section 1.3.1), and
- consider treating them for latent TB infection (see section 1.2.2).

If this is unavailable, offer an interferon-gamma release assay test. **[new 2015]**

1.2.1.19 Offer an interferon-gamma release assay test to new NHS employees who have had contact with patients in settings where TB is highly prevalent. **[2011, amended 2015]**

1.2.1.20 Healthcare workers who are immunocompromised should be screened in the same way as other people who are immunocompromised. **[2011]**

***Under-served groups***

1.2.1.21 Offer adults aged 18–65 years[15] from under-served groups a single interferon-gamma release assay. **[2011, amended 2015]**

[15] The upper age limit for offering testing to diagnose latent TB was previously 35 years, but has been increased to 65 years. Although evidence on contact tracing in adults of different ages was not reviewed as part of the 2015 update, the age threshold for testing is directly dependent on evidence of the benefits, harms and costs of treating latent TB. The Committee

1.2.1.22 Substance misuse services with access to an interferon-gamma release assay should provide testing for adults aged 18–65 years[16] if they:

- live in a high incidence area
- are likely to be involved with substance misuse services or other support services on a regular basis (for example, for opioid substitution therapy), when support should be available for directly observed preventive therapy. **[2012, amended 2015]**

1.2.1.23 In high incidence areas (and at prisons that receive prisoners from high incidence areas), prison health services should offer an interferon-gamma release assay test for TB to inmates younger than 65 years[17] who are in regular contact with substance misuse services or other support services. This is provided arrangements have been made for this support to continue after release. **[2012, amended 2015]**

1.2.1.24 Substance misuse services and prison health services should incorporate interferon-gamma release assay testing with screening for hepatitis B and C, and HIV testing. They should refer prisoners and people who misuse substances with positive interferon-gamma

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has reviewed this evidence and concluded that people should be offered treatment up to the age of 65 years. Therefore, it is necessary to update this recommendation to reflect the revised upper age-limit for treatment.

[16] The upper age limit for offering testing to diagnose latent TB was previously 35 years, but has been increased to 65 years. Although evidence on contact tracing in adults of different ages was not reviewed as part of the 2015 update, the age threshold for testing is directly dependent on evidence of the benefits, harms and costs of treating latent TB. The Committee has reviewed this evidence and concluded that people should be offered treatment up to the age of 65 years. Therefore, it is necessary to update this recommendation to reflect the revised upper age-limit for treatment.

[17] The upper age limit for offering testing to diagnose latent TB was previously 35 years, but has been increased to 65 years. Although evidence on contact tracing in adults of different ages was not reviewed as part of the 2015 update, the age threshold for testing is directly dependent on evidence of the benefits, harms and costs of treating latent TB. The Committee has reviewed this evidence and concluded that people should be offered treatment up to the age of 65 years. Therefore, it is necessary to update this recommendation to reflect the revised upper age-limit for treatment.

release assay tests to local multidisciplinary TB teams for further clinical investigations. For prisoners, these investigations should be done in the prison if practically possible. **[2012, amended 2015]**

### 1.2.2 Managing latent TB

1.2.2.1 Be aware that certain groups of people with latent TB are at increased risk of going on to develop active TB, including people who:

- are HIV positive
- have excessive alcohol intake
- are injecting drug users
- have had solid organ transplantation
- have a haematological malignancy
- have had a jejunoileal bypass
- have diabetes
- have chronic renal failure or receive haemodialysis
- have had a gastrectomy
- are having anti-tumour necrosis factor-alpha treatment or other biologic agents
- have silicosis.

People in these groups who do not have treatment for latent TB, as specified in recommendations 1.2.2.2 to 1.2.2.9, for any reason should be advised of the risks and symptoms of TB (on the basis of an individual risk assessment), usually in a standard letter of the type referred to as 'Inform and advise' information (see section 1.1.2), and have posterior-anterior chest X-rays 3 and 12 months later. **[new 2015]**

1.2.2.2 For people, including those with HIV, aged younger than 65 years with evidence of latent TB who have been in close contact with people who have suspected infectious or confirmed active pulmonary or laryngeal drug-sensitive TB offer either of the following drug treatments:

- 3 months of isoniazid and rifampicin, or
- 6 months of isoniazid. **[new 2015]**

1.2.2.3 For adults between the ages of 35 and 65 years, offer drug treatments only if hepatotoxicity is not a concern. **[new 2015]**

1.2.2.4 Base the choice of regimen on the person's clinical circumstances. Offer:

- 3 months of isoniazid and rifampicin if hepatotoxicity is a concern; this would include both liver function (including transaminase) tests and assessment of risk factors
- 6 months of isoniazid if interactions with rifamycins are a concern, for example, in people with HIV or who have had a transplant. **[new 2015]**

1.2.2.5 Clearly explain the risks and potential benefits of each treatment regimen. In discussion with the person, select a suitable regimen if they wish to proceed with preventive treatment. **[new 2015]**

1.2.2.6 Offer testing for HIV and hepatitis B and C before starting treatment for latent TB. For recommendations on hepatitis B and C, see NICE guidelines on hepatitis B and C: ways to promote and offer testing to people at increased risk of infection and hepatitis B (chronic): diagnosis and management of chronic hepatitis B in children, young people and adults. For recommendations on HIV, see NICE guidelines on increasing the uptake of HIV testing among black Africans in England and increasing the uptake of HIV testing among men who have sex with men. **[new 2015]**

1.2.2.7 If a person also has severe liver disease, for example, Child-Pugh level B or C, work with a specialist multidisciplinary team with experience of managing TB and liver disease. **[new 2015]**

1.2.2.8 Manage treatment with caution, ensuring careful monitoring of liver function, in:

- people with non-severe liver disease
- people with abnormal liver function (including abnormal transaminase levels) before starting treatment for latent TB infection
- people who misuse alcohol or drugs. **[new 2015]**

1.2.2.9 Ensure people having treatment for latent TB who also have social risk factors, such as misusing alcohol or drugs or being homeless, are linked to support services. They should also have an assessment of social needs and stability, including potential barriers to adherence or treatment completion (see section 1.7). **[new 2015]**

## *1.3 Active TB*

### 1.3.1 Diagnosing active TB

1.3.1.1 If TB is a possibility, microbiology staff should consider carrying out TB culture on samples, even if it is not requested. **[2006, amended 2015]**

1.3.1.2 If there are clinical signs and symptoms consistent with a diagnosis of TB, start treatment without waiting for culture results (see section 1.3.2). **[2006]**

1.3.1.3 Consider completing the standard recommended regimen, even if subsequent culture results are negative. **[2006, amended 2015]**

#### *Pulmonary TB*

1.3.1.4 Take a posterior-anterior chest X-ray; do further diagnostic investigations (as detailed below and summarised in table 1) if chest X-ray appearances suggest TB. **[2015]**

1.3.1.5 Send multiple respiratory samples (3 deep cough sputum samples, preferably with 1 early morning sample) for TB microscopy and culture. **[2015]**

- This should be before starting treatment if possible or, failing that, within 7 days of starting treatment in people with life-threatening disease. **[2006, amended 2015]**
- Obtain spontaneously-produced, deep cough sputum samples if possible, otherwise use:
  - 3 gastric lavages or 3 inductions of sputum in children and young people (see recommendation 1.5.1.0) **[new 2015]**, or
  - induction of sputum or bronchoscopy and lavage in adults (see recommendation 1.5.1.0). **[2006, amended 2015]**
- Laboratory practices should be in accordance with Public Health England's Standards for Microbiology Investigations. **[new 2015]**

1.3.1.6 Send samples for TB culture from autopsy samples if pulmonary TB is a possibility. **[2006]**

***Adults***

1.3.1.7 A TB specialist should request rapid diagnostic nucleic acid amplification tests for the *M. tuberculosis* complex (*M. tuberculosis*, *M. bovis*, *M. africanum*) on primary specimens (listed in table 1) if there is clinical suspicion of TB disease, and:

- the person has HIV, or
- rapid information about mycobacterial species would alter the person's care, or
- the need for a large contact-tracing initiative is being explored. **[new 2015]**

***Children and young people***

1.3.1.8 In children and young people aged 15 years or younger with suspected pulmonary TB, offer rapid diagnostic nucleic acid amplification tests for the *M. tuberculosis* complex (*M. tuberculosis*, *M. bovis*, *M. africanum*). Usually only 1 nucleic acid amplification test will be necessary per specimen type (for example,

spontaneous sputum, induced sputum or gastric lavage). (Listed in table 1). **[new 2015]**

1.3.1.9 In young people aged 16–18 years use the same criteria as in adults to decide whether to request rapid diagnostic nucleic acid amplification tests (see table 1). **[new 2015]**

**Table 1 Diagnostic investigations for pulmonary TB**

| Suspected site of disease | Imaging | Specimen | Routine test | Additional test (if it would alter management) |
|---|---|---|---|---|
| Pulmonary (adult) | Posterior-anterior X-ray | 3 adequate respiratory samples:<br>• preferably spontaneously-produced, deep cough sputum samples, otherwise induced sputum or bronchoscopy and lavage<br>• preferably 1 early morning sample | Microscopy<br>Culture<br>Histology | Nucleic acid amplification test |
| Pulmonary (young people aged 16–17 years) | Posterior-anterior X-ray | 3 adequate respiratory samples:<br>• preferably spontaneously-produced, deep cough sputum samples, otherwise induced sputum or gastric lavage | Microscopy<br>Culture<br>Histology | Nucleic acid amplification test |

| | | | | |
|---|---|---|---|---|
| | | • preferably 1 early morning sample | | |
| Pulmonary (children aged 15 years or younger) | Posterior-anterior X-ray | 3 adequate respiratory samples:<br>• preferably spontaneously-produced, deep cough sputum samples, otherwise induced sputum or gastric lavage<br>• preferably 1 early morning sample | Microscopy<br>Culture<br>Histology<br>Nucleic acid amplification tests (1 per specimen type) | Interferon-gamma release assay and/or tuberculin skin test (with expert input) |

1.3.1.10 Either a paediatrician with experience and training in the treatment of TB or a general paediatrician with advice from a specialised clinician should investigate and manage TB in children and young people. **[new 2015]**

1.3.1.11 An expert in paediatric TB may request interferon gamma release assays and tuberculin skin tests. Interpret these together with other diagnostic tools (such as history taking, clinical examination and imaging). **[new 2015]**

***Extrapulmonary TB***

1.3.1.12 Discuss the advantages and disadvantages of both biopsy and needle aspiration with the patient, with the aim of obtaining adequate material for diagnosis. **[2006]**

1.3.1.13 Do not place part or all of any of the samples in formalin (or other fixative agent) when sending for TB culture. **[2006, amended 2015]**

1.3.1.14 Think about a diagnosis of extrapulmonary TB even if rapid diagnostic tests in, for example, cerebrospinal fluid, pleural fluid or ascitic fluid are negative. **[new 2015]**

1.3.1.15 Offer all patients presenting with extrapulmonary TB a posterior–anterior chest X-ray and, if possible, culture of a spontaneously-produced respiratory sample to exclude or confirm coexisting pulmonary TB (see section 1.3.1). Also, consider site-specific tests as described below to exclude or confirm additional sites of TB. **[new 2015]**

1.3.1.16 Refer to an expert for sites not listed here, including TB of the eye and other rare sites of disease. **[new 2015]**

***Pleural TB***

1.3.1.17 Use the site-specific investigations listed in table 2 to diagnose and assess pleural TB.

**Table 2 Site-specific investigations for pleural TB**

| Suspected site of disease | Imaging | Specimen | Routine test | Additional test (if it would alter management) |
|---|---|---|---|---|
| Pleural | Posterior-anterior X-ray | 3 adequate respiratory samples:<br>• preferably spontaneously-produced, deep cough sputum samples, otherwise induced sputum or gastric lavage<br>• preferably | Microscopy<br>Culture<br>Histology | – |

| | | | | |
|---|---|---|---|---|
| | | 1 early morning sample | | |
| | | Pleural fluid | Microscopy<br>Culture<br>Cytology | Adenosine deaminase assay |

**[new 2015]**

***Central nervous system TB***

1.3.1.18 Use the site-specific investigations listed in table 3 to diagnose and assess central nervous system TB.

**Table 3 Site-specific investigations for central nervous system TB**

| Suspected site of disease | Imaging | Specimen | Routine test | Additional test (if it would alter management) |
|---|---|---|---|---|
| Central nervous system | CT<br>MRI | Biopsy of suspected tuberculoma | Microscopy<br>Culture<br>Histology | – |
| | | Cerebrospinal fluid | Microscopy<br>Culture<br>Cytology | Adenosine deaminase assay |
| Meningeal | CT<br>MRI | Cerebrospinal fluid | Microscopy<br>Culture<br>Cytology | Nucleic acid amplification test<br>Adenosine deaminase assay |

**[new 2015]**

1.3.1.19 Offer treatment for TB meningitis if clinical signs and other laboratory findings are consistent with the diagnosis, even if a rapid diagnostic test is negative. **[new 2015]**

***Lymph node TB***

1.3.1.20 Use the site-specific investigations listed in table 4 to diagnose and assess lymph node TB.

**Table 4 Site-specific investigations for lymph node TB**

| Suspected site of | Imaging | Specimen | Routine test | Additional test (if it |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| **disease** | | | | **would alter management)** |
| Lymph node | Ultrasound<br>CT<br>MRI | Biopsy | Microscopy<br>Culture<br>Histology | Nucleic acid amplification test |
| | | Aspirate | Microscopy<br>Culture<br>Cytology | Nucleic acid amplification test |

**[new 2015]**

***Pericardial TB***

1.3.1.21 Use the site-specific investigations listed in table 5 to diagnose and assess pericardial TB.

**Table 5 Site-specific investigations for pericardial TB**

| Suspected site of disease | Imaging | Specimen | Routine test | Additional test (if it would alter management) |
|---|---|---|---|---|
| Pericardial | Echocardiogram | Biopsy of pericardium | Microscopy<br>Culture<br>Histology | – |
| | | Pericardial fluid | Microscopy<br>Culture<br>Cytology | Nucleic acid amplification test<br>Adenosine deaminase assay |

**[new 2015]**

***Gastrointestinal TB***

1.3.1.22 Use the site-specific investigations listed in table 6 to diagnose and assess gastrointestinal TB.

**Table 6 Site-specific investigations for gastrointestinal TB**

| Suspected site of disease | Imaging | Specimen | Routine test | Additional test (if it would alter management) |
|---|---|---|---|---|
| Gastrointestinal | Ultrasound<br>CT<br>Laparoscopy | Biopsy of omentum<br>Biopsy of bowel | Microscopy<br>Culture<br>Histology | – |

| | | | | |
|---|---|---|---|---|
| | | Biopsy of liver | | |
| | | Ascitic fluid | Microscopy<br>Culture<br>Cytology | Adenosine deaminase assay |

**[new 2015]**

***Genitourinary TB***

1.3.1.23 Use the site-specific investigations listed in table 7 to diagnose and assess genitourinary TB.

**Table 7 Site-specific investigations for genitourinary TB**

| Suspected site of disease | Imaging | Specimen | Routine test | Additional test (if it would alter management) |
|---|---|---|---|---|
| Genitourinary | Ultrasound<br>Intravenous urography<br>Laparoscopy | Early morning urine | Culture | – |
| | | Biopsy from site of disease, such as endometrial curettings or renal biopsy | Microscopy<br>Culture<br>Histology | – |

**[new 2015]**

***Bone and joint TB***

1.3.1.24 Use the site-specific investigations listed in table 8 to diagnose and assess bone and joint TB.

**Table 8 Site-specific investigations for bone and joint TB**

| Suspected site of disease | Imaging | Specimen | Routine test | Additional test (if it would alter management) |
|---|---|---|---|---|
| Bone or joint TB | X-ray<br>CT<br>MRI | Biopsy or aspirate of paraspinal | Culture | – |

| | | | | |
|---|---|---|---|---|
| | | abscess<br>Biopsy of joint<br>Aspiration of joint fluid | | |

**[new 2015]**

***Disseminated TB***

1.3.1.25 Use the site-specific investigations listed in table 9 to diagnose and assess disseminated TB.

**Table 9 Site-specific investigations for disseminated TB**

| Suspected site of disease | Imaging | Specimen | Routine test | Additional test (if it would alter management) |
|---|---|---|---|---|
| Disseminated | CT of the thorax and head<br>MRI<br>Ultrasound of the abdomen | Biopsy of site of disease, including lung, liver and bone marrow | Microscopy<br>Culture<br>Histology | Additional tests appropriate to site |
| | | Aspirate bone marrow<br>Bronchial wash<br>Cerebrospinal fluid | Microscopy (if sample available)<br>Culture<br>Cytology | |
| | | Blood | Culture | |

**[new 2015]**

***Skin TB***

1.3.1.26 Use the site-specific investigations listed in table 10 to diagnose and assess skin TB.

**Table 10: Site-specific investigations for skin TB**

| Suspected site of disease | Imaging | Specimen | Routine test | Additional test (if it would alter management) |
|---|---|---|---|---|
| Skin | - | Biopsy | Microscopy<br>Culture<br>Histology | - |

**[2015]**

***Localised tuberculous abscess***

1.3.1.27 Use the site-specific investigations listed in table 11 to diagnose and assess TB in a localised, tuberculous abscess at a site other than a lymph node.

**Table 11: Site-specific investigations for localised tuberculous abscess**

| Suspected site of disease | Imaging | Specimen | Routine test | Additional test (if it would alter management) |
|---|---|---|---|---|
| Abscess outside of the lymph nodes | Ultrasound or other appropriate imaging | Aspirate | Microscopy<br>Culture<br>Cytology | – |
| | | Biopsy | Microscopy<br>Culture<br>Histology | – |

**[2015]**

### 1.3.2 Managing active TB

***Standard treatment***

1.3.2.1 Once a diagnosis of active TB is made:

- the clinician responsible for care should refer the person with TB to a clinician with training in, and experience of, the specialised care of people with TB
- the TB service should include specialised nurses and health visitors
- TB in children should be managed either by a paediatrician with experience and training in the treatment of TB, or by a general paediatrician with advice from a specialised clinician.

If these arrangements are not possible, seek advice from more specialised colleagues throughout the treatment period. **[2015]**

1.3.2.2 For people with active TB without central nervous system involvement, offer:

- isoniazid, rifampicin, pyrazinamide and ethambutol for 2 months, then
- isoniazid and rifampicin for a further 4 months.

Modify the treatment regimen according to drug susceptibility testing. **[2015]**

1.3.2.3 For people with active TB of the central nervous system, offer:

- isoniazid, rifampicin, pyrazinamide and ethambutol for 2 months, then
- isoniazid and rifampicin for a further 10 months.

Modify the treatment regimen according to drug susceptibility testing. **[2015]**

1.3.2.4 Test people with active spinal TB who have neurological signs or symptoms for central nervous system involvement (see section 1.3.1). Manage direct spinal cord involvement (for example, a spinal cord tuberculoma) as TB of the central nervous system. **[2015]**

1.3.2.5 For people with active spinal TB without central nervous system involvement, do not extend treatment beyond 6 months for residual effects (for example, persistent bending of the spine or vertebral loss). **[2015]**

1.3.2.6 Test people with disseminated (including miliary) TB for central nervous system involvement (see section 1.3.1). If there is evidence of central nervous system involvement, treat as for TB of the central nervous system. **[2015]**

1.3.2.7 Treat active peripheral lymph node TB in people who have had an affected gland surgically removed with the standard recommended regimen. **[new 2015]**

1.3.2.8 For people with active TB of the lymph nodes, do not routinely extend treatment beyond 6 months for newly enlarged lymph nodes or sinus formation, or for residual enlargement of the lymph nodes or sinuses. **[new 2015]**

***Dosing of regimens***

1.3.2.9 Use fixed-dose combination tablets as part of any TB treatment regimen. **[2006]**

1.3.2.10 Do not offer anti-TB treatment dosing regimens of fewer than 3 times per week. **[2006, amended 2015]**

1.3.2.11 Offer a daily dosing schedule to people with active pulmonary TB. **[2006, amended 2015]**

1.3.2.12 Consider a daily dosing schedule as first choice in people with active extrapulmonary TB. **[2006, amended 2015]**

1.3.2.13 Consider 3 times weekly dosing for people with active TB only if:

- risk assessment identifies a need for directly observed therapy and enhanced case management (see section 1.7) and
- daily directly observed therapy is not possible. **[2006, amended 2015]**

***People with comorbidities or coexisting conditions***

1.3.2.14 If the person has a comorbidity or coexisting condition such as:

- HIV, or
- severe liver disease, for example, Child-Pugh level B or C, or
- stage 4 or 5 chronic kidney disease (a glomerular filtration rate of <30 ml/minute/1.73m$^2$), or
- diabetes, or
- eye disease or impaired vision, or
- pregnancy or breastfeeding, or

- a history of alcohol or substance misuse

work with a specialist multidisciplinary team with experience of managing TB and the comorbidity or coexisting condition. **[new 2015]**

1.3.2.15 For people with HIV and active TB without central nervous system involvement, do not routinely extend treatment beyond 6 months. **[new 2015]**

1.3.2.16 For people with HIV and active TB with central nervous system involvement, do not routinely extend treatment beyond 12 months. **[new 2015]**

1.3.2.17 Take into account drug-to-drug interactions when co-prescribing antiretroviral and anti-TB drugs. **[new 2015]**

### *Adjunctive corticosteroids*

**Central nervous system TB**

1.3.2.18 At the start of an anti-TB treatment regimen, offer people with active TB of the central nervous system dexamethasone or prednisolone, initially at a high dose with gradual withdrawal over 4–8 weeks. An example of a suitable regimen is listed in table 12.

**Table 12 Example of suitable corticosteroid regimen for adults**

| | Stage | |
|---|---|---|
| **Dose of dexamethasone by week** | **1** | **2 or 3** |
| 1 | 0.3 mg/kg/day (IV) | 0.4 mg/kg/day (IV) |
| 2 | 0.2 mg/kg/day (IV) | 0.3 mg/kg/day (IV) |
| 3 | 0.1 mg/kg/day (oral) | 0.2 mg/kg/day (IV) |
| 4 | 3 mg/day (oral) | 0.1 mg/kg/day (IV) |
| 5 | 2 mg/day (oral) | 4 mg/day (oral) |
| 6 | 1 mg/day (oral) | 3 mg/day (oral) |
| 7 | – | 2 mg/day (oral) |
| 8 | – | 1 mg/day (oral) |
| Abbreviation: IV, intravenous | | |

**[new 2015]**

1.3.2.19 At the start of an anti-TB treatment regimen, offer children and young people with active TB of the central nervous system dexamethasone or prednisolone. This should initially be at a high dose with gradual withdrawal over 4–8 weeks. An example of a suitable regimen is oral prednisolone, starting at a dose of 4 mg/kg of body weight/day. **[new 2015]**

**Pericardial TB**

1.3.2.20 In adults with active pericardial TB, offer oral prednisolone at a starting dose of 60 mg/day, gradually withdrawing it 2–3 weeks after starting treatment. **[2015]**

1.3.2.21 In children and young people with active pericardial TB, offer oral prednisolone at a starting dose of 1 mg/kg of body weight/day (maximum 40 mg/day), gradually withdrawing it 2–3 weeks after starting treatment. **[2015]**

***Rapid-access radiology and other investigation results – referral to multidisciplinary TB team process***

1.3.2.22 Local hospitals, clinical commissioning groups and the local multidisciplinary team should consider developing a local pathway for patients with imaging highly suggestive of active TB. The pathway should enable them to be referred by the radiology department by the next working day to multidisciplinary TB teams. Consider including the following in the pathway:

- Agreed standardised radiology codes to identify imaging investigations highly suggestive of active TB.
- Regular liaison between multidisciplinary TB teams and the radiology department (for example, weekly) to ensure all patients have been referred to the multidisciplinary team for triage using the agreed local mechanism or pathway. **[new 2015]**

1.3.2.23 Report results of all pathology or other diagnostic results suggesting TB to the multidisciplinary TB team and clinician requesting them. **[new 2015]**

***Direct referral from emergency departments to multidisciplinary TB teams***

1.3.2.24 Commissioners and multidisciplinary teams should consider working with emergency departments to develop direct referral pathways for people with suspected TB so that:

- the local multidisciplinary team is informed of all suspected cases of TB using the appropriate process
- referral is accepted from any appropriate healthcare professional, for example an on-call radiologist. **[new 2015]**

1.3.2.25 Emergency department clinicians should ensure first-line diagnostic tests for TB are performed (see table 1 in section 1.3.1). **[new 2015]**

1.3.2.26 Emergency departments should consider carrying out audits of their direct referrals because of suspected TB and the outcomes of diagnosis. **[new 2015]**

1.3.2.27 Multidisciplinary TB teams should consider training emergency department staff in:

- using approaches that do not stigmatise people with TB
- giving people with TB appropriate advice (see sections 1.1.1, 1.1.2 and 1.5). **[new 2015]**

***Adjunctive surgery***

1.3.2.28 If surgery is indicated, the surgeon should fully explain what is involved to the person, either with or after consulting a TB specialist. Discuss the possible benefits and risks with the person and their family members or carers, as appropriate, so that they can make an informed decision. **[new 2015]**

**Central nervous system TB**

1.3.2.29 Consider surgery as a therapeutic intervention in people with TB of the central nervous system only if there is evidence of raised intracranial pressure. **[new 2015]**

**Spinal TB**

1.3.2.30 Do not routinely perform surgery in people with spinal TB to eradicate the disease. **[new 2015]**

1.3.2.31 Consider surgery in people with spinal TB if there is spinal instability or evidence of spinal cord compression. **[new 2015]**

## *1.4 Drug resistant TB*

### 1.4.1 Multidrug-resistant TB

1.4.1.1 For people with clinically suspected TB, a TB specialist should request rapid diagnostic nucleic acid amplification tests for rifampicin resistance on primary specimens if a risk assessment for multidrug resistance identifies any of the following risk factors:

- history of previous TB drug treatment, particularly if there was known to be poor adherence to that treatment
- contact with a known case of multidrug-resistant TB
- birth or residence in a country in which the World Health Organization reports that a high proportion (5% or more) of new TB cases are multidrug-resistant. **[new 2015]**

1.4.1.2 If the rapid diagnostic nucleic acid amplification test for rifampicin resistance is positive:

- start infection control measures and continue until pulmonary disease has been excluded (see section 1.5)
- manage treatment along with a multidisciplinary team with experience of managing multidrug-resistant TB (see section 1.8)
- offer a treatment regimen involving at least 6 drugs to which the mycobacterium is likely to be sensitive

- test for resistance to second-line drugs. **[new 2015]**

1.4.1.3 If the rapid diagnostic nucleic acid amplification test for the *M. tuberculosis* complex is positive but rifampicin resistance is not detected, treat as drug-susceptible TB with the standard regimen (see section 1.4.2). **[new 2015]**

1.4.1.4 If the rapid diagnostic nucleic acid amplification test for the *M. tuberculosis* complex is negative in a person at high risk of multidrug-resistant TB:

- obtain further specimens for nucleic acid amplification testing and culture, if possible
- use rapid rifampicin resistance detection on cultures that become positive for the *M. tuberculosis* complex
- consider waiting for the results of further tests before starting treatment if the person is well
- if urgent treatment is necessary, consider managing as multidrug-resistant TB until sensitivity results are available. **[new 2015]**

1.4.1.5 When definitive phenotypic susceptibility results are available, modify treatment as needed (see sections 1.3.2 and 1.4.2). **[new 2015]**

1.4.1.6 Consider more intensive clinical follow-up for people with multidrug-resistant TB. This includes those having directly observed therapy (see section 1.7) throughout treatment because of the complexity of treatment and risk of adverse events. **[new 2015]**

### 1.4.2 Drug-resistant TB (excluding multidrug- and extensively drug-resistant TB)

1.4.2.1 For people with TB, without central nervous system involvement, that is resistant to just 1 drug consider the treatments in table 13.

**Table 13 Treatment regimen for people with TB that is resistant to 1 drug**

| Drug resistance | First 2 months (initial phase) | Continue with (continuation phase) |
|---|---|---|
| Isoniazid | Rifampicin, pyrazinamide and ethambutol | Rifampicin and ethambutol for 7 months (up to 10 months for extensive disease) |
| Pyrazinamide | Rifampicin, isoniazid and ethambutol | Rifampicin and isoniazid for 7 months |
| Ethambutol | Rifampicin, isoniazid and pyrazinamide | Rifampicin and isoniazid for 4 months |
| Rifampicin | As for multidrug-resistant TB | |

**[new 2015]**

1.4.2.2 Discuss the options for organising care for people with multidrug-resistant TB with clinicians who specialise in this. Seek the patient's views and take them into account, and consider shared care (see section 1.8). **[2006]**

1.4.2.3 Consider surgery as a therapeutic intervention in people with potentially resectable multidrug-resistant disease if:

- optimal medical therapy under direct observation has not worked, or
- medical therapy is likely to fail because of extensively drug-resistant TB. **[new 2015]**

1.4.2.4 For people with drug-resistant TB and central nervous system involvement, involve a TB specialist with experience in managing drug-resistant TB in decisions about the most appropriate regimen and the duration of treatment. **[new 2015]**

## *1.5 Infection control*

### 1.5.1 Healthcare settings

1.5.1.1 Ensure healthcare settings can promptly identify people with suspected infectious or confirmed pulmonary TB before or at presentation. Ensure people working in the settings follow the

recommendations about testing and treatments (see sections 1.2, 1.3 and 1.4*)*. **[new 2015]**

1.5.1.2 Put patients with suspected infectious or confirmed pulmonary TB who will remain in a hospital setting (including emergency, outpatients or inpatient care) in a single room. If this is not possible, keep the person's waiting times to a minimum. This may involve prioritising their care above that of other patients. **[new 2015]**

1.5.1.3 Minimise the number and duration of visits a person with TB makes to an outpatient department while they are still infectious. To minimise the risk of infection, people with infectious TB should be seen at times or in places away from other patients. **[new 2015]**

1.5.1.4 In hospital settings, risk assess people with suspected infectious or confirmed pulmonary TB for multidrug-resistant TB *(*see section 1.4.1). Care for those deemed to be at low risk in a single room, as a minimum. For those deemed to be at high risk:

- provide care in a negative pressure room, and
- have specimens sent for rapid diagnostic tests, such as nucleic acid amplification tests. **[new 2015]**

1.5.1.5 Unless there is a clear clinical or public health need, such as homelessness, people with suspected infectious or confirmed pulmonary TB should not be admitted to hospital for diagnostic tests or for care. **[2006, amended 2015]**

1.5.1.6 Do not admit people with suspected infectious or confirmed pulmonary TB to a ward containing immunocompromised patients, such as transplant recipients, people with HIV and those on anti-tumour necrosis factor alpha or other biologics, unless they can be cared for in a negative-pressure room on the same ward. **[new 2015]**

1.5.1.7 Assess any visitors to a child with suspected active TB in hospital for symptoms of infectious TB, and keep them separate from other patients until they have been excluded as a source of infection (see sections 1.2.1 and 1.6.1). **[new 2015]**

1.5.1.8 Care for people with a continuing clinical or public health need for admission with pulmonary TB in a single room (as a minimum) until they have completed 2 weeks of the standard treatment regimen (see section 1.3.2) if they:

- are unlikely to be rifampicin resistant (that is, do not have risk factors for multidrug-resistant TB, see section 1.4.1), or
- have negative rifampicin resistance on nucleic acid amplification test or culture. **[new 2015]**

1.5.1.9 Consider de-escalating isolation after 2 weeks of treatments, taking into account the risks and benefits, if:

- the person is showing tolerance to the prescribed treatment
- there is agreement to adhere to treatment
- there is resolution of cough
- there is definite clinical improvement on treatment; for example, remaining afebrile for a week
- there are not immunocompromised people, such as transplant recipients, people with HIV and those on anti-tumour necrosis factor alpha or other biologics, in the same accommodation
- the person's initial smear grade was not high; for example, 2 or less
- there is not extensive pulmonary involvement, including cavitation
- there is no laryngeal TB. **[new 2015]**

1.5.1.10 In people who may have TB, only carry out aerosol-generating procedures such as bronchoscopy, sputum induction or nebuliser

treatment in an appropriately engineered and ventilated area (ideally a negative pressure room). **[new 2015]**

1.5.1.11 Consider discharging from hospital people:

- who do not have a continuing clinical or public health need for admission with pulmonary TB, and
- who are unlikely to be rifampicin resistant (that is, do not have risk factors for multidrug-resistant TB (see section 1.4.1), or
- who have negative rifampicin resistance on nucleic acid amplification test or culture.

If discharged, congregate settings should be avoided for the first 2 weeks of their treatment. **[new 2015]**

1.5.1.12 Ask inpatients with suspected infectious or confirmed pulmonary TB (with explanation) to wear a surgical mask in the hospital whenever they leave their room, until they have had at least 2 weeks of treatment. **[2015]**

1.5.1.13 Offer patients advice on simple respiratory hygiene measures. **[new 2015]**

### 1.5.2 Non-healthcare settings

1.5.2.1 In non-healthcare settings catering for large numbers of people and populations at high risk of TB (such as detention settings, residential hostels and day centres):

- promote simple respiratory hygiene
- ensure awareness of symptoms of potentially infectious TB to enable prompt healthcare referral
- seek advice from the local public health team and the local authority on accommodating people with TB
- ensure adequate ventilation. **[new 2015]**

1.5.2.2 In prisons or immigration removal centres, everyone with X-ray changes indicative of active TB, as well as those with symptoms who are awaiting X-ray, should be isolated in an adequately ventilated individual room or cell. Prisoners and detainees should be retained on medical hold until they have:

- proven smear negative and had a posterior-anterior X-ray that does not suggest active TB, or
- had a negative risk assessment for multidrug-resistant TB and completed 2 weeks of the standard treatment regimen. **[2012, amended 2015]**

### 1.5.3 Multidrug-resistant TB

1.5.3.1 If people with suspected or known infectious multidrug-resistant TB are admitted to hospital, admit them to a negative-pressure room. If none is available locally, transfer them to a hospital that has these facilities and a clinician experienced in managing complex drug-resistant cases. Carry out care in a negative-pressure room for people with:

- suspected multidrug-resistant TB, until non-resistance is confirmed
- confirmed multidrug-resistant TB, until they have 3 negative smears at weekly intervals and are ideally culture negative. **[new 2015]**

1.5.3.2 As soon as possible, explore options to reduce the psychosocial impact of prolonged isolation. For example, through providing free access to Internet, telephone and television, and accompanied walks in the open air. **[new 2015]**

1.5.3.3 Consider earlier discharge for people with confirmed multidrug-resistant TB, if there are suitable facilities for home isolation and the person will adhere to the care plan. **[new 2015]**

1.5.3.4 For people with confirmed multidrug-resistant TB whose symptoms have improved and who are unable to produce sputum, discharge decisions should be taken by the multidisciplinary team and the health protection team. **[new 2015]**

1.5.3.5 Staff and visitors should wear FFP3 masks during contact with a patient with suspected or known multidrug-resistant TB while the patient is thought to be infectious. **[2015]**

1.5.3.6 Before deciding to discharge a patient with suspected or known multidrug-resistant TB from hospital, agree with the patient and carers secure arrangements for supervising and administering all anti-TB therapy. **[2015]**

1.5.3.7 Discuss the decision to discharge a patient with suspected or known multidrug-resistant TB with:

- the infection control team
- the local microbiologist
- the local TB service and
- the health protection team. **[2015]**

1.5.3.8 Ensure negative-pressure rooms used for infection control in multidrug-resistant TB meet the standards of the Interdepartmental Working Group on Tuberculosis, and are clearly identified for staff, for example by a standard sign. Keep such signs up to date. **[2015]**

## *1.6 Case finding*

### 1.6.1 Contact tracing

#### *Human to human transmission*

1.6.1.1 Once a person has been diagnosed with active TB, the diagnosing physician should inform relevant colleagues so that the need for contact tracing can be assessed without delay. Contact tracing should not be delayed until notification. **[2006]**

1.6.1.2 Offer screening to the household contacts of any person with pulmonary TB[18]. Household contacts are defined as those who share a bedroom, kitchen, bathroom or sitting room with the index case. **[2006, amended 2015]**

1.6.1.3 Assess symptomatic household contacts for active TB. **[new 2015]**

1.6.1.4 In asymptomatic household contacts younger than 65 years[19], consider standard testing for latent TB (see section 1.2.1), followed by consideration of BCG (see section 1.1.3) or treatment for latent TB infection (see section 1.2.2) once active TB has been ruled out (see section 1.3.1) for people who:

- are previously unvaccinated, and
- are household contacts of a person with sputum-smear-positive TB, and
- are Mantoux negative (see section 1.2.1). **[2006, amended 2015]**

1.6.1.5 In asymptomatic household contacts older than 65 years[20], consider a posterior–anterior chest X-ray (if there are no contraindications), possibly leading to further investigation for active TB (see section 1.3.1). **[2006, amended 2015]**

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[18] The Committee has revised this recommendation – which previously referred to 'all people with active TB' – to limit testing to contacts of people with potentially infectious TB.

[19] The upper age limit for offering testing to diagnose latent TB was previously 35 years, but has been increased to 65 years. Although evidence on contact tracing in adults of different ages was not reviewed as part of the 2015 update, the age threshold for testing is directly dependent on evidence of the benefits, harms and costs of treating latent TB. The Committee has reviewed this evidence and concluded that people should be offered treatment up to the age of 65 years. Therefore, it is necessary to update this recommendation to reflect the revised upper age-limit for treatment.

[20] The upper age limit for offering testing to diagnose latent TB was previously 35 years, but has been increased to 65 years. Although evidence on contact tracing in adults of different ages was not reviewed as part of the 2015 update, the age threshold for testing is directly dependent on evidence of the benefits, harms and costs of treating latent TB. The Committee has reviewed this evidence and concluded that people should be offered treatment up to the age of 65 years. Therefore, it is necessary to update this recommendation to reflect the revised upper age-limit for treatment.

1.6.1.6 For people with pulmonary TB, assess other close contacts. These may include boyfriends or girlfriends and frequent visitors to the home of the index case. Occasionally, a workplace associate may be judged to have had contact equivalent to that of household contacts, and should be assessed in the same way. **[2006, amended 2015]**

1.6.1.7 Do not routinely assess casual contacts of people with TB, who will include most workplace contacts. **[2006, amended 2015]**

1.6.1.8 Assess the need for tracing casual contacts of people with pulmonary TB[21] if:

- the index case is judged to be particularly infectious (for example, evidenced by transmission to close contacts), or
- any casual contacts are known to possess features that put them at high risk of going on to develop active TB. **[2006, amended 2015]**

1.6.1.9 Offer 'inform and advise' information to all contacts of people with smear-positive TB (see section 1.1.2). **[2006]**

***Cases on an aircraft***

1.6.1.10 After diagnosis of TB in an aircraft traveller, do not routinely carry out contact tracing of fellow passengers. **[2006, amended 2015]**

1.6.1.11 The notifying clinician should inform the relevant consultant in communicable disease control or health protection if:

- less than 3 months has elapsed since the flight and the flight was longer than 8 hours, and
- the index case is sputum-smear-positive, and either
- the index case has multidrug-resistant TB, or

[21] The Committee has revised this recommendation – which previously referred to 'all people with active TB' – to limit testing to contacts of people with potentially infectious TB.

- the index case coughed frequently during the flight. **[2006]**

1.6.1.12 The consultant in communicable disease control or health protection should provide the airline with 'inform and advise' information to send to passengers seated in the same part of the aircraft as the index case. **[2006]**

1.6.1.13 If the TB index case is an aircraft crew member, contact tracing of passengers should not routinely take place. **[2006]**

1.6.1.14 If the TB index case is an aircraft crew member, contact tracing of other members of staff is appropriate, in accordance with the usual principles for screening workplace colleagues (see section 1.8.1). **[2006]**

***Cases in schools***

1.6.1.15 After diagnosis of TB in a school pupil or member of staff, the consultant in communicable disease control or health protection should be prepared to explain the prevention and control procedures to staff, parents and the press. Advice on managing these incidents and their public relations is available from the Public Health England Health Protection Team and the local authority. **[2006, amended 2015]**

1.6.1.16 If a school pupil is diagnosed with sputum-smear-positive TB, carry out a risk assessment of the need to test the rest of his or her class (if there is a single class group), or the rest of the year group who share classes, as part of contact tracing. **[2006]**

1.6.1.17 If a teacher has sputum-smear-positive TB, assess the pupils in his or her classes during the preceding 3 months as part of contact tracing. **[2006]**

1.6.1.18 Consider extending contact tracing in schools to include children and teachers involved in extracurricular activities, and non-teaching staff, on the basis of:

- the degree of infectivity of the index case
- the length of time the index case was in contact with others
- whether contacts are unusually susceptible to infection
- the proximity of contact. **[2006, amended 2015]**

1.6.1.19 Treat secondary cases of sputum-smear-positive TB as index cases for contact tracing. **[2006]**

1.6.1.20 If the index case of a school pupil's TB infection is not found, and the child is not in a high-risk group for TB, contact tracing and screening (by either symptom enquiry or chest X-ray) should be considered for all relevant members of staff at the school. **[2006]**

***Cases in community childcare***

1.6.1.21 When an adult who works in childcare (including people who provide childcare informally) is diagnosed with sputum-smear-positive TB, manage as for contact tracing. **[2006]**

***Cases in hospital inpatients***

1.6.1.22 If TB is diagnosed in a hospital inpatient, do a risk assessment. 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. **[2006, amended 2015]**

1.6.1.23 Carry out contact tracing and testing only for patients for whom the risk is regarded as significant. **[2006]**

1.6.1.24 Regard patients 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. Document the risk in the contact's clinical notes, for the attention of the contact's consultant. Give the contact 'inform and advise' information, and inform their GP. **[2006]**

1.6.1.25 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, manage their TB risk in the same way as household contacts (see section 1.2.1). **[2006, amended 2015]**

1.6.1.26 If an inpatient with sputum-smear-positive TB is found to have multidrug-resistant TB, or if exposed patients are HIV positive, trace contacts following the Interdepartmental Working Group on Tuberculosis guidelines. **[2006]**

1.6.1.27 In cases of doubt when planning contact tracing after diagnosing sputum-smear-positive TB in an inpatient, seek further advice from the local or national Public Health England or Wales unit or people experienced in the field. **[2006, amended 2015]**

### 1.6.2 Opportunistic case finding

***New entrants from high incidence countries***

1.6.2.1 Assess and manage TB in new entrants from high incidence countries as follows:

- assess risk of HIV, including HIV prevalence rates in the country of origin, and take this into account in deciding whether to give a BCG vaccination
- offer testing for latent TB (see section 1.2.1)
- assess for active TB if the test for latent TB is positive (see section 1.3.1)
- offer treatment to people aged 65 years or younger in whom active TB has been excluded but who have a positive Mantoux test inconsistent with their BCG history and a positive interferon-gamma release assay for latent TB infection (see section 1.2.2)

- consider offering BCG for unvaccinated people who are Mantoux negative (see section 1.1.3)
- give 'inform and advise' information to people who do not have active TB and are not being offered BCG or treatment for latent TB infection (see section 1.1.2). **[2006, amended 2011 and 2015]**

1.6.2.2 Primary care services should support local, community-based and voluntary organisations that work with vulnerable migrants to ensure they:

- register with a primary care provider
- know how to use NHS services (emergency or primary care). **[2012]**

1.6.2.3 Healthcare professionals, including primary care staff, responsible for screening new entrants should screen all vulnerable migrants who have not previously been checked (see section 1.2.1). This is regardless of when they arrived in England. People born in countries with an incidence of more than 150 per 100,000 per year should be made a priority for latent TB screening when they arrive here. **[2012]**

***People using homeless or substance misuse services***

1.6.2.4 In areas of identified need (see section 1.8.6), including major urban centres with a high incidence of TB, commissioners should:

- ensure there is a programme of active case-finding using mobile X-ray in places where homeless people and people who misuse substances congregate (this includes: homeless day centres, rolling shelters, hostels and temporary shelters established as part of cold weather initiatives and venues housing needle and syringe programmes)
- base the frequency of screening at any one location on population turnover

- where local demand does not warrant a mobile X-ray team, consider commissioning mobile X-ray capacity from another area. **[2006, amended 2012]**

1.6.2.5 Multidisciplinary TB teams should consider using simple incentives, such as providing hot drinks and snacks, to encourage people to attend for screening. **[2006, amended 2012, amended 2015]**

1.6.2.6 Commissioners of TB prevention and control programmes should consider offering people who are homeless and people who misuse substances other health interventions when they are screened for TB at a mobile X-ray unit. (Examples may include blood-borne virus screening, dentistry and podiatry services.) **[2012]**

1.6.2.7 Multidisciplinary TB teams should work closely with mobile X-ray teams and frontline staff in hostels and day centres to promote TB screening and to ensure appropriate onward referrals and follow-up. **[2012]**

1.6.2.8 Multidisciplinary TB teams should consider using peer educators to promote the uptake of TB screening in hostels and day centres. **[2012]**

1.6.2.9 Multidisciplinary TB teams should provide routine data to TB control boards on: screening uptake, referrals and the number of active TB cases identified. **[2012]**

***People in prisons or immigration removal centres***

1.6.2.10 Healthcare professionals in prisons and immigration removal centres should ensure prisoners and detainees are screened for TB within 48 hours of arrival. **[2012]**

1.6.2.11 Prisons with Department of Health-funded static digital X-ray facilities for TB screening should X-ray all new prisoners and detainees (including those being transferred from other

establishments) if they have not had a chest X-ray in the past 6 months. This should take place within 48 hours of arrival. **[2012]**

1.6.2.12 Prison and immigration removal centre health staff should report all suspected and confirmed TB cases to the local multidisciplinary TB team within 1 working day. **[2012]**

1.6.2.13 Multidisciplinary TB staff should visit every confirmed TB case in a prison or immigration removal centre in their locality within 5 working days. **[2012]**

1.6.2.14 If a case of active TB is identified, the local Public Health England unit, in conjunction with the multidisciplinary TB team, should plan a contact investigations exercise. They should also consider using mobile X-ray to check for further cases. **[2012]**

### 1.6.3 Active case finding in under-served groups

1.6.3.1 Multidisciplinary TB teams should follow NICE recommendations on contact tracing (see section 1.6.1).They should coordinate contact investigations at places where the person with TB spends significant amounts of time. Examples could include pubs, crack houses, parks and community centres. The aim is to help identify people who have been living with them and people they frequently socialise with. **[2012]**

1.6.3.2 Multidisciplinary TB teams dealing with someone from an under-served group should work alongside health and social care professionals known to them to help trace relevant contacts. They should also work in partnership with voluntary, community and statutory organisations to conduct outreach contact investigations. **[2012]**

1.6.3.3 Multidisciplinary TB teams should, if available and appropriate, encourage peer educators or TB programme support workers *(*see section 1.8.8*)* to help with contact investigations involving under-served people who have complex social networks. **[2012]**

1.6.3.4 Multidisciplinary TB teams in discussion with local Public Health England health protection teams should consider using digital mobile X-ray for active case-finding in settings identified by looking at social networks as places where under-served people at risk congregate. They should also provide the necessary support so that multidisciplinary TB teams can use strain-typing and social network analysis to ascertain where transmission is occurring in the community. (Examples of transmission sites may include pubs, crack houses, hostels and day centres.) They should focus on active case-finding in the settings identified. **[2012, amended 2015]**

### 1.6.4 Incident and outbreak response

1.6.4.1 Multidisciplinary TB teams should coordinate incident or outbreak contact investigations at places where the person with TB spends significant amounts of time. Examples include workplaces, schools, colleges, universities, childcare settings. The aim is to help identify people they frequently spend substantial time with, as outlined in section 1.6.1. **[new 2015]**

1.6.4.2 Multidisciplinary TB teams should refer any incident in a congregate setting to the local health protection team for risk assessment within 5 working days of suspicion of a potential incident. They should tell the local TB control board a referral has been made. **[new 2015]**

1.6.4.3 TB control boards working with local health protection teams should set up or have access to an incident team that will:

- undertake an incident risk assessment and provide advice
- support or undertake contact investigations
- provide information and communication support to the multidisciplinary TB team, the local director of public health, the setting where the incident has occurred and the people affected including:
  - written advice, printed or by email

  - question and answer sessions
  - telephone advice
  - media engagement.
- Gather and collate data, and report on outcomes to measure the effectiveness of the investigation (for example, offering testing to all people identified at risk and monitoring uptake).
- Report back to TB control boards at appropriate times. This includes when outcomes of initial investigation of people classified as close contacts are available. It also includes when a decision is made to broaden the investigation to the next stage using the concentric circle method for risk assessment). **[new 2015]**

1.6.4.4 When incidents have been identified, multidisciplinary TB teams in discussion with local Public Health England health protection teams could also provide support for strain-typing and other analysis to ascertain where transmission is occurring. (Examples of transmission sites may include workplaces, schools, colleges, universities, childcare settings.) **[new 2015]**

1.6.4.5 In all types of contact investigation scenario (active case finding, incident or outbreak investigations) multidisciplinary TB teams should investigate all people who have been in contact with children who have pulmonary or non-pulmonary TB to identify the primary source of infection. If necessary, they should look beyond immediate close contacts to find the source. **[2012, amended 2015]**

## *1.7 Adherence, treatment completion and follow-up*

### 1.7.1 Improving adherence: case management including directly observed therapy

1.7.1.1 Allocate a named TB case manager to everyone with active TB as soon as possible after diagnosis (and within 5 days). The clinical

team should tell each person who their named TB case manager is and provide contact details. **[2006, 2012 amended 2015]**

1.7.1.2 The TB case managers should work with the person diagnosed with TB to develop a health and social care plan, and support them to complete therapy successfully. The TB case manager should:

- offer an incident risk assessment to every person with TB, to identify their needs and whether they should have enhanced case management including directly observed therapy
- educate the person about TB and the treatment
- develop an individual care plan after discussion with the person
- gain the person's consent to the plan and agree a review date (for example, when moving from initiation to maintenance, or at each contact to ensure the person's needs are being met)
- coordinate discharge planning, especially for people on directly observed therapy
- involve representatives from other allied professions and key workers from all organisations who work with the person if appropriate
- explore appropriate ways that peers and voluntary organisations can provide support. **[2006, 2012, amended 2015]**

1.7.1.3 Offer directly observed therapy as part of enhanced case management in people who:

- do not adhere to treatment (or have not in the past)
- have been treated previously for TB
- have a history of homelessness, drug or alcohol misuse
- are currently in prison, or have been in the past 5 years
- have a major psychiatric, memory or cognitive disorder
- are in denial of the TB diagnosis
- have multidrug-resistant TB

- request directly observed therapy after discussion with the clinical team
- are too ill to administer the treatment themselves. **[2012, amended 2015]**

1.7.1.4 In children whose parents are members of any of the above groups, offer directly observed therapy as part of enhanced case management and include advice and support for parents to assist with treatment completion. **[2015]**

1.7.1.5 Re-evaluate the need for directly observed therapy throughout the course of TB treatment whenever the person's (or in the case of children, parents') circumstances change. **[new 2015]**

1.7.1.6 TB case managers should ensure the health and social care plan (particularly if directly observed therapy is needed) identifies why a person may not attend for diagnostic testing or follow a treatment plan, and how they can be encouraged to do so. It should also include ways to address issues such as fear of stigmatisation, support needs and/or cultural beliefs, and may include information on:

- demographics (for example, age, nationality, place of birth, length of time in UK)
- all current prescribing regimens
- housing needs and living situation, including looked-after children
- substance misuse (drugs or alcohol)
- any contact with the criminal justice system
- the need for hepatitis B and C or HIV testing (see recommendation 1.2.2.3)
- HIV status
- other health conditions (physical or mental)
- communication factors (for example, language and literacy levels)

- ability to access treatment (mobility and transport needs)
- employment or entitlement to benefits
- legal or immigration status (including risk of removal or relocation within the UK)
- any enablers or incentives to overcome anything that is stopping diagnosis or treatment. **[2012, amended 2015]**

1.7.1.7 The health and social care plan should:

- state who will be observing treatment and where (if the person is having directly observed therapy this should be provided at a location that is convenient and accessible to them, for example, at a methadone clinic) **[2012, amended 2015]**
- include actions to take if contact with the person is lost (for example, keeping details of people who might be able to help re-establish contact) **[2012]**
- refer to, and be coordinated with, any other care plan already established for the person **[2012]**
- define the support needed to address any unmet health and social care needs (for example, support to gain housing or other benefits, or to help them access other health or social care services) **[2012, amended 2015]**
- include a commitment from the person to complete their TB treatment **[2012, amended 2015]**
- be supported by frequent contact with any key workers who work with the person. **[2006 amended 2011, amended 2015]**

1.7.1.8 Multidisciplinary TB teams should aim to find people with active TB who are lost to follow-up, or who stop using services before completing diagnostic investigations. They should report all those lost to follow-up to local Public Health England teams, GPs, the referring organisation and specialist outreach teams. **[2012]**

### 1.7.2 Other strategies to encourage people to follow their treatment plan

1.7.2.1 To encourage people to follow their treatment plan, involve people in treatment decisions for active or latent TB from the start. Emphasise the importance of following the treatment plan when agreeing the regimen. **[2015]**

1.7.2.2 Multidisciplinary TB teams should implement strategies for active and latent TB to encourage people to follow the treatment plan and prevent people stopping treatment early. These could include:

- reminder letters, printed information, telephone calls, texts and apps using an appropriate language **[2006, amended 2015]**
- health education counselling and patient-centred interviews **[2006, amended 2015]**
- tailored health education booklets from quality sources (see section 1.1.2) **[2006, amended 2015]**
- home visits **[2006]**
- random urine tests and other monitoring (for example, pill counts) **[2006]**
- access to free TB treatment for everyone (irrespective of eligibility for other NHS care) and information about help with paying for prescriptions **[2006, 2012, amended 2015]**
- social and psychological support (including cultural case management and broader social support) **[new 2015]**
- advice and support for parents and carers **[new 2015]**
- incentives and enablers to help people follow their treatment regimen. **[new 2015]**

1.7.2.3 TB control boards should ensure services take into account the barriers facing vulnerable migrants who may need treatment, and in particular the stigma they may face. Other issues include the location of services (both geographically and in terms of opening

times) and people's language and cultural needs, in terms of the format of advice and the type of information given. **[2012, amended 2015]**

### 1.7.3 Strategies in prisons or immigration removal centres

1.7.3.1 On arrival at a prison or immigration removal centre, healthcare professionals should ask all prisoners and detainees (including those being transferred from other establishments) whether they are taking TB medication, to ensure continuity of treatment. **[2012]**

1.7.3.2 All prisoners and immigration removal centre detainees having treatment for active TB should have a named TB case manager. The case manager should be responsible for contingency planning for discharge from prison or detention. **[2012]**

1.7.3.3 Prisons and immigration removal centres should ensure multidisciplinary TB staff have access to prisoners and detainees who need treatment (for example, by being given security clearance). **[2012]**

1.7.3.4 All prisoners having treatment for active TB should have directly observed therapy. **[2012]**

1.7.3.5 Prison health services should have contingency, liaison and handover arrangements to ensure continuity of care before any prisoner on TB treatment is transferred between prisons or released. In addition, other agencies working with prisoners or detainees should also be involved in this planning. **[2012]**

1.7.3.6 Prison and immigration removal centre healthcare services should liaise with the named TB case manager (from the multidisciplinary TB team) to ensure contingency plans for continuation of treatment are drawn up for prisoners and immigration removal centre detainees with TB. **[2012]**

1.7.3.7 Multidisciplinary TB teams should ensure accommodation is available for the duration of TB treatment after the prisoner or detainee's release (see section 1.8.12). **[2012]**

1.7.3.8 Multidisciplinary TB teams should ensure directly observed therapy is arranged for prisoners or detainees being treated for TB after their release. This should be available close to where they will live in the community. **[2012]**

### 1.7.4 Re-establishing treatment after interruptions because of adverse events

1.7.4.1 In people who have experienced a treatment interruption because of drug-induced hepatotoxicity:

- investigate other causes of acute liver reactions
- wait until aspartate or alanine transaminase levels fall below twice the upper limit of normal, bilirubin levels return to the normal range and hepatotoxic symptoms have resolved, then
- sequentially reintroduce each of the anti-TB drugs over a period of no more than 10 days, starting with ethambutol and either isoniazid or rifampicin. **[new 2015]**

1.7.4.2 In people with severe or highly infectious TB who need to interrupt standard therapy because of a reaction, consider continuing treatment with:

- for hepatotoxicity, a combination of at least 2 anti-TB drugs of low hepatotoxicity (such as ethambutol and streptomycin, with or without a quinolone, such as levofloxacin or moxifloxacin) and monitor with a liver specialist for further reactions
- for a cutaneous reaction, a combination of at least 2 anti-TB drugs with a low risk of cutaneous reactions (such as ethambutol and streptomycin) and monitor with a dermatologist for further reactions. **[new 2015]**

1.7.4.3 If another reaction of a similar or greater severity occurs because of reintroducing a particular drug, exclude that drug from future regimens and consider extending the total regimen accordingly. **[new 2015]**

### 1.7.5 Follow-up after treatment completion

1.7.5.1 Follow-up clinic visits should not be conducted routinely after treatment completion. **[2006]**

1.7.5.2 Tell patients to watch for symptoms of relapse and how to contact the TB service rapidly through primary care or a TB clinic. Key workers should ensure that patients at increased risk of relapse are particularly well informed about symptoms. **[2006]**

1.7.5.3 Patients who have had drug-resistant TB should be considered for follow-up for 12 months after completing treatment. Patients who have had multidrug-resistant TB should be considered for prolonged follow-up. **[2006]**

## *1.8 Service organisation*

### 1.8.1 Strategic oversight and commissioning of TB prevention and control activities

1.8.1.1 Public Health England, in partnership with NHS England, should take responsibility for national oversight of TB prevention and control activities. This includes setting up TB control boards (see section 1.8.2). **[2012, amended 2015]**

1.8.1.2 Public Health England and NHS England should work together to establish control boards in agreed geographical areas and employ appropriate staff (see recommendation 1.8.2.3). **[new 2015]**

1.8.1.3 Clinical commissioning groups and local authority public health teams working in partnership with Public Health England and NHS England should consider collaborative commissioning arrangements through TB control boards. This could, for example,

include working with 1 or more clinical commissioning groups to cover a major metropolitan district, region or TB control board area taking into account:

- local TB incidence
- local at-risk populations and their movements across different geographical areas
- existing service configurations for organisations involved in TB prevention and control
- the need to share services, such as mobile X-ray facilities, across different geographical areas. **[2012, amended 2015]**

1.8.1.4 TB control boards should develop TB prevention and control programmes working with commissioners, Public Health England and NHS England. The board could include clinical, commissioning (from clinical commissioning groups, local government and the voluntary sector) and public health leaders and people with TB or groups who advocate on their behalf from across the control board area. This may include identifying a lead clinical commissioning group, which could be led by an executive director of that commissioning group working with the board. Develop feedback mechanisms between local commissioning groups and the TB control board**. [new 2015]**

1.8.1.5 An executive director of local commissioning groups, working with the local director of public health or another nominated public health consultant, should lead implementation of the programme in their locality. The lead should ensure a comprehensive prevention and control programme is commissioned to support the level of need (see section 1.8.6) and that they work with the control board regularly. **[2012, amended 2015]**

1.8.1.6 Working together through TB control boards and local networks, commissioners, local government and Public Health England should ensure TB prevention and control programmes set up

multidisciplinary TB teams to provide all TB services (see section 1.8.8). They should ensure that local strategy and service commissioning focuses on an end-to-end pathway. **[2012, amended 2015]**

1.8.1.7 Working together through TB control boards, commissioners and Public Health England should ensure the TB prevention and control programme is informed by relevant NICE guidance and developed in collaboration with clinical services. It should also be informed by the standard minimum data set collected through local needs assessment and service audit (see section 1.8.6). **[2012, amended 2015]**

1.8.1.8 Working together through TB control boards, commissioners and Public Health England should ensure the TB prevention and control programme targets all ages, including children, and covers all aspects of TB prevention and control (see recommendations 1.8.2.1 and 1.8.2.2), including but not limited to:

- active case finding (contact investigations and identifying latent TB in high-risk groups)
- awareness-raising activities
- standard and enhanced case management (including providing directly observed therapy and free treatment)
- finding people lost to follow-up and encouraging them back into treatment
- incident and outbreak control
- monitoring, evaluating and gathering surveillance and outcome data. **[2012, amended 2015]**

1.8.1.9 Working together through TB control boards, commissioners, Public Health England and the voluntary sector should ensure TB prevention and control programmes take account of the need to work with other programmes targeting specific high-risk groups, such as those who are under-served. Examples include

programmes focused on the health of asylum seekers and refugees, under-served children, homelessness and housing, offenders and people who misuse substances. **[2012, amended 2015]**

1.8.1.10 Working together through TB control boards, commissioners, Public Health England, the voluntary sector, clinical teams and managers should consider whether TB prevention and control programmes need to develop integrated TB/HIV services. Such services could include joint clinics and training opportunities with medical, nursing and psychosocial input from both TB and HIV specialists. **[new 2015]**

1.8.1.11 Commissioners should consider offering support and advice to all groups diagnosed with TB irrespective of whether they are under-served (section 1.1.1). **[new 2015]**

### 1.8.2 Developing the TB prevention and control programme

1.8.2.1 TB control boards should be responsible for developing a TB control programme based on the national strategy and evidence-based models. **[new 2015]**

1.8.2.2 TB control boards should plan, oversee, support and monitor local TB control, including clinical and public health services and workforce planning. **[new 2015]**

1.8.2.3 TB control boards should assess services in their area, identify gaps in provision and develop plans to meet these, including:

- undertaking a workforce review to support local or regional commissioning of TB services to meet the needs of their population (see sections 1.8.7 and 1.8.8 and recommendations 1.8.2.3, 1.8.2.6 and 1.8.2.7)
- supporting development of appropriate services and pathways to improve access and early diagnosis (see sections 1.8.9 and 1.8.10 and recommendations 1.3.1.28–33 and 1.7.4.8)

- negotiating arrangements to cover the cost of additional services to address specific gaps in current TB control arrangements. **[new 2015]**

1.8.2.4 TB control boards should ensure cohort review is undertaken at least quarterly (see section 1.8.6), and the results are fed back to local clinical and TB networks. These should be agreed by accountable bodies such as clinical commissioning groups, trust management, regional Public Health England and centre directors and local authority directors of public health as agreed, all of whom should make sure appropriate action is taken. **[new 2015]**

1.8.2.5 TB control boards should enable full and consistent use of national guidelines including:

- ensuring the needs of all people with TB, particularly under-served populations, are addressed (see sections 1.1.1, 1.1.2, 1.6.3, 1.7, 1.8.1, 1.8.5, 1.8.10, 1.8.11 and recommendations 1.2.1.21–24 and 1.6.2.2–9)
- ensuring contact tracing arrangements are appropriate to the needs of the population (see section 1.6)
- assuring themselves that TB control in low-incidence areas is established and delivered appropriately (see section 1.8.4)
- assuring themselves that multidrug-resistant TB is managed appropriately (see section 1.4.1) and mechanisms are in place to ensure:
  - there is sufficient clinical expertise available to manage cases
  - regional multidrug-resistant TB networks take account of expert advice (see section 1.8.3). **[new 2015]**

1.8.2.6 TB control boards should develop links and partnerships and establish agreed relationships and lines of accountability between TB control boards and local clinical and TB networks. This includes engaging with other key stakeholders to ensure universal coverage of TB control efforts. **[new 2015]**

1.8.2.7 TB control boards should collaborate with their local and regional partners. They should agree and establish regular monitoring, surveillance and reporting arrangements with all partners to support needs assessment (see section 1.8.5) and regular audit and evaluation. **[new 2015]**

1.8.2.8 TB control board staff should, as a minimum, include a control board director and a manager. Their roles and responsibilities should include:

- Establishing the links, partnerships and relationships between all aspects of the control board area within their remit (if necessary across usual geographical commissioning boundaries).
- Developing and supporting adoption and implementation of evidence-based model service specifications for the clinical and public health actions needed to control TB including:
  - improving access and early diagnosis (see sections 1.1.1, 1.1.2 and 1.8.9 and recommendations 1.3.1.28–33.)
  - diagnostics, treatment and care services (see sections 1.2 and 1.3
  - contact investigations and tracing
  - cohort review (see section 1.8.6)
  - vaccination (see section 1.1.3)
  - drug resistance (see section 1.4.1)
  - tackling TB in under-served populations
  - surveillance, monitoring and quality assurance
  - workforce development and commissioning (see section 1.8.7 and 1.8.8). **[new 2015]**

1.8.2.9 TB control boards should ensure there is enough capacity available to them to manage a sudden increase in demand such as:

- TB contact investigations, (such as incidents in congregate settings)
- large scale active case-finding initiatives in under-served groups in the community
- outbreaks in a variety of settings or sites where transmission risk may be high, including but not limited to schools, workplaces, hostels and prisons. **[new 2015]**

1.8.2.10 To set up, monitor and evaluate a TB control programme, TB control boards will need to:

- agree plans within their partnerships to assess local services against the service specifications
- develop plans and quality standards to secure improvements
- establish quality assurance mechanisms and regular audits including but not limited to cohort review for all aspects of the TB control board partnership plans. **[new 2015]**

***Coordinating local TB networks***

1.8.2.11 TB control boards should (in collaboration with commissioners) consider the need for a TB network local coordinator, particularly if working across multiple clinical commissioning group areas (see recommendation 1.8.1.2). **[new 2015]**

1.8.2.12 The coordinator should work in close collaboration with clinicians and all relevant multidisciplinary TB teams to develop the network and be responsible for:

- setting up the network and developing it based on needs, reporting back to the TB control board regularly
- establishing the links, partnerships and relationships across their local network (if necessary across usual geographical commissioning boundaries). **[new 2015]**

### 1.8.3 Regional multidrug-resistant TB network

1.8.3.1 TB control boards should consider setting up a regional multidisciplinary TB network to discuss multidrug-resistant TB. This could:

- Identify designated regional expert centres.
- Ensure all healthcare professionals who suspect or treat a case of multidrug-resistant TB are informed about, have access to, and are encouraged to use specialist advisory services for multidrug-resistant TB. This includes the designated expert centre in their regional network and may also include the national advisory service for MDRTB (currently provided by the British Thoracic Society).
- Ensure all cases of multidrug-resistant TB are discussed at the regional multidisciplinary TB team meeting in the local clinical network.
- Formally consider and record the advice from the specialist advisory services for multidrug-resistant TB provided by the designated regional expert centre or the national advisory service for multidrug-resistant TB. **[new 2015]**

### 1.8.4 Rural services: organisational and support factors

1.8.4.1 Commissioners in rural areas (working with the TB control board) should consider collaborative approaches to deliver and manage TB services. They could, for example, set up a network including areas with high and low incidence of TB to:

- provide general expertise in the condition and offer expert support and advice on more complex cases
- consider pooling administration support and having arrangements for nursing cross-cover during times of illness or annual leave

- share training opportunities for healthcare professionals and consider protected learning time for continuing professional development activities on TB in those who may encounter TB
- agree a shared cohort review process (see section 1.8.6). **[new 2015]**

1.8.4.2 Commissioners should consider using technology to help patients and staff living and working in rural areas overcome issues such as travel. Technology could also be used to manage staff workload, for example allowing them to attend meetings and consultations virtually. **[new 2015]**

### 1.8.5 Local needs assessment

1.8.5.1 Directors of public health, in discussion with local health protection teams, should ensure that TB is part of the joint strategic needs assessment. **[2012, amended 2015]**

1.8.5.2 Directors of public health should provide commissioners of TB prevention and control programmes and TB control boards (see sections 1.8.1 and 1.8.8) with local needs assessment information annually using data provided by Public Health England. **[2012, amended 2015]**

1.8.5.3 Commissioners of TB prevention and control programmes should ensure services reflect the needs of their area, identified by needs assessment. Health and wellbeing boards should ensure that local TB services have been commissioned based on local needs identified through needs assessment. **[2012, amended 2015]**

1.8.5.4 Directors of public health and TB control boards should use cohort review (see section 1.8.6) and other methods to collect data on the following, to inform local needs assessment:

- Number of annual notified TB cases (see Public Health England's enhanced TB surveillance data and annual 'suite of indicators').

- Size, composition (for example, age and ethnicity) and distribution of local at-risk groups[22].
- Indices of social deprivation.
- Local statutory and non-statutory services working with these groups.
- Organisation of local TB services, including the composition and capacity of the local multidisciplinary TB team (see the results of local audit) and location of services. This may also include data to support evaluating the need for integrated TB/HIV services including joint clinics.
- Numbers needing enhanced case management (see section 1.7).
- Numbers receiving directly observed therapy from the start of, or at any point during, treatment (see Public Health England's enhanced TB surveillance data).
- Evidence of recent transmission (for example, using DNA fingerprinting or surrogate markers such as number of cases in children under 5 years (see 'UK TB strain-typing database' and local incident and outbreak reports).
- Completeness and yield of contact investigations. This includes: proportion of sputum-smear-positive cases with 0, 5 or more contacts identified; proportion of identified contacts clinically assessed; and proportion of contacts with latent TB infection who successfully complete treatment (see section 1.6 and 1.8.6).
- Active case-finding initiatives, incident contact investigations and identification of latent TB infection in high-risk groups.
- Treatment outcomes for everyone grouped according to social risk factors and by the use of directly observed therapy

[22] Potential sources include: census data, the National Drug Treatment Monitoring Service, records of locally detained populations, records of homeless people in residential accommodation, the number of rough sleepers and the size of vulnerable migrant communities.

(including rates of loss to follow-up and treatment interruptions – see Public Health England's enhanced TB surveillance data and sections 1.6 and 1.8.6).

- Local education and awareness-raising programmes for under-served groups, professionals and practitioners working with them.
- Views and experiences of people with TB, carers and the services working with them. **[2012, amended 2015]**

1.8.5.5 Local needs assessments should also be equity proofed to assess the potential effect of planning, commissioning and policy decisions on health inequalities (see planning and commissioning services in NICE's local government briefing on health inequalities and population health). **[new 2015]**

### 1.8.6 Cohort review

1.8.6.1 TB control boards and prevention and control programme leads should initiate, audit and evaluate cohort reviews in their commissioning area. Quarterly cohort review meetings should take place in the area covered by the programme. Combine these meetings with others if possible, or use technology to make it easier for clinicians and case managers to attend. **[2012, amended 2015]**

1.8.6.2 TB case managers should present standardised information on each case, including: demographic information, HIV test results, pre-treatment and ongoing status (clinical, laboratory, radiology), adherence to treatment and the results of contact investigations. **[2012, amended 2015]**

1.8.6.3 TB case managers and key allied professionals from the TB prevention and control programme should attend cohort review meetings. This could include the lead clinician (who may or may not be the case manager). Either a paediatrician with training and expertise in TB management or a paediatric infectious disease

specialist should be present when cases of children with TB are presented. **[2012, amended 2015]**

1.8.6.4 The chair of the cohort review should not work for any of the TB services included in the review. Examples of possible chairs include a public health consultant, a specialist physician or a senior TB nurse, preferably from a different geographical area. Alternatively the chair could be a representative from the local Public Health England health protection team or the TB control board. **[2012, amended 2015]**

1.8.6.5 Multidisciplinary TB teams, in conjunction with Public Health England units and the TB control boards, should collate and present cohort review data on TB treatment and the outcome of contact investigations at the review meetings. In addition, progress towards national, regional and local service targets should be presented. **[2012, amended 2015]**

1.8.6.6 TB control boards, directors of public health and local public health consultants should ensure outputs from the cohort review feed into the needs assessment for TB services. TB control board directors should attend the cohort review at least once a year. **[2012, amended 2015]**

1.8.6.7 TB case managers should feed back promptly to multidisciplinary TB teams on issues identified as a result of cohort review. The results of the cohort review should be collated locally and agreed by the chair before being fed back to TB control boards, commissioners and health and wellbeing boards regularly and via needs assessment. **[2012, amended 2015]**

1.8.6.8 People participating in a cohort review should review the results and evaluate local services (for example, auditing adverse outcomes, rates of culture confirmation, treatment completion rates or time to diagnosis). **[2012, amended 2015]**

### 1.8.7 Commissioning multidisciplinary TB support

1.8.7.1 Commissioners should ensure multidisciplinary TB teams:

- Have the skills and resources to manage the care of people with active TB who are not from under-served groups. (A minimum of 1 whole-time equivalent case manager is recommended per 40 incident cases needing standard management.) **[2012, amended 2015]**
- Include at least 1 TB case manager with responsibility for planning and coordinating the care of under-served people and those with active TB who receive enhanced case management. (One whole-time equivalent case manager is recommended per 20 incident cases needing enhanced case management.) **[2012, amended 2015]**
- Have the resources to manage latent TB care in under-served groups and the wider population. (One whole-time equivalent case manager is recommended per 40 latent TB cases needing enhanced case management and per 80 latent TB cases for standard case management). **[new 2015]**
- Include a range of clinical specialties in the multidisciplinary TB team, including paediatrics, infection control and respiratory medicine. **[2012]**
- Have regular attendance at these multidisciplinary team and cohort review meetings for all team members included as a programmed activity as part of their work planning. **[new 2015]**
- Have the skills and resources necessary to manage the care of people with complex social and clinical needs (either directly or via an established route). This includes the ability to provide prompt access (or if necessary, referral) to skilled outreach and advocacy workers who can draw on the services of allied practitioners. The aim is to address people's housing, asylum, immigration, welfare, substance dependency and other health and social care needs. (The allied practitioner support should

include both a specified housing officer and a social worker.) **[2012]**

- Can provide rapid access TB clinics for all cases, including under-served groups. **[2012]**
- Provide administration support to TB nurses and case managers so they have capacity for clinical and case management work in line with the standard case management or enhanced case management ratios. This should include giving TB nurses access to computer hardware and software. **[new 2015]**
- Have the resources to provide a continuous service throughout the year, ensuring the TB service accounts for the following to manage continuity of care:
  - planned absence (for example, professional development, mandatory training, annual, maternity or paternity leave)
  - unplanned absence (such as sickness absence). **[2012, amended 2015]**
- Can provide prompt access to a professional who has training and experience in assessing and protecting children and vulnerable adults at risk of abuse or neglect. **[2012]**
- Have access to funds through local government and clinical commissioning groups that can be used flexibly to improve adherence to treatment among under-served groups. For example, funds could be used to provide transport to clinics, to provide support or enablers for treatment, or for paying outreach workers or community services to support directly observed therapy. Funds may also be used to provide accommodation during treatment (see section 1.8.11). **[2012, amended 2015]**
- Have the resources to provide ongoing TB awareness-raising activities for professional, community and voluntary (including advocacy) groups that work with populations at high risk of TB (see section 1.1.1). These resources could be financed by local government or clinical commissioning groups. **[2012, amended 2015]**

### 1.8.8 Non-clinical roles including TB support workers

1.8.8.1 TB control boards and local TB services should consider employing trained, non-clinically qualified professionals to work alongside clinical teams to agreed protocols, and to contribute to a variety of activities. Examples of this may include awareness raising and supporting patients to attend appointments (including other health and social care appointments). They could also help with collecting samples, contact tracing, case management including directly observed therapy and cohort review, or any other aspect of the service if:

- they are trained to deliver the intervention or processes effectively
- they are supported, mentored and supervised by a named case manager, such as a TB nurse
- they have the skills to monitor, evaluate and report on their work practices and outcomes to maintain a process of ongoing evaluation and service improvement in relation to cohort review (see section 1.8.6). **[new 2015]**

1.8.8.2 TB control boards should ensure that people working in the TB service have the right knowledge, engagement, advocacy and communication skills to meet the needs (for example, language, cultural or other requirements) of all the groups they may work with (see section 1.8.5). **[new 2015]**

1.8.8.3 Commissioners should consider different needs across traditional geographical and organisational boundaries are taken into account. Put agreements in place so that staff can work across these boundaries, covering the whole service or TB control board area if appropriate. **[new 2015]**

1.8.8.4 Commissioners and TB control boards should ensure they put in place appropriate governance (including clear lines of accountability and extension of scope of practice) and data sharing

practices and agreements. This includes ensuring they are part of service level agreements between NHS and non-NHS services, for example, the third sector or local government, and appropriate training has been completed. **[new 2015]**

### 1.8.9 Rapid-access TB services

1.8.9.1 Multidisciplinary TB teams should establish relationships with statutory, community and voluntary organisations that work with people at risk of TB to develop appropriate TB referral pathways. They should ensure these organisations know how to refer people to local TB services. **[2012]**

1.8.9.2 Multidisciplinary TB teams should accept referrals from healthcare providers and allied organisations working in the community with under-served groups. This includes voluntary and statutory organisations (for example, mobile X-ray teams or community organisations or outreach workers working with vulnerable migrants). **[2012]**

1.8.9.3 Multidisciplinary TB teams should accept self-referrals to TB clinics by people who suspect they have TB or have recently been in contact with someone with TB. **[2012, amended 2015]**

1.8.9.4 Multidisciplinary TB teams should consider accepting direct referrals from emergency departments (see recommendations 1.3.1.28–33). **[new 2015]**

1.8.9.5 Healthcare professionals should consider urgent referral to TB clinics for people with suspected active TB. They should also ensure the results from first-line diagnostic tests (including a sputum smear and posterior–anterior chest X-ray) are available before the person sees a specialist. (Note: this should not delay the referral.) **[2012, amended 2015]**

1.8.9.6 Multidisciplinary TB teams should have pathways to triage referrals, start investigations and collect clinical information before the

person is seen by a physician. While triaging they should ensure everyone is given information about TB as part of the process (see section 1.1.2). This should include who the person should contact if they have any questions and how to access advice or information from support groups, national charities such as TB Alert and other sources such as local government (for example, public health or social care teams). **[2015]**

1.8.9.7 Multidisciplinary TB teams should ensure people who have a smear-positive result or imaging features highly suggestive of sputum-smear-positive TB (for example, evidence of cavitation on chest X-ray) are assessed the next working day. This is so that case management and infection control procedures start promptly. **[2012, amended 2015]**

1.8.9.8 The multidisciplinary TB team should assess people who are not sputum-smear-positive but have imaging that suggests pulmonary TB as soon as possible. This should be no later than 5 working days after a referral. **[2012, amended 2015]**

1.8.9.9 Multidisciplinary TB teams should be able to provide or arrange outreach services to ensure sputum samples or other assessments such as contact investigation can be arranged in the community. **[2015]**

### 1.8.10 Identifying and managing active TB in prisons, custody suites or immigration removal centres: organisational factors

1.8.10.1 Multidisciplinary TB teams, prisons, custody suites and immigration removal centre healthcare services should have named TB liaison leads to ensure they can communicate effectively with each other. **[2012, amended 2015]**

1.8.10.2 Prison, custody suites and immigration removal centre healthcare services should develop a TB policy by working with the TB control board and multidisciplinary TB team and the local Public Health England health protection team. **[2012, amended 2015]**

1.8.10.3 Multidisciplinary TB teams, in conjunction with prisons, custody suites and immigration removal centre healthcare services, should agree a care pathway for TB. This is to ensure that any suspected or confirmed cases are reported to, and managed by, the multidisciplinary TB team. **[2012, amended 2015]**

1.8.10.4 Multidisciplinary TB teams, in liaison with prisons, custody suites or immigration removal centre healthcare providers, should manage all cases of active TB. Investigations and follow-up should be undertaken within the prison or immigration removal centre if possible. **[2012, amended 2015]**

### 1.8.11 Accommodation during treatment

1.8.11.1 Multidisciplinary TB teams should assess the living circumstances of people with TB. Where there is a housing need they should work with allied agencies to ensure that all those who are entitled to state-funded accommodation receive it as early as possible during their treatment. **[2012]**

1.8.11.2 Multidisciplinary TB teams, commissioners, local authority housing lead officers and other social landlords, providers of hostel accommodation, hospital discharge teams, Public Health England and the Local Government Association should work together to agree a process for identifying and providing accommodation for homeless people diagnosed with active pulmonary TB who are otherwise ineligible for state-funded accommodation. This includes people who are not sleeping rough but do not have access to housing or recourse to public funds. The process should detail the person's eligibility and ensure they are given accommodation for the duration of their TB treatment. **[2012, amended 2015]**

1.8.11.3 Local government and clinical commissioning groups should fund accommodation for homeless people diagnosed with active TB who are otherwise ineligible for state-funded accommodation. Use

health and public health resources, in line with the Care Act 2014. **[2012, amended 2015]**

1.8.11.4 Multidisciplinary TB teams should make people who would not otherwise be entitled to state-funded accommodation aware that they may lose this accommodation if they do not comply with treatment. They should ensure plans are made to continue housing people once their TB treatment is completed. **[2012]**

1.8.11.5 Public Health England, working with the Local Government Association and their special interest groups, should consider working with national housing organisations such as the Chartered Institute of Housing and the National Housing Federation to raise the profile of TB. This is to ensure people with TB are considered a priority for housing. Consider developing and delivering training on TB and the need for housing support for their members. **[new 2015]**

# 2 Implementation: getting started

This section will be completed in the final guideline using information provided by stakeholders during consultation.

To help us complete this chapter, please use the comments form to give us your views on these questions:

1. Which areas will have the biggest impact on practice and be challenging to implement? Please say for whom and why.

2. What would help users overcome any challenges? (For example, existing practical resources or national initiatives, or examples of good practice.)

# 3 Research recommendations

The Guideline Committee has made the following recommendations for research, based on its review of evidence, to improve NICE guidance and

patient care in the future. The Guideline Committee's full set of research recommendations is detailed in the full guideline.

## 3.1 Universal compared with risk-based approach to using rapid diagnostic tests

In people with suspected TB, what is the relative clinical and cost effectiveness of universal and risk-based use of rapid nucleic acid amplification tests?

**Why this is important**

The GDG noted that there were 2 possible approaches to using rapid nucleic acid amplification tests for suspected TB. The current approach is to use them only if TB is strongly suspected and rapid information about mycobacterial species would alter the person's care. Another approach is to use them in anyone with a possible diagnosis of TB. There is a trade-off between ensuring that all people with active TB are diagnosed and avoiding a large number of false positives, which leads to unnecessary treatment. This trade-off may lead to differences in the cost effectiveness of each approach. NICE's systematic review of the diagnosis of active TB did not identify any robust evidence on this, nor did the health technology assessment on using nucleic acid amplification tests to detect drug resistance. Cost-effectiveness studies are needed to improve understanding in this area.

## 3.2 Diagnosis in children

Apart from culture, what other diagnostic tests or combinations of tests are effective in establishing an accurate diagnosis of active respiratory TB in children and young people with suspected active TB?

**Why this is important**

The Committee noted the paucity of evidence on the diagnosis of active TB in children. The disease manifests differently in children than in adults, and more evidence would have been useful to the Committee. Cross-sectional studies are needed to examine the relative accuracy of different tests, and the most appropriate specimen type for these tests, compared with those currently in use. In particular, the poor accuracy of many tests in children means that

diagnostic strategies – that is, combinations of tests – should be investigated, including both tests with high sensitivity and those based on host response.

## *3.3 Treating isoniazid-resistant TB*

For isoniazid-resistant TB, what is the most effective regimen for reducing mortality and morbidity?

**Why this is important**

There is little evidence for the treatment of isoniazid resistant TB. This is the most common form of drug resistance in the UK, occurring in 7.5% of TB cases. Currently, treatment is not always successful, even when the recommended drugs are given for the recommended time and there are no adherence issues. It is particularly difficult to treat if there are treatment interruptions or if the central nervous system is involved. Randomised controlled trials are needed to compare different anti-TB regimens for isoniazid-resistant TB, assessing mortality, treatment success or treatment failure, rates of relapse and adverse events.

## *3.4 Impact of infection control measures on quality of life*

What effects does isolation have on the quality of life of people being treated for TB?

**Why this is important**

Isolation is known to significantly affect a person's quality of life. Despite this, the Committee identified no reliable data on the impact of isolation on quality of life. This information is essential in producing economic models that reflect the real costs of isolation. Data on the impact of isolation on quality of life need to be collected and reported.

## *3.5 Treatment interruptions caused by adverse events (specifically hepatotoxicity)*

For people with active, drug susceptible TB who experience treatment interruptions because of adverse events, particularly hepatotoxicity, what approach to re-establishing treatment is most effective in reducing mortality and morbidity?

**Why this is important**

There is little evidence on re-establishing treatment after interruptions because of adverse events. This is key to ensuring treatment success without relapse or the emergence of drug resistance, but avoiding of further adverse events is also important. Randomised controlled trials are needed to compare approaches to re-establishing treatment for active, drug susceptible TB after it is interrupted because of adverse events, particularly hepatotoxicity. These trials should assess mortality, treatment success or failure, rates of relapse, the recurrence of adverse events and the emergence of drug resistance. Approaches evaluated could compare, for example, restarting regimens with lengthening their duration, as well as sequential reintroduction. Approaches should vary depending on the proportion of doses missed and the stage of treatment (initial or continuation phase) in which the interruption occurred. Prospective observational cohort studies with multivariable analyses may also be useful.

# 4 Other information

## *4.1 Scope and how this guideline was developed*

NICE guidelines are developed in accordance with a scope that defines what the guideline will and will not cover.

**How this guideline was developed**

NICE commissioned the Internal Clinical Guidelines team to develop this guideline. The team established a Guideline Committee (see section 4), which reviewed the evidence and developed the recommendations.

The methods and processes for developing NICE guidelines are described in The guidelines manual.

## *4.2 Related NICE guidance*

Details are correct at the time of consultation on the guideline (May 2015). Further information is available on the NICE website.

### General

- Patient experience in adult NHS services (2012) NICE guideline CG138
- Medicines adherence (2009) NICE guideline CG76

### Condition-specific

- Hepatitis B and C: ways to promote and offer testing to people at increased risk of infection (2012) NICE guideline PH43
- Hepatitis B (chronic): Diagnosis and management of chronic hepatitis B in children, young people and adults (2013) NICE guideline CG165
- Increasing the uptake of HIV testing among black Africans in England (2011) NICE guideline PH33
- Increasing the uptake of HIV testing among men who have sex with men (2011) NICE guideline PH34
- Infection control (2012) NICE guideline CG139
- Medicines adherence (2009) NICE guideline CG76
- Reducing differences in the uptake of immunisations (2009) NICE guideline PH21

### Under development

NICE is developing the following guidance:

- Increasing the uptake of HIV testing among people at higher risk of exposure. NICE public health guidance. This guidance will cover how to encourage people in at-risk groups to have HIV tests.
- Xpert MTB/RIF assay (and alternative technologies identified during scoping). NICE diagnostics assessment programme guidance. The Health Technology Assessment (HTA) programme at the National Institute for Health Research (NIHR) has commissioned a project with significant overlap with the planned scope of the diagnostic guidance. The topic has therefore been paused and any decision to proceed with the topic will depend on the outcome of the NIHR project.

# 5 The Guideline Committee, National Collaborating Centre and NICE project team, and declarations of interests

## *5.1 Guideline Committee*

The Guideline Committee members listed are those for the 2015 update. For the composition of previous Committees, see the full guideline.

**Ibrahim Abubakar** (Guideline co-chair)
Professor in Infectious Disease Epidemiology, University College London

**Andrew Hayward** (Guideline co-chair)
Professor of Infectious Disease Epidemiology and Inclusion Health Research, University College London

**Faizan Ahmed (until October 2013)**
GP, Manchester

**Sudy Anaraki**
Consultant in Communicable Disease Control, North East and North Central London Health Protection Team

**Christine Bell**
TB/Respiratory Nurse, Manchester Royal Infirmary

**Toby Capstick (co-opted expert member)**
Lead Respiratory Pharmacist, Leeds Teaching Hospitals NHS Trust

**Ann Chapman**
Consultant in Infectious Diseases and General Medicine, Monklands Hospital NHS Lanarkshire

**Timothy Collyns**
Consultant Medical Microbiologist, Leeds Teaching Hospitals NHS Trust

**Francis Drobniewski**

Professor of Global Health and Tuberculosis, Imperial College, London

**Michael Eisenhut**

Consultant Paediatrician, Luton and Dunstable Hospital NHS Foundation Trust

**Mango Hoto**

Patient and carer member

**Uday Katkar**

GP Locum, Stoke-on-Trent

**Marc Lipman**

Consultant Respiratory Physician, Royal Free London NHS Foundation Trust

**Amy McConville**

Patient and carer member

**Tessa Marshall (until October 2013)**

Patient and carer member, TB Alert

**Philip Monk (until July 2013)**

Consultant in Communicable Disease Control

**Horace Reid**

Patient and carer member

**Bertie Squire**

Consultant Physician in Infectious Diseases, Liverpool School of Tropical Medicine

**Alistair Story**

Consultant TB Nurse, London

**John Watson** (co-opted expert Consultant Physician)

Consultant in Respiratory Medicine, The Leeds Teaching Hospital NHS Trust

**Service Delivery Group co-optees**

**Vanya Gant**

Divisional Clinical Director for Infection, University College London Hospitals

**John Hayward**

Independent Consultant in Public Health, London

**Alan Higgins**

Director of Public Health, Oldham

**Onn Min Kon**

Consultant Respiratory Physician, London

**Philip Monk**

Consultant in Health Protection, Leicester

**Ikenna Obianwa**

Community Development Officer, London

## *5.2 Internal clinical guidelines team*

**Emma Banks** (until June 2014)

Project Manager

**Julia Bidonde** (from September 2014)

Technical Analyst

**Margaret Derry** (from September 2014)

Project Manager

**Stephen Duffield** (January to April 2014)

Technical Analyst

**Susan Ellerby**

Clinical Adviser

**Nicole Elliott** (until June 2014)

Associate Director

**Chris Gibbons**
Health Economist

**Michael Heath** (until October 2014)
Programme Manager

**Ruaraidh Hill** (from September 2013 to May 2014)
Analyst, Centre for Public Health

**Lucy Hoppe**
Lead Technical Analyst

**Andrew Hoy** (from September 2013 until August 2014)
Analyst, Centre for Public Health

**Rachel Kettle** (from August 2013)
Lead Technical Analyst, Centre for Public Health

**Hugh McGuire** (from March 2014)
Technical Adviser

**Claire McLeod** (from September 2013)
Analyst, Centre for Public Health

**Stephanie Mills** (until April 2013)
Project Manager

**Lakshmi Murthy** (from January 2014 to October 2014)
Analyst, Centre for Public Health

**Suzi Peden** (until August 2013)
Lead Technical Analyst, Centre for Public Health

**Robby Richey** (June 2013 to June 2014)
Technical Analyst

**Gabriel Rogers**
Technical Adviser, Health Economics

**Susan Spiers** (from June 2014)
Associate Director

**Catherine Swann**
Associate Director, Centre for Public Health

**Toni Tan** (until March 2014)
Technical Adviser

## *5.3 NICE project team*

**Sarah Willett**
Guideline Lead

**Martin Allaby**
Clinical Adviser

**Ben Doak**
Guideline Commissioning Manager

**Trudie Willingham**
Guideline Coordinator

**Beth Shaw**
Technical Lead

**Bhash Naidoo**
Health Economist

**Jaimella Espley**
Editor

## *5.4 Declarations of interests*

The following members of the Guideline Committee made declarations of interests. All other members of the Committee stated that they had no interests to declare.

Declarations were managed using the NICE Conflicts of Interest Policy, 2007.

| Member | Interest declared | Type of interest | Decision taken |
|---|---|---|---|
| Ibrahim Abubakar | Chief investigator for the National Institute for Health Research (NIHR)-funded study on the prognostic value of interferon-gamma release assay (this call was suggested by the Department of Health as a response to the recommendations of NICE guideline CG33) and a co-applicant on a NIHR-funded systematic review and economic analysis on genetic tests for the rapid detection of resistance to anti-TB drugs. | Non-personal financial, specific interest | Declare and participate |
| Ibrahim Abubakar | Recently funded by the Department of Health to conduct a randomised controlled trial to improve the diagnosis of latent TB using peer support workers and another trial of rifapentine for latent TB. The research is fully funded by the Department of Health/NHS with no commercial involvement. | Non-personal financial, specific interest | Declare and participate |
| Timothy Collyns | Employer, LTHT Microbiology, has received small amounts of funding to enable local evaluation of certain diagnostic methods | Non-personal financial, non-specific interest | Declare and participate |
| Francis Drobniewski | Health Consultancy training grant (from Otsuka Pharmaceutical, Japan) to train Indonesian doctors in the UK. This included training on clinical TB and laboratory management and practice, evidence based medicine, role of NICE, JCVI and other bodies. | Non-personal financial, specific interest | Declare and participate |
| Francis Drobniewski | PI Health Technology Assessment (HTA) grant relating to diagnosis of drug resistant TB 2012/13 | Non-personal financial, specific interest | Declare and participate |
| Francis Drobniewski | Co-PI EU FP7 grant from TB-PAN-NET the Pan-European network for the study and clinical management of drug resistant tuberculosis, which implements diagnostic and clinical trials network in Eastern Europe | Non-personal financial, specific interest | Declare and participate |
| Andrew Hayward | Part of a research project on identifying and managing TB in | Non-personal | Declare and |

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| | hard-to reach-groups, which has received a loan of a CEPHEID gene-expert machine and donation of diagnostic kits to assess the value of the technology as a near patient test on the mobile X-ray unit. | financial, non-specific interest | participate |
| Uday Katkar | Director of a limited company, Dr Katkar Limited, which deals only with locum and other non-pensionable work. There is no pecuniary interest with the Guideline Committee work | Personal financial, non-specific interest | Declare and participate |
| Uday Katkar | Full time, self-employed, GP locum since 1 April 2014 | Personal financial, non-specific interest | Declare and participate |
| Marc Lipman | Received remuneration for attending a National Association for Patient Participation (NAPP) Advisory Board for Flutiform (an asthma product) in May 2012. Remuneration was paid into a research grant. | Non-personal financial, non-specific interest | Declare and participate |
| Marc Lipman | Invited speaker at ZINC (UK HIV Specialist Pharmacists Group, sponsored by Bristol-Myers Squibb), presentation on HIV and TB, June 2013. Remuneration paid into research grant. | Non-personal financial, specific interest | Declare and participate |
| Marc Lipman | Member of international expert panel working on definitions of opportunistic infections in patients receiving biological agents, including TB. Project duration January–May 2014. Organised by Reynolds Clinical Sciences with sponsorship by pharmaceutical industry. Remuneration paid into research grant. | Non-personal financial, specific interest | Declare and participate |
| Marc Lipman | Advisory board for Prevenar (Pfizer pneumococcal vaccine) use in HIV infection, June 2014. Remuneration paid into research grant. | Non-personal financial, non-specific interest | Declare and participate |
| Marc Lipman | Advisory board for cardiovascular risk assessment in HIV, sponsored by Gilead, July 2014. Remuneration paid into research grant. | Non-personal financial, non-specific interest | Declare and participate |
| Marc Lipman | From July 2014 onwards - Consultancy work via University | Non-personal | Declare and participate |

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| | College London with ProteinLogic (start-up medical diagnostic company). Area of interest is TB diagnosis using blood based proteins. Uncertain volume of work, although likely to be minimal in first 12 months. Any remuneration will be paid into a research grant. | financial, specific interest | |
| Marc Lipman | Grants for:<br>• NIHR HTA assessments of value of: rapid molecular diagnostics, and of BCG<br>• Department of Health evaluation of long-acting rifamycin (rifapentine) for treatment of latent TB infection. | Non-personal financial, specific interest | Declare and participate |
| Marc Lipman | Independent member of NIHR Programme Grant Trial Steering Committee for 'Development of an optimal antibiotic regimen for long-term therapy in stable COPD'. | Non-personal financial, non-specific interest | Declare and participate |
| Marc Lipman | Member of HPA Respiratory Infection Programme Board, which signs off position statements on aspects of TB. | Personal non-financial, specific interest | Declare and participate |
| Marc Lipman | Member of HPA National Knowledge Service for TB, which produces information on TB for healthcare workers and the general public. | Personal non-financial, specific interest | Declare and participate |
| Marc Lipman | Member of European Centre for Disease Prevention and Control multidrug resistant TB panel (2011/12) produced guidance on the management of multidrug resistant TB latently infected contacts. | Personal non-financial, specific interest | Declare and participate |
| Marc Lipman | Attended American Thoracic Society Meeting 2012 and European Respiratory Society Meeting 2012 with support of NAPP pharmaceuticals. | Non-personal financial, specific | Declare and participate |
| Marc Lipman | Clinical expert for European Medicines Agency Committee for Medicinal Products for Human Use, Anti-infectives Specialist Advisory Group on Delamanid (new anti-TB drug produced by Otsuka), March 2013. | Personal non-financial, specific interest | Declare and participate |

| | | | |
|---|---|---|---|
| Marc Lipman | ERS/WHO Consilium Clinical Expert for MDR TB (2013–present). | Personal non-financial, specific interest | Declare and participate |
| Marc Lipman | Involvement in studies of new blood TB IGRA assay use in latent and active TB (Qiagen, manufacturers of Quantiferon). These are both investigator-led (free kits supplied with no other remuneration) and commercial (company provides research nurse, there is no direct financial payment). Not lead investigator on these studies but team will recruit patients to these studies. Date July 2014 onwards. | Personal non-financial, specific interest | Declare and participate |
| Bertie Squire | Previously worked with Jason Madden from Warwick Evidence, but not on the work Warwick Evidence have done for this guideline. | Personal non-financial, non-specific interest | Declare and participate |
| John Watson (co-opted expert Consultant Physician) | Paid by Otsuka Pharmaceuticals (manufacturer of delaminid, a new drug for multidrug resistant TB) to act as a consultant for a single 'expert council' meeting of European multidrug resistant TB specialists in Munich, 14 November 2014.<br>(Note that in discussion of multidrug resistant TB, principles of treatment were discussed but individual drugs were not.) | Personal financial, non-specific interest | Declare and participate |
| John Watson (co-opted expert Consultant Physician) | Member of British Thoracic Society multidrug resistant TB advisory service since 2008, and clinical lead for that service November 2010–August 2014.<br>Member of British Thoracic Society TB Specialist Advisory Group for Tuberculosis 2008–2014. | Personal non-financial, specific interest | Declare and participate |
| **Service Delivery Group members** | | | |
| Onn Min Kon | Been on an advisory board of Janssen with respect to advice on bedaquiline but has not personally received any financial reward for this. | Personal non-financial, non-specific | Declare and participate |
| Onn Min Kon | Chair of the British Thoracic Society Specialist Advisory Group. | Personal non- | Declare and participate |

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| | | financial, non-specific | |
| Onn Min Kon | Co-chair of the TB subgroup of the Respiratory Clinical Reference Group. | Personal non-financial, non-specific | Declare and participate |
| Onn Min Kon | Chaired and spoken at TB-related educational seminars organised by Qiagen, Janssen and Otsuka but has not received any payment for these activities. | Personal non-financial, non-specific | Declare and participate |
| **Expert advisers to sub-group** | | | |
| Sue Ibbotson | Employee of Public Health England, with role as advocate for a systematic approach to control of TB | Personal non-financial, non-specific | Declare and participate |
| Anton Pozniak | Chair for British HIV Association TB/HIV guidelines. | Personal non-financial, non-specific | Declare and participate |
| Anton Pozniak | Member of British Thoracic Society joint committee on TB. | Personal non-financial, non-specific | Declare and participate |
| Anton Pozniak | Member of Department of Health expert advisory group on AIDS. | Personal non-financial, non-specific | Declare and participate |
| Anton Pozniak | Vice Chair of European AIDS Clinical Society clinical guidelines for HIV. | Personal non-financial, non-specific | Declare and participate |
| Anton Pozniak | President of the European AIDS and Infectious disease treatment network. | Personal non-financial, non-specific | Declare and participate |
| Anton Pozniak | Treasurer of the International AIDS society. | Personal non-financial, non-specific | Declare and participate |
| Anton Pozniak | Panel member for the World Health Organization 2013 HIV guidelines. | Personal non-financial, non-specific | Declare and participate |

# 6 Glossary

**Active case-finding**

Systematically identifying people with active or latent TB using tests, examinations or other procedures.

**Active TB**

Infection with mycobacteria of the *M. tuberculosis* complex, in which mycobacteria are growing and causing symptoms and signs of disease. This is distinct from latent TB, in which mycobacteria are present (possibly dormant), but are not causing disease. Symptoms include weakness, weight loss, fever, loss of appetite, chills and sweating at night. Other symptoms of TB disease depend on where in the body the bacteria are growing. If TB is in the lungs (pulmonary TB), the symptoms may include a cough, pain in the chest, and coughing up blood.

**Adenosine deaminase assay**

A test for TB based on detecting adenosine deaminase activity in serum and plasma samples.

**Adherence**

The term adherence refers to the person's ability or willingness to keep to a treatment regimen as directed.

**Adults**

People aged 18 or older.

**Case management**

Case management involves follow-up of a person suspected or confirmed to have TB. It needs a collaborative, multidisciplinary approach and should start as soon as possible after a suspected case is discovered.

**Case manager**

Standard and enhanced case management is overseen by a case manager who will usually be a specialist TB nurse or (in low-incidence areas) a nurse

with responsibilities that include TB. Depending on the person's circumstances and needs, case management can also be provided by appropriately trained and supported non-clinical members of the TB multidisciplinary team.

**Cavitation**

A more advanced and infectious manifestation of pulmonary disease in which holes (‘cavities’) develop in the lung, resulting from the destruction of lung tissue by direct bacterial invasion and an immune response.

**Children and young people**

People aged 17 or younger.

**Cohort review**

Cohort review is a systematic quarterly audit of the management and treatment of all TB patients and their contacts. The ‘cohort’ is a group of cases counted over a specific time, usually 3 months. Brief details of the management and outcomes of each case are reviewed in a group setting. The case manager presents the cases they are responsible for, giving the opportunity to discuss problems and difficulties in case management, service strengths and weaknesses, and staff training needs.

**Contacts**

A person who has spent time with someone with infectious TB.

**Contact investigation**

Clinical investigations (diagnostic testing) of people identified as having had significant exposure to a case of TB, including tests to diagnose latent or active TB. The aims of contact investigation are to:

- detect active TB earlier to offer treatment and prevent further transmission
- detect latent TB that may benefit from drug treatment.

**Contact tracing**

Identifying people who may have come into contact with a person with TB and assessing them for risk of significant exposure to TB. The aim is to find

associated cases, to detect people with latent TB and to identify those not infected but for whom BCG vaccination might be appropriate.

**Culture**

Growing TB bacteria from sputum or other samples for identification and diagnosis.

**Directly observed therapy**

A trained health professional, or responsible lay person supported by a trained health professional, provides the prescribed medication and watches the person swallow every dose.

**Disseminated TB**

Blood-borne spread of TB that may or may not be accompanied by chest X-ray or high resolution CT changes.

**Enablers**

Methods of helping someone to overcome barriers to completing diagnostic investigations and TB treatment. Examples of barriers include: transport, housing, nutrition and immigration status.

**Enhanced case management**

Management of B for someone with clinically or socially complex needs. It starts as soon as TB is suspected. As part of enhanced case management, the need for directly observed treatment is considered, along with a package of supportive care tailored to the person's needs.

**Equity proofed**

Tools such as health equity audit and health impact assessment have been used systematically to assess the potential effect of all policies, programmes and activities (including those without an explicit health focus) on health inequalities. Equity proofing helps ensure all policies and programmes address the social determinants of health and health inequalities. Including a health equity audit as part of the joint strategic needs assessment can help local authorities and their partners to:

- develop strategy and plans according to need
- identify and work with community and health partners
- commission activities based on the best available evidence
- implement interventions to tackle inequity

**End-to-end pathway**

The pathway from awareness raising and primary prevention, through diagnosis to treatment completion, incorporating all aspects such as contact tracing and other infection control mechanisms, for example, access to isolation facilities. This includes governance and commissioning considerations so that a comprehensive clinical and public health service is developed and delivered across any agreed geographical footprint.

**Extrapulmonary TB**

Active TB disease in any site other than the lungs or tracheobronchial tree.

**Extensively drug-resistant TB**

Resistance to at least isoniazid and rifampicin, 1 injectable agent (capreomycin, kanamycin or amikacin) and 1 fluoroquinolone.

**Gastric lavage (gastric washings)**

Some people (particularly children) with suspected TB are unable to cough up any sputum. As an alternative, in a gastric lavage, saline solution is introduced into the stomach through a tube, the contents are pumped out and are examined for *M. tuberculosis* complex bacteria.

**High incidence**

A high-incidence country or area has more than 40 cases of TB per 100,000 people per year. Public Health England lists high-incidence countries and areas of the UK on its website.

### High-risk groups

The term ‘high-risk groups' is used in this guideline to mean adults, young people and children from any ethnic background, regardless of migration status, who are at increased risk of having or contracting TB. This includes those classified as under-served, those identified as contacts according to the case finding recommendations, new entrants from high-incidence countries and people who are immunocompromised.

### Homelessness

For the purposes of TB control, a broad and inclusive definition of homelessness has been adopted that incorporates overcrowded and substandard accommodation. It includes people:

- who share an enclosed air space with those at high risk of undetected active pulmonary TB (that is, those with a history of rough sleeping, hostel residence or substance misuse)
- without the means to securely store prescribed medication
- without private space in which to self-administer TB treatment
- without secure accommodation in which to rest and recuperate in safety and dignity for the full duration of planned treatment.

### Household contact

A person who lives in the same house as a person with infectious TB.

### Immigration removal centres

Immigration removal centres are private or prison-run holding centres for migrants waiting to be accepted by, or deported from, the UK. Immigration removal centres are also known as immigration detention centres and pre-departure accommodation.

### Immunocompromised

In this guideline, immunocompromised refers to a person who has a significantly impaired immune system. For instance, this may be because of prolonged corticosteroid use, tumour necrosis factor-alpha antagonists, antirejection therapy, immunosuppression-causing medication or comorbid

states that affect the immune system, for example, HIV, chronic renal disease, many haematological and solid cancers, and diabetes.

**Incident cases**

The number of new cases of TB treated per year.

**Incident in a congregate setting**

Cases of infectious TB in a place where people congregate or an institutional setting such as a workplace, prison, hostel, or childcare or educational setting, where non-household contacts might have had significant exposure to TB.

**Incident risk assessment**

Assessment of risk of exposure to TB in a congregate setting to decide on the need for and extent of contact investigation. The risk assessment would take into considerations factors such as infectiousness of the index case, vulnerability of contacts to TB infection, length of contact with or exposure to an infectious case and the built environment (for example, size of the rooms, ventilation and overcrowding).

**Index case**

The initial person found to have TB, whose contacts are screened. The source of their infection may be found to be one of the contacts, but the patient who presents first is regarded as the index case.

**Induration**

The firm skin reaction occurring after a tuberculin skin test to diagnose latent TB infection. It is measured, and the result used to determine whether the test result is classified as positive or negative. This guideline recommends a threshold of 5 mm for tuberculin skin test positivity.

**Infection control**

Measures, other than screening, to minimise the risk of transmitting infections.

**Interferon-gamma release assay**

A blood test used to diagnose latent TB (which may be used as an alternative, or an addition, to tuberculin skin tests) based on detecting the response of white blood cells to TB antigens.

**Isolation**

An infection control measure in which people with infectious TB are kept away from others who may be at risk of infection. This guideline deals with 3 levels of isolation for infection control in hospital settings:

- negative-pressure rooms, which have air pressure continuously or automatically measured, as defined by NHS Property Services
- single rooms that are not negative pressure but are vented to the outside of the building
- beds on a ward, for which no particular engineering standards are needed.

**Latent TB**

Infection with mycobacteria of the *M. tuberculosis* complex in which the bacteria are alive but not currently causing active disease. Also known as latent TB infection.

**Lost to follow-up**

People are defined as 'lost to follow-up' if they cannot be contacted within 10 working days of:

- their first missed outpatient appointment (if they are on self-administered treatment)
- their first missed directly observed therapy appointment (if they are on directly observed therapy).

**Mantoux testing**

A type of tuberculin skin test in which tuberculin is injected into the skin. The injection site is examined for signs of an immune response after 2–3 days. (Also see ‘Tuberculin skin test’).

**Medical hold**

A process to ensure prisoners are not transferred until they are medically fit enough.

**Multidisciplinary TB teams**

A team of professionals with a mix of skills to meet the needs of someone with TB who also has complex physical and psychosocial issues (that is, someone who is under-served). Team members will include a social worker, voluntary sector and local housing representatives, TB lead physician and nurse, a case manager, a pharmacist, an infectious disease doctor or consultant in communicable disease control or health protection, a peer supporter or advocate and a psychiatrist.

**Multidrug-resistant TB**

TB resistant to isoniazid and rifampicin, with or without any other resistance.

**Needs assessment**

An assessment of the needs of a population and potential benefit from healthcare activities at a population-wide level. A needs assessment takes into account epidemiology, current service provision, and evidence of clinical effectiveness and cost effectiveness.

**Negative pressure room**

Used to isolate some patients known or suspected to have infectious TB. A negative pressure room is one where the air from the room is sucked out into dedicated ducting through a filter and into the outside air, at a distance from all other air intakes. The pressure should be 10 pascals below the ambient air pressure.

**Neonates**

Children aged 4 weeks or younger.

**New entrant**

Anyone coming to work or settle in the UK. This includes immigrants, refugees, asylum seekers, students and people on work permits. It also

includes UK-born people, or UK citizens, re-entering the country after a prolonged stay in a high-incidence country.

**Non-household contact**

A person in frequent contact with someone with infectious TB in settings other than the home (such as the workplace or schools).

**Nucleic acid amplification tests**

Tests that detect fragments of nucleic acid, allowing rapid and specific diagnosis of *M. tuberculosis* directly from a range of clinical samples.

**Opportunistic case-finding**

Opportunistic identification of people with active or latent TB using tests, examinations or other procedures in the course of existing appointments or interactions, rather than identification through formal screening programmes.

**Outbreak**

There is no robust, widely accepted threshold for an outbreak of a disease, but in practical terms an outbreak is the occurrence of an unusually high number of cases in associated people, in a small geographical area, or in a relatively short period of time.

**Peers**

Peers are people who may have experienced TB. They are often in a good position to help convey, with empathy, the need for screening or treatment. They may be recruited from specific populations. With support they can communicate health messages, assist with contact investigations or screening and offer people support while they are being tested or treated.

**Prisons**

Any state prison establishments, including young offender institutions.

**Rapid access**

In the context of TB services, rapid access refers to timely support from a specialist team.

**Smear grade**

The number of bacilli found in a sputum sample, believed to relate to the degree of infectivity of the person. There are several systems but in general recording goes from no mycobacteria in 100 fields (0 or negative) to more than 10 acid-fast bacilli per field in at least 20 fields (grade 3).

**Sputum smear positive**

Respiratory TB in which mycobacteria have been seen in a stained smear of sputum examined under a microscope. The diagnosis is confirmed by a culture to differentiate the organisms from atypical mycobacteria (those which are not in the *M. tuberculosis* complex).

**Substance misuse**

Substance misuse is defined as intoxication by – or regular excessive consumption of or dependence on – psychoactive substances, leading to social, psychological, physical or legal problems. It includes problematic use of both legal and illegal drugs.

**TB control board**

A partnership of mixed professionals and lay people who have experience of leading, commissioning, managing or supporting people with TB. Board members are likely to include the voluntary sector, housing representatives, TB specialists and other clinicians, consultants in communicable disease control or health protection, peer supporter and advocate groups, clinical commissioning groups, executive officers, local government commissioners and an independent chair. This list is not intended to be exhaustive; membership should be determined based on an area's needs, agreements and commissioning arrangements.

**Treatment interruption**

A break in the prescribed anti-TB regimen for 2 weeks or more in the initial phase, or more than 20% of prescribed doses missed intermittently.

### Tuberculin skin test

Any one of a range of simple tests that involve injecting tuberculin (purified protein derivative) into the skin. Immune reactions can be assessed after a few days according to the size of induration at the site of injection. They can demonstrate acquired immunity to TB, lack of immunity, or possible current infection (a strong response), but are confounded by being immunocompromised, having had previous tuberculin skin tests, and previous exposure to atypical mycobacteria. The results are generally referred to as 'positive' or 'negative'. (Also see 'Mantoux test').

### Under-served groups

This term is used in this guideline to mean groups of adults, young people and children from any ethnic background, regardless of migration status. They are 'under-served' if their social circumstances, language, culture or lifestyle (or those of their parents or carers) make it difficult to:

- recognise the clinical onset of TB
- access diagnostic and treatment services
- self-administer treatment (or, in the case of children and young people, have treatment administered by a parent or carer)
- attend regular appointments for clinical follow-up.

The groups classified as under-served in this guideline are:

- people who are homeless
- people who misuse substances
- prisoners
- vulnerable migrants.

### Under-served children

Groups of children identified as potentially under-served include:

- unaccompanied minors
- those whose parents are under-served, including vulnerable migrants
- those whose parents are in prison or who abuse substances

- those from traveller communities
- looked-after children.

### Vulnerable migrants

Vulnerable migrants may include undocumented migrants and those with no recourse to public funds. Some refugees, asylum seekers and new entrants to the country may also fall into this category.

# Appendix A: Recommendations from previous NICE guidelines on TB that have been deleted or changed

## *Recommendations to be deleted from 'Tuberculosis: clinical diagnosis and management of tuberculosis, and measures for its prevention and control'*

The table shows recommendations from 2006 and 2011 that NICE proposes deleting in the 2015 update. The right-hand column gives the replacement recommendation, or explains the reason for the deletion if there is no replacement recommendation.

| Recommendation in 2011 guideline | Comment |
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| 1.1.1.1 Offer Mantoux testing in line with the Green Book to diagnose latent TB in people who are:<br>• household contacts (aged 5 years and older) of all people with active TB<br>• non-household contacts (other close contacts for example, in workplaces and schools). | Retained, though amended for adults (not updated by a new review): 1.2.1.1<br><br>Replaced by:<br>1.2.1.8 Offer Mantoux testing for latent TB in people aged between 2 and 17 years who are:<br>• household contacts of a person with pulmonary TB<br>• non-household contacts (other close contacts, for example, in workplaces and schools) of people with pulmonary TB. **[new 2015]** |
| 1.1.1.4 Offer a Mantoux test to children aged 5–15 years. If positive, follow with an interferon-gamma test | Replaced by:<br>1.2.1.4 Only consider using interferon-gamma release assays in children and young people if Mantoux testing is not available or impractical (for example, situations in which large numbers need to be tested). **[new 2015]**<br>1.2.1.8 Offer Mantoux testing for latent TB in people aged between 2 and 17 years who are:<br>• household contacts of a person with pulmonary TB<br>• non-household contacts (other close contacts, for example, in workplaces and schools) of people with pulmonary TB. **[new 2015]**<br>1.2.1.9 If the Mantoux test is positive (5 |

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| | mm or larger, regardless of BCG history) in people aged between 2 and 17 years:<br>• assess for active TB (see section 1.3.1), and<br>• consider treating them for latent TB infection (see section 1.2.2). **[new 2015]** |
| 1.1.1.6 Offer Mantoux testing as the initial diagnostic test for latent TB infection in children younger than 5 years who have recently arrived from a high-incidence country. If the initial test is positive (taking into account the BCG history):<br>• refer to a TB specialist to exclude active disease and<br>• consider treating latent TB. | Replaced by:<br>1.2.1.4 Only consider using interferon-gamma release assays in children and young people if Mantoux testing is not available or impractical (for example, situations in which large numbers need to be tested). **[new 2015]**<br>1.2.1.5 If a neonate has been in close contact with people with pulmonary TB and has not had at least 2 weeks of anti-TB treatment:<br>• Assess for active TB.<br>• Start isoniazid (for 3 months.<br>• Carry out a Mantoux test after 3 months of treatment.<br>• If the Mantoux test is positive (5 mm or larger, regardless of BCG history), reassess for active TB (see section 1.3.1). If this assessment for active TB is negative, continue isoniazid for a total of 6 months.<br>• If the Mantoux test is negative, consider an interferon-gamma release assay:<br>– if both are negative then stop isoniazid and give a BCG vaccination (see section 1.1.3)<br>– if the interferon-gamma release assay is positive, reassess for active TB (see section 1.3.1); if the test for active TB is negative, continue isoniazid treatment for a total of 6 months. **[new 2015]** |
| 1.1.1.7 Offer Mantoux testing as the initial diagnostic test for latent TB infection in child household contacts between the ages of 2 and 5 years. If the initial test is positive taking into account the BCG history: | Replaced by:<br>1.2.1.8 Offer Mantoux testing for latent TB in people aged between 2 and 17 years who are:<br>• household contacts of a person with pulmonary TB |

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| • refer to a TB specialist to exclude active disease and<br>• consider treating latent TB. | • non-household contacts (other close contacts, for example, in workplaces and schools) of people with pulmonary TB. **[new 2015]**<br>1.2.1.9 If the Mantoux test is positive (5 mm or larger, regardless of BCG history) in people aged between 2 and 17 years:<br>• assess for active TB (see section 1.3.1), and<br>• consider treating them for latent TB infection (see section 1.2.2). **[new 2015]** |
| 1.1.1.11 For people with HIV and CD4 counts less than 200 cells/mm3, offer an interferon-gamma test and a concurrent Mantoux test. If either test is positive:<br>• perform a clinical assessment to exclude active TB and<br>• consider treating latent TB infection. | Replaced by:<br>1.2.1.14 For adults who are severely immunocompromised, such as those with HIV and CD4 counts of fewer than 200 cells/$mm^3$, or after solid organ or allogeneic stem cell transplant, offer an interferon-gamma release assay and a concurrent Mantoux test. If either test is positive (for Mantoux, this is an induration of 5 mm or larger, regardless of BCG history):<br>• assess for active TB (see section 1.3.1), and<br>• consider treating them for latent TB infection (see section 1.2.2). **[new 2015]** |
| 1.1.1.12 For people with HIV and CD4 counts of 200–500 cells/mm3, offer an interferon-gamma test alone or an interferon-gamma test with a concurrent Mantoux test. If either test is positive:<br>• perform a clinical assessment to exclude active TB and<br>• consider treating latent TB infection. | Replaced by:<br>1.2.1.15 For other adults who are immunocompromised, consider an interferon-gamma release assay alone or an interferon-gamma release assay with a concurrent Mantoux test. If either test is positive (for Mantoux, this is an induration of 5 mm or larger, regardless of BCG history):<br>• assess for active TB (see section 1.3.1), and<br>• consider treating them for latent TB infection (see section 1.2.2). **[new 2015]** |
| 1.1.1.13 For other people who are immunocompromised, offer an interferon-gamma test alone or an interferon-gamma test with a concurrent Mantoux test. If either test is positive:<br>• perform a clinical assessment to exclude active TB and<br>• consider treating latent TB. | Replaced by:<br>1.2.1.15 For other adults who are immunocompromised, consider an interferon-gamma release assay alone or an interferon-gamma release assay with a concurrent Mantoux test. If either test is positive (for Mantoux, this is an induration of 5 mm or larger, regardless of BCG history): |

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| | • assess for active TB (see section 1.3.1), and<br>• consider treating them for latent TB infection (see section 1.2.2). **[new 2015]** |
| 1.1.2.1 … a posterior–anterior chest X-ray should be taken; chest X-ray appearances suggestive of TB should lead to further diagnostic investigation<br>… in children unable to expectorate sputum, induction of sputum should be considered if it can be done safely, with gastric washings considered as third line | Replaced by:<br>1.3.1.5 Send multiple respiratory samples (3 deep cough sputum samples, preferably with 1 early morning sample) for TB microscopy and culture. **[2015]**<br>• This should be before starting treatment if possible or, failing that, within 7 days of starting treatment in people with life-threatening disease. **[2006, amended 2015]**<br>• Obtain spontaneously-produced, deep cough sputum samples if possible, otherwise use:<br>– 3 gastric lavages or 3 inductions of sputum in children and young people (see recommendation 1.5.1.0). [new 2015], or<br>– induction of sputum or bronchoscopy and lavage in adults (see recommendation 1.5.1.0). **[2006, amended 2015]**<br>• Laboratory practices should be in accordance with Public Health England's Standards for Microbiology Investigations. **[new 2015]**<br>1.3.1.7 A TB specialist should request rapid diagnostic nucleic acid amplification tests for *the M. tuberculosis* complex (*M. tuberculosis, M. bovis, M. africanum*) on primary specimens (listed in table 1) if there is clinical suspicion of TB disease, and:<br>• the person has HIV, or<br>• rapid information about mycobacterial species would alter the person's care, or<br>• the need for a large contact-tracing initiative is being explored. **[new 2015]** |
| 1.1.2.2 … all patients with non- | Replaced by: |

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| respiratory TB should have a chest X-ray to exclude or confirm coexisting respiratory TB; in addition, tests as described in table 1 should be considered | 1.3.1.15 Offer all patients presenting with extrapulmonary TB a chest posterior-anterior X-ray and, if possible, culture of a spontaneously-produced respiratory sample to exclude or confirm coexisting pulmonary TB (see section 1.3.1). Also, consider site-specific tests as described below to exclude or confirm additional sites of TB. **[new 2015]**<br>1.3.1.17 Use the site-specific investigations listed in table 2 to diagnose and assess pleural TB.<br>1.3.1.18 Use the site-specific investigations listed in table 3 to diagnose and assess central nervous system TB. **[new 2015]**<br>1.3.1.20 Use the site-specific investigations listed in table 4 to diagnose and assess lymph node TB. **[new 2015]**<br>1.3.1.21 Use the site-specific investigations listed in table 5 to diagnose and assess pericardial TB. **[new 2015]**<br>1.3.1.22 Use the site-specific investigations listed in table 6 to diagnose and assess gastrointestinal TB. **[new 2015]**<br>1.3.1.23 Use the site-specific investigations listed in table 7 to diagnose and assess genitourinary TB. **[new 2015]**<br>1.3.1.24 Use the site-specific investigations listed in table 8 to diagnose and assess bone and joint TB. **[new 2015]**<br>1.3.1.25 Use the site-specific investigations listed in table 9 to diagnose and assess disseminated TB. **[new 2015]**<br>1.3.1.26 Use the site-specific investigations listed in table 10 to diagnose and assess skin TB. **[new 2015]**<br>1.3.1.27 Use the site-specific investigations listed in table 11 to diagnose and assess TB in a localised, tuberculous abscess at a site other than a lymph node. **[new 2015]** |
| 1.1.2.3 Rapid diagnostic tests for *Mycobacterium tuberculosis* complex (*M tuberculosis, M bovis, M africanum*) on primary specimens should be used only if: | Replaced by:<br>1.3.1.7 A TB specialist should request rapid diagnostic nucleic acid amplification tests for the *M. tuberculosis* complex (*M. tuberculosis, M. bovis, M. africanum*) on |

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| • rapid confirmation of a TB diagnosis in a sputum smear-positive person would alter their care, or<br>• before conducting a large contact-tracing initiative. | primary specimens (listed in table 1) if there is clinical suspicion of TB disease, and:<br>• the person has HIV, or<br>• rapid information about mycobacterial species would alter the person's care, or<br>• the need for a large contact-tracing initiative is being explored. **[new 2015]**<br>1.3.1.8 In children and young people aged 15 years or younger with suspected pulmonary TB, offer rapid diagnostic nucleic acid amplification tests for the *M. tuberculosis* complex (*M. tuberculosis, M. bovis, M. africanum*). Usually only 1 nucleic acid amplification test will be necessary per specimen type (for example, spontaneous sputum, induced sputum or gastric lavage). (Listed in table 1). **[new 2015]**<br>1.3.1.9 In young people aged 16–18 years use the same criteria as in adults to decide whether to request rapid diagnostic nucleic acid amplification tests (see table1). **[new 2015]**<br>1.3.1.17 Use the site-specific investigations listed in table 2 to diagnose and assess pleural TB.<br>1.3.1.18 Use the site-specific investigations listed in table 3 to diagnose and assess central nervous system TB. **[new 2015]**<br>1.3.1.20 Use the site-specific investigations listed in table 4 to diagnose and assess lymph node TB. **[new 2015]**<br>1.3.1.21 Use the site-specific investigations listed in table 5 to diagnose and assess pericardial TB. **[new 2015]**<br>1.3.1.22 Use the site-specific investigations listed in table 6 to diagnose and assess gastrointestinal TB. **[new 2015]**<br>1.3.1.23 Use the site-specific investigations listed in table 7 to diagnose and assess genitourinary TB. **[new 2015]**<br>1.3.1.24 Use the site-specific investigations listed in table 8 to diagnose and assess bone and joint TB. |

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| | **[new 2015]**<br>1.3.1.25 Use the site-specific investigations listed in table 9 to diagnose and assess disseminated TB. **[new 2015]**<br>1.3.1.26 Use the site-specific investigations listed in table 10 to diagnose and assess skin TB. **[new 2015]**<br>1.3.1.27 Use the site-specific investigations listed in table 11 to diagnose and assess TB in a localised, tuberculous abscess at a site other than a lymph node. **[new 2015]** |
| 1.1.2.4 Clinicians should still consider a diagnosis of non-respiratory TB if rapid diagnostic tests are negative, for example in pleural fluid, cerebrospinal fluid and urine. | Replaced by:<br>1.3.1.14 Think about a diagnosis of extrapulmonary TB even if rapid diagnostic tests in, for example, cerebrospinal fluid, pleural fluid or ascitic fluid are negative. **[new 2015]** |
| 1.1.2.5 Clinical signs and other laboratory findings consistent with TB meningitis should lead to treatment, even if a rapid diagnostic test is negative, because the potential consequences for the patient are severe. | Replaced by:<br>1.3.1.19 Offer treatment for TB meningitis if clinical signs and other laboratory findings are consistent with the diagnosis, even if a rapid diagnostic test is negative. **[new 2015]** |
| 1.1.2.6 Before conducting a large contact-tracing initiative (for example, in a school or hospital), the species of Mycobacterium should be confirmed to be *M tuberculosis* complex by rapid diagnostic tests on microscopy- or culture-positive material. Clinical judgement should be used if tests are inconclusive or delayed. | Replaced by:<br>1.3.1.7 A TB specialist should request rapid diagnostic nucleic acid amplification tests for the *M. tuberculosis* complex (*M. tuberculosis, M. bovis, M. africanum*) on primary specimens (listed in table 1) if there is clinical suspicion of TB disease, and:<br>• the person has HIV, or<br>• rapid information about mycobacterial species would alter the person's care, or<br>• the need for a large contact-tracing initiative is being explored. **[new 2015]** |
| 1.1.2.7 If a risk assessment suggests a patient has multidrug-resistant (MDR) TB:<br>• rapid diagnostic tests should be conducted for rifampicin resistance<br>• infection control measures and treatment for MDR TB should be started as described in section, pending the result of the tests. | Replaced by:<br>1.4.1.1 For people with clinically suspected TB, a TB specialist should request rapid diagnostic nucleic acid amplification tests for rifampicin resistance on primary specimens if a risk assessment for multidrug resistance identifies any of the following risk factors:<br>• history of previous TB drug treatment, particularly if there was known to be poor adherence to |

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| | that treatment<br>• contact with a known case of multidrug-resistant TB<br>• birth or residence in a country in which the World Health Organization reports that a high proportion (5% or more) of new TB cases are multidrug-resistant. **[new 2015]**<br>1.4.1.2 If the rapid diagnostic nucleic acid amplification test for rifampicin resistance is positive:<br>• start infection control measures, and continue until pulmonary disease has been excluded (see section 1.5)<br>• manage treatment along with a multidisciplinary team with experience of managing multidrug-resistant TB (see section 1.8)<br>• offer a treatment regimen involving at least 6 drugs to which the mycobacterium is likely to be sensitive<br>• test for resistance to second-line drugs. **[new 2015]** |
| 1.1.2.8 Rapid diagnostic tests for *M tuberculosis* complex identification should be conducted on biopsy material only if:<br>• all the sample has been inappropriately placed in formalin, and<br>• acid-fast bacilli are visible on microscopy. | Updated by new review.<br>The group felt that there was no evidence to support the retention of this recommendation. |
| 1.1.2.9 Clinical samples should ideally be sent for culture by automated liquid methods, bearing in mind that laboratories need a certain level of throughput to maintain quality control. | This is now accepted practice. |
| 1.2.1.2 A 6-month, four-drug initial regimen (6 months of isoniazid and rifampicin supplemented in the first 2 months with pyrazinamide and ethambutol) should be used to treat active respiratory TB in:<br>• adults not known to be HIV positive<br>• adults who are HIV positive<br>• children. | Updated by new review.<br>1.3.2.2 For people with active TB without central nervous system involvement, offer:<br>• isoniazid, rifampicin, pyrazinamide and ethambutol for 2 months, then<br>• isoniazid and rifampicin for a further 4 months.<br>Modify the treatment regimen according |

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| This regimen is referred to as 'standard recommended regimen' in this guideline. | to drug susceptibility testing. **[2015]** |
| 1.2.2.1 All patients with TB should have risk assessments for drug resistance and for HIV. If risk factors for MDR TB are present, see section 1.5.3 for recommendations on infection control. | Replaced by:<br>1.2.2.6 Offer testing for HIV and hepatitis B and C before starting treatment for latent TB. For recommendations on hepatitis B and C, see NICE guidelines on hepatitis B and C: ways to promote and offer testing to people at increased risk of infection and hepatitis B (chronic): diagnosis and management of chronic hepatitis B in children, young people and adults. For recommendations on HIV, see NICE guidelines on increasing the uptake of HIV testing among black Africans in England and increasing the uptake of HIV testing among men who have sex with men. **[new 2015]**<br>1.4.1.1 For people with clinically suspected TB, a TB specialist should request rapid diagnostic nucleic acid amplification tests for rifampicin resistance on primary specimens if a risk assessment for multidrug resistance identifies any of the following risk factors:<br>• history of previous TB drug treatment, particularly if there was known to be poor adherence to that treatment<br>• contact with a known case of multidrug-resistant TB<br>• birth or residence in a country in which the World Health Organization reports that a high proportion (5% or more) of new TB cases are multidrug-resistant. **[new 2015]** |
| 1.2.2.3 If admitted to hospital, people with suspected respiratory TB should be given a single room. | Replaced by:<br>1.5.1.2 Put patients with suspected infectious or confirmed pulmonary TB who will remain in a hospital setting (including emergency, outpatients or inpatient care) in a single room. If this is not possible, keep the person's waiting times to a minimum. This may involve prioritising their care above that of other patients. **[new 2015]** |
| 1.2.2.4 Patients with respiratory TB should be separated from immunocompromised patients, either by admission to a single room on a separate ward, or in a negative-pressure room on the same ward. | Replaced by:<br>1.5.1.6 Do not admit people with suspected infectious or confirmed pulmonary TB to a ward containing immunocompromised patients, such as transplant recipients, people with HIV |

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| | and those on anti-tumour necrosis factor alpha or other biologics, unless they can be cared for in a negative-pressure room on the same ward. **[new 2015]** |
| 1.2.2.5 Any visitors to a child with TB in hospital should be screened as part of contact tracing, and kept separate from other patients until they have been excluded as the source of infection. | Replaced by:<br>1.5.1.7 Assess any visitors to a child with suspected active TB in hospital for symptoms of infectious TB, and keep them separate from other patients until they have been excluded as a source of infection (see sections 1.6.1 and 1.2.1). **[new 2015]** |
| 1.2.2.6 Smear-positive TB patients without risk factors for MDR TB should be cared for in a single room, until:<br>• they have completed 2 weeks of the standard treatment regimen, or<br>• they are discharged from hospital. | Replaced by:<br>1.5.1.8 Care for people with a continuing clinical or public health need for admission with pulmonary TB in a single room (as a minimum) until they have completed 2 weeks of the standard treatment regimen (see section 1.3.2) if they:<br>• are unlikely to be rifampicin resistant (that is, do not have risk factors for multidrug-resistant TB, see section 1.4.1), or<br>• have negative rifampicin resistance on nucleic acid amplification test or culture. **[new 2015]** |
| 1.2.2.7 Aerosol-generating procedures such as bronchoscopy, sputum induction or nebuliser treatment should be carried out in an appropriately engineered and ventilated area for:<br>• all patients on an HIV ward, regardless of whether a diagnosis of TB has been considered<br>• all patients in whom TB is considered a possible diagnosis, in any setting. | Replaced by:<br>1.5.1.10 In people who may have TB, only carry out aerosol-generating procedures such as bronchoscopy, sputum induction or nebuliser treatment in an appropriately engineered and ventilated area (ideally a negative pressure room). **[new 2015]** |
| 1.2.2.8 Healthcare workers caring for people with TB should not use masks, gowns or barrier nursing techniques unless:<br>• MDR TB is suspected<br>• aerosol-generating procedures are being performed.<br>When such equipment is used, the reason should be explained to the person with TB. The equipment should meet the standards of the Health and Safety Executive. See section 1.5.3 for further | Replaced by:<br>1.5.1.10 In people who may have TB, only carry out aerosol-generating procedures such as bronchoscopy, sputum induction or nebuliser treatment in an appropriately engineered and ventilated area (ideally a negative pressure room). **[new 2015]** |

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| details of MDR TB infection control. | |
| 1.2.2.9 TB patients admitted to a setting where care is provided for people who are immunocompromised, including those who are HIV positive, should be considered infectious and, if sputum smear positive at admission, should stay in a negative-pressure room until:<br>1. the patient has had at least 2 weeks of appropriate multiple drug therapy, and<br>2. if moving to accommodation (inpatient or home) with people who are immunocompromised, including those who are HIV positive, the patient has had at least three negative microscopic smears on separate occasions over a 14-day period, and<br>3. the patient is showing tolerance to the prescribed treatment and an ability and agreement to adhere to treatment, and either<br>4. any cough has resolved completely, or<br>5. there is definite clinical improvement on treatment, for example remaining afebrile for a week.<br>1.2.2.10 For people who were sputum smear negative at admission (that is, three negative samples were taken on separate days; samples were spontaneously produced sputum if possible, or obtained by bronchoscopy or lavage if sputum samples were not possible): all of 1, 2, 3 and 5 above should apply. | Replaced by:<br>1.5.1.9 Consider de-escalating isolation after 2 weeks of treatments, taking into account the risks and benefits, if:<br>• the person is showing tolerance to the prescribed treatment<br>• there is agreement to adhere to treatment<br>• there is resolution of cough<br>• there is definite clinical improvement on treatment; for example, remaining afebrile for a week<br>• there are not immunocompromised people, such as transplant recipients, people with HIV and those on anti-tumour necrosis factor alpha or other biologics, in the same accommodation<br>• the person's initial smear grade was not high; for example, 2 or less<br>• there is not extensive pulmonary involvement, including cavitation<br>• there is no laryngeal TB. **[new 2015]** |
| 1.2.2.11 Inpatients with smear-positive respiratory TB should be asked (with explanation) to wear a surgical mask whenever they leave their room until they have had 2 weeks' drug treatment. | Replaced by:<br>1.5.1.12 Ask inpatients with suspected infectious or confirmed pulmonary TB (with explanation) to wear a surgical mask in the hospital whenever they leave their room, until they have had at least 2 weeks of treatment. **[2015]** |
| 1.3.1.1 Patients with active meningeal TB should be offered:<br>• a treatment regimen, initially lasting for 12 months, comprising isoniazid, pyrazinamide, rifampicin and a fourth drug (for example, ethambutol) for the first 2 months, followed by isoniazid and rifampicin for the rest of the treatment period<br>• a glucocorticoid at the normal | Replaced by:<br>1.3.2.3 For people with active TB of the central nervous system, offer:<br>• isoniazid, rifampicin, pyrazinamide and ethambutol for 2 months, then<br>• isoniazid and rifampicin for a further 10 months.<br>Modify the treatment regimen according to drug susceptibility testing. **[2015]** |

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| dose range:<br>– adults – equivalent to prednisolone 20–40 mg if on rifampicin, otherwise 10–20 mg<br>– children – equivalent to prednisolone 1–2 mg/kg, maximum 40 mg<br>with gradual withdrawal of the glucocorticoid considered, starting within 2–3 weeks of initiation. | |
| 1.3.2.2 Patients with active peripheral lymph node TB who have had an affected gland surgically removed should still be treated with the standard recommended regimen. | Replaced by:<br>1.3.2.7 Treat active peripheral lymph node TB in people who have had an affected gland surgically removed with the standard recommended regimen. **[new 2015]** |
| 1.3.2.3 Drug treatment of peripheral lymph node TB should normally be stopped after 6 months, regardless of the appearance of new nodes, residual nodes or sinuses draining during treatment. | Replaced by:<br>1.3.2.8 For people with active TB of the lymph nodes, do not routinely extend treatment beyond 6 months for newly enlarged lymph nodes or sinus formation, or for residual enlargement of the lymph nodes or sinuses. **[new 2015]** |
| 1.3.3.1 The standard recommended regimen should be planned and started in people with:<br>• active spinal TB<br>• active TB at other bone and joint sites. | Replaced by:<br>1.3.2.2 For people with active TB without central nervous system involvement, offer:<br>• isoniazid, rifampicin, pyrazinamide and ethambutol for 2 months, then<br>• isoniazid and rifampicin for a further 4 months.<br>Modify the treatment regimen according to drug susceptibility testing. **[2015]**<br>1.3.2.3 For people with active TB of the central nervous system, offer:<br>• isoniazid, rifampicin, pyrazinamide and ethambutol for 2 months, then<br>• isoniazid and rifampicin for a further 10 months.<br>Modify the treatment regimen according to drug susceptibility testing. **[2015]** |
| 1.3.3.3 A computed tomography (CT) or magnetic resonance (MR) scan should be performed on patients with active spinal TB who have neurological signs or symptoms. If there is direct spinal cord involvement (for example, a spinal cord | Replaced by:<br>1.3.2.4 Test people with people with active spinal TB who have neurological signs or symptoms for central nervous system involvement (see section 1.3.1). Manage direct spinal cord involvement |

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| tuberculoma), management should be as for meningeal TB. | (for example, a spinal cord tuberculoma) as TB of the central nervous system. **[2015]** |
| 1.3.4.1 In patients with spinal TB, anterior spinal fusion should not be performed routinely. | Replaced by:<br>1.3.2.30 Do not routinely perform surgery in people with spinal TB to eradicate the disease. **[new 2015]** |
| 1.3.4.2 In patients with spinal TB, anterior spinal fusion should be considered if there is spinal instability or evidence of spinal cord compression. | Replaced by:<br>1.3.2.31 Consider surgery in people with spinal TB if there is spinal instability or evidence of spinal cord compression. **[new 2015]** |
| 1.3.5.2 In addition to anti-TB treatment, patients with active pericardial TB should be offered:<br>• for adults, a glucocorticoid equivalent to prednisolone at 60 mg/day<br>• for children, a glucocorticoid equivalent to prednisolone 1 mg/kg/day (maximum 40 mg/day)<br>• with gradual withdrawal of the glucocorticoid considered, starting within 2–3 weeks of initiation. | Replaced by:<br>1.3.2.20 In adults with active pericardial TB, offer oral prednisolone at a starting dose of 60 mg/day, gradually withdrawing it 2–3 weeks after starting treatment. **[2015]**<br>1.3.2.21 In children and young people with active pericardial TB, offer oral prednisolone at a starting dose of 1 mg/kg of body weight/day (maximum 40 mg/day), gradually withdrawing it 2–3 weeks after starting treatment. **[2015]** |
| 1.3.6.2 Treatment of disseminated (including miliary) TB should be started even if initial liver function tests are abnormal. If the patient's liver function deteriorates significantly on drug treatment, advice on management options should be sought from clinicians with specialist experience of these circumstances. | Recommendation deleted because the Committee did not consider this recommendation to be necessary. |
| 1.3.6.3 Patients with disseminated (including miliary) TB should be tested for central nervous system (CNS) involvement by:<br>• brain scan (CT or MRI) and/or lumbar puncture for those with CNS signs or symptoms<br>• lumbar puncture for those without CNS signs and symptoms.<br>If evidence of CNS involvement is detected, treatment should be the same as for meningeal TB. | Replaced by:<br>1.3.2.6 Test people with disseminated (including miliary) TB for central nervous system involvement (see section 1.3.1). If there is evidence of central nervous system involvement, treat as for TB of the central nervous system. **[2015]** |
| 1.5.1.1 A risk assessment for drug resistance should be made for each patient with TB, based on the risk factors listed below:<br>• history of prior TB drug treatment; prior TB treatment failure | Replaced by:<br>1.4.1.1 For people with clinically suspected TB, a TB specialist should request rapid diagnostic nucleic acid amplification tests for rifampicin resistance on primary specimens if a risk |

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| • contact with a known case of drug-resistant TB<br>• birth in a foreign country, particularly high-incidence countries as defined by the HPA on its website<br>• HIV infection<br>• residence in London<br>• age profile, with highest rates between ages 25 and 44<br>• male gender. | assessment for multidrug resistance identifies any of the following risk factors:<br>• history of previous TB drug treatment, particularly if there was known to be poor adherence to that treatment<br>• contact with a known case of multidrug-resistant TB<br>• birth or residence in a country in which the World Health Organization reports that a high proportion (5% or more) of new TB cases are multidrug-resistant. **[new 2015]** |
| 1.5.1.2 The TB service should consider the risk assessment for drug resistance and, if the risk is regarded as significant, urgent molecular tests for rifampicin resistance should be performed on smear-positive material or on positive cultures when they become available. | Replaced by:<br>1.4.1.1 For people with clinically suspected TB, a TB specialist should request rapid diagnostic nucleic acid amplification tests for rifampicin resistance on primary specimens if a risk assessment for multidrug resistance identifies any of the following risk factors:<br>• history of previous TB drug treatment, particularly if there was known to be poor adherence to that treatment<br>• contact with a known case of multidrug-resistant TB<br>• birth or residence in a country in which the World Health Organization reports that a high proportion (5% or more) of new TB cases are multidrug-resistant. **[new 2015]** |
| 1.5.1.3 Response to treatment should be closely monitored in patients at increased risk of drug resistance. If there is no clinical improvement, or if cultures remain positive after the fourth month of treatment ('treatment failure'), drug resistance should be suspected and treatment reviewed with a clinician experienced in the treatment of MDR TB. | Replaced by:<br>1.4.1.4 If the rapid diagnostic nucleic acid amplification test for the M. tuberculosis complex is negative in a person at high risk of multidrug-resistant TB:<br>• obtain further specimens for nucleic acid amplification testing and culture, if possible<br>• use rapid rifampicin resistance detection on cultures that become positive for the M. tuberculosis complex<br>• consider waiting for the results of further tests before starting treatment if the person is well<br>• if urgent treatment is necessary, consider managing as multidrug- |

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| | resistant TB until sensitivity results are available. **[new 2015]**<br>1.4.1.5 When definitive phenotypic susceptibility results are available, modify treatment as needed (see sections 1.3.2 and 1.4.2). **[new 2015]**<br>1.4.1.6 Consider more intensive clinical follow-up for people with multidrug-resistant TB. This includes those having directly observed therapy (see section 1.7) throughout treatment because of the complexity of treatment and risk of adverse events. **[new 2015]**<br>1.4.2.4 For people with drug-resistant TB and central nervous system involvement, involve a TB specialist with experience in managing drug-resistant TB in decisions about the most appropriate regimen and the duration of treatment. **[new 2015]** |
| 1.5.3.1 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. | Replaced by:<br>1.5.3.1 If people with suspected or known infectious multidrug-resistant TB are admitted to hospital, admit them to a negative-pressure room. If none is available locally, transfer them to a hospital that has these facilities and a clinician experienced in managing complex drug-resistant cases. Carry out care in a negative-pressure room for people with:<br>• suspected multidrug-resistant TB, until non-resistance is confirmed<br>• confirmed multidrug-resistant TB, until they have 3 negative smears at weekly intervals and are ideally culture negative. **[new 2015]** |
| 1.5.3.3 Before the decision is made to discharge a patient with suspected or known MDR TB from hospital, secure arrangements for the supervision and administration of all anti-TB therapy should have been agreed with the patient and carers. | Replaced by:<br>1.5.3.6 Before the decision is made to discharge a patient with suspected or known multidrug-resistant TB from hospital, agree with the patient and carers secure arrangements for supervising and administering all anti-TB therapy. **[2015]** |
| 1.5.3.4 The decision to discharge a patient with suspected or known MDR TB should be discussed with the infection control team, the local microbiologist, the local TB service, and the consultant in communicable disease control. | Replaced by:<br>1.5.3.7 Discuss the decision to discharge a patient with suspected or known multidrug-resistant TB with:<br>• the infection control team<br>• the local microbiologist<br>• the local TB service and |

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| | • the health protection team. **[2015]** |
| 1.5.3.5 Negative-pressure rooms used for infection control in MDR TB should meet the standards of the Interdepartmental Working Group on Tuberculosis, and should be clearly identified for staff, for example by a standard sign. Such labelling should be kept up to date. | Replaced by:<br>1.5.3.8 Ensure negative-pressure rooms used for infection control in multidrug-resistant TB meet the standards of the Interdepartmental Working Group on Tuberculosis, and are clearly identified for staff, for example by a standard sign. Keep such signs up to date. **[2015]** |
| 1.5.4.1 Patients with drug-resistant TB, other than MDR, should be under the care of a specialist physician with appropriate experience in managing such cases. First-choice drug treatment is set out in table 2. | Replaced by:<br>1.4.2.1 For people with TB, without central nervous system involvement, that is resistant to just 1 drug consider the treatments in table 13. **[new 2015]** |
| 1.6.1.1 Treatment of latent TB infection should be considered for people in the following groups, once active TB has been excluded by chest X-ray and examination.<br>People identified through screening who are:<br>• 35 years or younger (because of increasing risk of hepatotoxicity with age)<br>• any age with HIV<br>• any age and a healthcare worker<br>and are either:<br>• Mantoux positive (6 mm or greater), and without prior BCG vaccination, or<br>• strongly Mantoux positive (15 mm or greater), interferon-gamma positive, and with prior BCG vaccination.<br>Children aged 1–15 years identified through opportunistic screening to be:<br>• strongly Mantoux positive (15 mm or greater), and<br>• interferon-gamma positive (if this test has been performed), and<br>• without prior BCG vaccination.<br>People with evidence of TB scars on chest X-ray, and without a history of adequate treatment. | Replaced by:<br>1.2.2.2 For people, including those with HIV, aged younger than 65 years with evidence of latent TB who have been in close contact with people who have suspected infectious or confirmed active pulmonary or laryngeal drug-sensitive TB offer either of the following drug treatments:<br>• 3 months of isoniazid and rifampicin, or<br>• 6 months of isoniazid. **[new 2015]** |
| 1.6.1.2 People with HIV who are in close contact with people with sputum-smear-positive respiratory TB should have active disease excluded and then be given treatment for latent TB infection. | The Committee felt that this recommendation was no longer relevant – this is an action that should be performed in all people with latent infection. The recommendations for the |

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| | diagnosis of latent TB infection include the need to rule out active disease once infection is detected. |
| 1.6.1.3 Treatment for latent TB infection should not be started in close contacts of people with sputum-smear-positive MDR TB who are strongly Mantoux positive (15 mm or greater), as no regimen is of proven benefit, and only a small proportion of people infected will develop the disease. Long-term monitoring should be undertaken for active disease. | Replaced by:<br>1.2.2.2 For people, including those with HIV, aged younger than 65 years with evidence of latent TB who have been in close contact with people who have suspected infectious or confirmed active pulmonary or laryngeal drug-sensitive TB offer either of the following drug treatments:<br>• 3 months of isoniazid and rifampicin, or<br>• 6 months of isoniazid. **[new 2015]** |
| 1.6.1.4 People who have agreed to receive treatment for latent TB infection should be started on one of the following regimens:<br>• either 6 months of isoniazid (6H) or 3 months of rifampicin and isoniazid (3RH) for people aged 16–35 not known to have HIV<br>• either 6 months of isoniazid (6H) or 3 months of rifampicin and isoniazid (3RH) for people older than 35 in whom treatment for latent TB infection is recommended (see recommendation 1.6.1.1), and who are not known to have HIV<br>• 6 months of isoniazid (6H) for people of any age who have HIV<br>• 6 months of rifampicin (6R) for contacts, aged 35 or younger, of people with isoniazid-resistant TB.<br>People eligible for treatment of latent TB infection, but who decline to take this treatment, should be given 'Inform and advise' information about TB and have chest X-rays 3 and 12 months later. | Replaced by:<br>1.2.2.2 For people, including those with HIV, aged younger than 65 years with evidence of latent TB who have been in close contact with people who have suspected infectious or confirmed active pulmonary or laryngeal drug-sensitive TB offer either of the following drug treatments:<br>• 3 months of isoniazid and rifampicin, or<br>• 6 months of isoniazid. **[new 2015]** (1.2.2.1)<br>1.2.2.4 Base the choice of regimen on the person's clinical circumstances. Offer:<br>• 3 months of isoniazid and rifampicin if hepatotoxicity is a concern; this would include both liver function (including transaminase) tests and assessment of risk factors<br>• 6 months of isoniazid if interactions with rifamycins are a concern, for example, in people with HIV or who have had a transplant. **[new 2015]** |
| 1.6.1.5 Neonates who have been in close contact with people with sputum-smear-positive TB who have not received at least 2 weeks' anti-tuberculosis drug treatment should be treated as follows.<br>• The baby should be started on isoniazid (according to the current 'British national formulary for children') for 3 months and then a | Replaced by:<br>1.2.1.5 If a neonate has been in close contact with people with pulmonary TB and has not had at least 2 weeks of anti-TB treatment:<br>• Assess for active TB.<br>• Start isoniazid for 3 months.<br>• Carry out a Mantoux test after 3 |

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| Mantoux test performed after 3 months' treatment.<br>• If the Mantoux test is positive (6 mm or greater) the baby should be assessed for active TB. If this assessment is negative, then isoniazid should be continued for a total of 6 months.<br>• If the Mantoux test is negative (less than 6 mm), it should be repeated together with an interferon-gamma test. If both are negative then isoniazid should be stopped and a BCG vaccination performed. | months of treatment.<br>• If the Mantoux test is positive (5 mm or larger, regardless of BCG history), reassess for active TB (see section 1.3.1). If this assessment for active TB is negative, continue isoniazid for a total of 6 months.<br>• If the Mantoux test is negative, consider an interferon-gamma release assay:<br>– if both are negative then stop isoniazid and give a BCG vaccination (see section 1.1.3)<br>– if the interferon-gamma release assay is positive, reassess for active TB (see section 1.3.1); if the test for active TB is negative, continue isoniazid treatment for a total of 6 months. **[new 2015]** |
| 1.6.1.6 Children older than 4 weeks but younger than 2 years who have not had BCG vaccination and are in close contact with people with sputum-smear-positive TB should be treated as follows.<br>• The child should be started on isoniazid (according to the current 'British national formulary for children') and a Mantoux test performed.<br>• If the Mantoux test is positive (6 mm or greater), the child should be assessed for active TB. If active TB is ruled out, full treatment for latent TB infection should be given.<br>• If the Mantoux test is negative (less than 6 mm), then isoniazid should be continued for 6 weeks, and then a repeat Mantoux test together with an interferon-gamma test should be carried out.<br>• If the repeat tests are negative, isoniazid may be stopped and BCG vaccination performed.<br>• If either repeat test is positive (6 mm or greater), then the child should be assessed for active TB | Replaced by:<br>1.2.1.6 Treat children aged between 4 weeks and 2 years and in close contact with people with pulmonary TB as follows:<br>• Start isoniazid and carry out a Mantoux test.<br>• If the Mantoux test is positive (5 mm or larger, regardless of BCG history), assess for active TB (see section 1.3.1).<br>• If active TB is ruled out, give full treatment for latent TB infection (see section 1.2.2).<br>• If the Mantoux test is negative, continue isoniazid for 6 weeks, then repeat the Mantoux test and consider an interferon-gamma release assay:<br>– if the repeat tests are negative, isoniazid may be stopped; give a BCG vaccination if the child has not already had one (see section 1.1.3)<br>– if either repeat test is positive, assess for active TB (see section |

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| and consider treating for latent TB. | 1.3.1) and if the assessment is negative, complete treatment for latent TB. **[new 2015]** |
| 1.6.1.7 BCG-vaccinated children older than 4 weeks but younger than 2 years, in close contact with people with sputum-smear-positive respiratory TB, should be treated as follows.<br>• The child should have a Mantoux test. If this is positive (15 mm or greater), the child should be assessed for active TB. If active TB is excluded, then treatment for latent TB infection should be given.<br>• If the result of the test is as expected for prior BCG (less than 15 mm), it should be repeated after 6 weeks together with an interferon-gamma test.<br>• If the repeat Mantoux test is also less than 15 mm, and the interferon-gamma test is also negative, no further action is needed.<br>• If the repeat Mantoux test becomes more strongly positive (15 mm or greater and an increase of 5 mm or more over the previous test), or the interferon-gamma test is positive the child should be assessed for active TB. If active TB is excluded, treatment for latent TB infection should be given. | Replaced by:<br>1.2.1.6 Treat children aged between 4 weeks and 2 years and in close contact with people with pulmonary TB as follows:<br>• Start isoniazid and carry out a Mantoux test.<br>• If the Mantoux test is positive (5 mm or larger, regardless of BCG history), assess for active TB (see section 1.3.1).<br>• If active TB is ruled out, give full treatment for latent TB infection (see section 1.2.2).<br>• If the Mantoux test is negative, continue isoniazid for 6 weeks, then repeat the Mantoux test and consider an interferon-gamma release assay:<br>– if the repeat tests are negative, isoniazid may be stopped; give a BCG vaccination if the child has not already had one (see section 1.1.3)<br>– if either repeat test is positive, assess for active TB (see section 1.3.1) and if the assessment is negative, complete treatment for latent TB. **[new 2015]** |
| 1.6.1.8 For children requiring treatment for latent TB infection, a regimen of either 3 months of rifampicin and isoniazid (3RH) or 6 months of isoniazid (6H) should be planned and started, unless the child is known to be HIV positive, when 6H should be given.<br>1.6.1.9 Healthcare workers should be aware that certain groups of people with latent TB are at increased risk of going on to develop active TB, including people who:<br>• are HIV positive<br>• are injecting drug users<br>• have had solid organ | Replaced by:<br>1.2.2.2 For people, including those with HIV, aged younger than 65 years with evidence of latent TB who have been in close contact with people who have suspected infectious or confirmed active pulmonary or laryngeal drug-sensitive TB offer either of the following drug treatments:<br>• 3 months of isoniazid and rifampicin, or<br>• 6 months of isoniazid. **[new 2015]** |

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| transplantation<br>• have a haematological malignancy<br>• have had a jejunoileal bypass<br>• have chronic renal failure or receive haemodialysis<br>• have had a gastrectomy<br>• are receiving anti-tumour necrosis factor-alpha treatment<br>• have silicosis.<br>Patients in these groups should be advised of the risks and symptoms of TB, on the basis of an individual risk assessment, usually in a standard letter of the type referred to as 'Inform and advise' information. | |
| 1.8.2.1 'Inform and advise' information should be given to people in contact with TB-diseased animals. Diagnostic tests for latent TB should be considered only for children younger than 16 who have not had BCG vaccination and have regularly drunk unpasteurised milk from animals with TB udder lesions. | Out of scope for the 2015 update. |
| 1.8.7.1 Healthcare professionals, including primary care staff, responsible for screening new entrants should maintain a coordinated programme to:<br>• detect active TB and start treatment<br>• detect latent TB and start treatment<br>• provide BCG vaccination to those in high-risk groups who are not infected and who are previously unvaccinated<br>• provide relevant information to all new entrants.<br>New entrant screening for TB should be incorporated within larger health screening programmes for new entrants, linked to local services. | Out of scope for the 2015 update. |
| 1.8.7.3 New entrants should be identified for TB screening from the following information:<br>• Port of Arrival reports<br>• new registrations with primary care<br>• entry to education (including | Out of scope for the 2015 update. |

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| universities)<br>• links with statutory and voluntary groups working with new entrants. | |
| Section heading updated<br>1.4.2 Improving adherence: directly observed therapy | Replaced by:<br>1.7.1 Improving adherence: case management including directly observed therapy |
| 1.4.2.1 Use of directly observed therapy (DOT) is not usually necessary in the management of most cases of active TB. | Replaced by:<br>1.7.1.3 Offer directly observed therapy as part of enhanced case management in people who:<br>• do not adhere to treatment (or have not in the past)<br>• have been treated previously for TB<br>• have a history of homelessness, drug or alcohol misuse<br>• are currently in prison or have been in the past 5 years<br>• have a major psychiatric, memory or cognitive disorder<br>• are in denial of the TB diagnosis<br>• have multidrug-resistant TB<br>• request directly observed therapy after discussion with the clinical team<br>• are too ill to administer the treatment themselves.<br>**[2012, amended 2015]** |
| 1.4.2.2 All patients should have a risk assessment for adherence to treatment, and DOT should be considered for patients who have adverse factors on their risk assessment, in particular:<br>• street- or shelter-dwelling homeless people with active TB<br>• patients with likely poor adherence, in particular those who have a history of non-adherence. [2006] | Replaced by:<br>1.7.1.2 The TB case managers should work with the person diagnosed with TB to develop a health and social care plan and support them to complete therapy successfully. The TB case manager should:<br>• offer an incident risk assessment to every person with TB, to identify their needs and whether they should have enhanced case management including directly observed therapy<br>• educate the person about TB and the treatment<br>• develop an individual care plan after discussion with the person<br>• gain the person's consent to the plan and agree a review date (for example, when moving from |

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| | initiation to maintenance, or at each contact to ensure the person's needs are being met)<br>• coordinate discharge planning, especially for people on directly observed therapy<br>• involve representatives from other allied professionals and key workers from all organisations who work with the person where appropriate<br>• explore appropriate ways that peers and voluntary organisations can provide support.<br>**[2006, 2012, amended 2015]** |
| 1.4.2.3 Clinicians who are planning to offer a course of DOT should consider ways to mitigate the environmental, financial and psychosocial factors that may reduce adherence, including stability of accommodation, prescription charges and transport. The setting, observer and frequency of treatment should be arranged to be most practicable for the person with TB. The person with TB and his or her assigned key worker should be involved in deciding these arrangements. DOT should also be supported by frequent contact with the key worker (see section 1.4.3). [2006, amended 2011] | Replaced by:<br>1.7.1.6 TB case managers should ensure the health and social care plan (particularly if directly observed therapy is needed) identifies why a person may not attend for diagnostic testing or follow a treatment plan and how they can be encouraged to do so. It should also include ways to address issues such as fear of stigmatisation, support needs and/or cultural beliefs and may include information on:<br>• demographics (for example, age, nationality, place of birth, length of time in UK)<br>• all current prescribing regimens<br>• housing needs and living situation including looked-after children<br>• substance misuse (drugs or alcohol)<br>• any contact with the criminal justice system<br>• the need for hepatitis B and C or HIV testing (see recommendation 1.2.2.3)<br>• HIV status<br>• other health conditions (physical or mental)<br>• communication factors (for example, language and literacy levels)<br>• ability to access treatment (mobility and transport needs).<br>• employment or entitlement to |

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| | benefits<br>• legal or immigration status (including risk of removal or relocation within the UK).<br>• any 'enablers' or incentives to overcome anything that is stopping diagnosis or treatment.<br>**[2012, amended 2015]**<br>1.7.1.7 The health and social care plan should:<br>• state who will be observing treatment and where (if the person is having directly observed therapy this should be provided at a location that is convenient and accessible to them, for example, at a methadone clinic) **[2012, amended 2015]**<br>• include actions to take if contact with the person is lost (for example, keeping details of people who might be able to help re-establish contact) **[2012]**<br>• refer to, and be coordinated with, any other care plan already established for the person **[2012]**<br>• define the support needed to address any unmet health and social care needs (for example, support to gain housing or other benefits, or to help them access other health or social care services) **[2012, amended 2015]**<br>• include a commitment from the person to complete their TB treatment **[2012]**<br>• be supported by frequent contact with any key workers who work with the person. **[2006 amended 2011, amended 2015]** |
| 1.4.3.2 The TB service should tell each person with TB who their named key worker is, and how to contact them. This key worker should facilitate education and involvement of the person with TB in achieving adherence. [2006] | 1.7.1.1 Allocate a named TB case manager to everyone with active TB as soon as possible after diagnosis (and within 5 days). The clinical team should tell each person who their named TB case manager is and provide contact details. **[2006, 2012 amended 2015]** |
| 1.4.3.5 TB services should assess local language and other communication needs and, if there is a demonstrated need, provide patient information | Replaced by update to bullet on health education booklets: tailored health education booklets from quality sources (see section 1.1.2) [2006, amended |

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| accordingly. [2006] | 2015] and inclusion of a new bullet social and psychological support (including cultural case management and broader social support) **[new 2015]** in recommendation 1.4.3.3<br>Plus, recommendations that include tailoring of information in section 1.1.2<br>1.1.2 Providing information for the public about TB<br>1.1.2.1 National organisations (for example, National Knowledge Service – Tuberculosis, TB Alert, Public Health England, Department of Health and NHS Choices) should work together to develop generic, quality-assured template materials with consistent up-to-date messages. These materials should be made freely available and designed so that they can be adapted to local needs. **[new 2015]**<br>1.1.2.2 Multidisciplinary TB teams should use these templates for general awareness raising and targeted activities in under-served and other high-risk groups. Involve the target group in developing and piloting the materials. **[new 2015]**<br>1.1.2.3 The content of any materials should:<br>• be up-to-date and attractively designed, including pictures and colour where possible<br>• be culturally appropriate, taking into account the language, actions, customs, beliefs and values of the group they are aimed at<br>• be tailored to target population needs<br>• include risks and benefits of treatment, and how to access services, advice and support<br>• dispel myths<br>• show that, by deciding to be tested and treated for TB, a person can be empowered to take responsibility for their own health<br>• use language that encourages the person to believe that they can change their behaviour<br>• be simple and succinct. **[new** |

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| | **2015]**<br>1.1.2.4 Make the material available in a range of formats such as written, braille, text messages, electronic, audio (including podcasts), pictorial and video. Make them freely available in a variety of ways, for example, online, as print materials or on memory sticks. **[new 2015]**<br>1.1.2.5 Disseminate materials in ways likely to reach target groups, for example, via culturally specific radio or TV stations, at shelters, and at community, commercial or religious venues that target groups attend regularly. **[new 2015]** |

## *Recommendations to be deleted from Identifying and managing tuberculosis among hard-to-reach groups*

The table shows recommendations from 2012 that NICE proposes deleting in the 2015 update. The right-hand column gives the replacement recommendation, or explains the reason for the deletion if there is no replacement recommendation.

| Recommendation in 2012 guideline | Comment |
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| MDTB teams should, as soon as possible (and within 5 working days of a referral), allocate a named TB case manager to people who have TB and have been identified as hard-to-reach. They should also provide an individual care plan within the same timescale. (Part of Recommendation 14). | Replaced by:<br>1.7.1.1 Allocate a named TB case manager to everyone with active TB as soon as possible after diagnosis (and within 5 days). The clinical team should tell each person who their named TB case manager is and provide contact details. |
| TB case managers should undertake a risk assessment to identify whether the person should have directly observed therapy (DOT). DOT should be considered part of standard care, from the start of treatment, for all hard-to-reach children aged under 16. It should also be standard care for anyone who requests it and those who:<br>• Do not (or have not in the past) adhered to treatment.<br>• Have been treated previously for TB. | 1.7.1.3 Offer directly observed therapy as part of enhanced case management in people who:<br>• do not adhere to treatment (or have not in the past)<br>• have been treated previously for TB<br>• have a history of homelessness, drug or alcohol misuse<br>• are currently in prison or have been in the past 5 years<br>• have a major psychiatric, memory |

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| • Have a history of homelessness, drug or alcohol misuse.<br>• Are currently (or have previously been) in prison.<br>• Have a major psychiatric, memory or cognitive disorder.<br>• Are in denial of the TB diagnosis.<br>• Have multi-drug resistant TB.<br>• Are too ill to administer the treatment themselves. (Part of Recommendation 15). | or cognitive disorder<br>• are in denial of the TB diagnosis<br>• have multi-drug resistant TB<br>• request directly observed therapy after discussion with the clinical team<br>• are too ill to administer the treatment themselves. |
| DOT should be considered part of standard care, from the start of treatment, for all hard-to-reach children aged under 16. (Part of Recommendation 15). | 1.7.1.4 In children whose parents are members of any of the above groups offer directly observed therapy as part of enhanced case management and include advice and support for parents to assist with treatment completion. **[2015]** |
| TB case managers should develop the care plan during a face-to-face discussion with the person. They should also involve representatives from other allied professionals and key workers from community organisations who work with the person. In addition, they should gain the person's consent to the plan and agree a review date. (Part of Recommendation 15). | Replaced by:<br>1.7.1.2 The TB case managers should work with the person diagnosed with TB to develop a health and social care plan and support them to complete therapy successfully. The TB case manager should:<br>• offer a risk incident assessment to every person with TB, to identify their needs and whether they should have enhanced case management including directly observed therapy<br>• educate the person about TB and the treatment<br>• develop an individual care plan after discussion with the person<br>• gain the person's consent to the plan and agree a review date (for example, when moving from initiation to maintenance, or at each contact to ensure the person’s needs are being met)<br>• coordinate discharge planning, especially for people on directly observed therapy<br>• involve representatives from other allied professionals and key workers from all organisations who work with the person where appropriate<br>• explore appropriate ways that peers and voluntary organisations |

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| | can provide support. |
| TB case managers should ensure the care plan identifies potential barriers to diagnosis and treatment (including fear of being stigmatised) and any support that may be required. It should also take account of cultural beliefs. The plan may include:<br>• Demographic information (for example, age, nationality, place of birth, length of time in UK).<br>• Current prescribing regimens.<br>• Housing needs and living situation (see recommendation 16).<br>• Substance use issues (drugs or alcohol).<br>• Criminal justice issues.<br>• The need for hepatitis B and C or HIV testing.<br>• HIV status<br>• Other health issues (physical or mental).<br>• Communication factors (for example, language and literacy level).<br>• Ability to access treatment (mobility and transport needs).<br>• Employment or entitlement to benefits.<br>• Legal or immigration status (including risk of removal from, or relocation within, England).<br>• Any 'enablers' or incentives to overcome the barriers to diagnosis or treatment. (Part of Recommendation 15). | Replaced by:<br>1.7.1.6 TB case managers should ensure the health and social care plan (particularly if directly observed therapy is needed) identifies why a person may not attend for diagnostic testing or follow a treatment plan and how they can be encouraged to do so. It should also include ways to address issues such as fear of stigmatisation, support needs and/or cultural beliefs and may include information on:<br>• demographics (for example, age, nationality, place of birth, length of time in UK)<br>• all current prescribing regimen.<br>• housing needs and living situation including looked-after children<br>• substance misuse (drugs or alcohol)<br>• any contact with the criminal justice system<br>• the need for hepatitis B and C or HIV testing (in the case of HIV testing please see rec xxx)<br>• HIV status<br>• other health conditions (physical or mental)<br>• communication factors (for example, language and literacy levels)<br>• ability to access treatment (mobility and transport needs).<br>• employment or entitlement to benefits<br>• legal or immigration status (including risk of removal or relocation within the UK).<br>• any 'enablers' or incentives to overcome anything that is stopping diagnosis or treatment. **[2012, amended 2015]** |

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## *Amended recommendation wording from 'Tuberculosis: clinical diagnosis and management of tuberculosis, and measures for its prevention and control'*

Recommendations are labelled **[2011, amended 2015] and [2006, amended 2011, amended 2015]** if the evidence has not been reviewed but either:

- changes have been made to the recommendation wording that change the meaning, or
- NICE has made editorial changes to the original wording to clarify the action to be taken.

These changes are marked with yellow highlighting.

| Recommendation in 2011 guideline | Recommendation in current guideline | Reason for change |
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| 1.1.1.2 Consider interferon-gamma testing for people whose Mantoux testing shows positive results, or in people for whom Mantoux testing may be less reliable, for example BCG-vaccinated people. | 1.2.1.2 Consider interferon-gamma testing for adults aged 18 to 65 whose Mantoux test shows positive results (5 mm or larger, regardless of BCG history), or in people for whom Mantoux testing may be less reliable, for example, BCG-vaccinated people. **[2011, amended 2015]** | The upper age-limit for offering testing to diagnose latent TB was previously 35 years, but has been increased to 65 years. Although evidence on contact-tracing in adults of different ages was not reviewed as part of the 2015 update, the age threshold for testing is directly dependent on evidence of the benefits, harms and costs of treating latent TB. The Committee has reviewed this evidence and concluded that |

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| | | people should be offered treatment up to the age of 65 years. Therefore, it is necessary to amend this recommendation to reflect the revised upper age-limit for treatment.<br>Although not amended by a new review, the Committee felt strongly that the threshold for test positivity in healthcare workers should be brought in line with both international guidance and the other recommendations in this section. The previous threshold for test positivity of 6 mm from the 2011 guideline (taken from the Department of Health's The Green Book) is inconsistent with the new recommendations, which opted for a threshold of 5 mm, as well as with the new clinical- and cost-effectiveness reviews and the new health economic modelling on |

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| | | which these were based. This is particularly an issue given that the 2011 recommendations were consensus-based, not driven by evidence. See section 4.1.3.4 of the full guideline for further information. |
| 1.1.1.9 In an outbreak situation when large numbers of people may need to be screened, consider a single interferon-gamma test for people aged 5 years and older. | 1.2.1.16 In an outbreak situation when large numbers of people may need to be screened, consider a single interferon-gamma release assay for people aged 18 to 65 years. | The upper age-limit for offering testing to diagnose latent TB was previously 35 years, but has been increased to 65 years. Although evidence on contact-tracing in adults of different ages was not reviewed as part of the 2015 update, the age threshold for testing is directly dependent on evidence of the benefits, harms and costs of treating latent TB. The Committee has reviewed this evidence and concluded that people should be offered treatment up to the age of 65 years. |

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| | | Therefore, it is necessary to amend this recommendation to reflect the revised upper age-limit for treatment.<br><br>The Committee considered the substantial resource implications inherent in the potential widespread use of IGRA testing, particularly in children who would require multiple appointments and blood taken in a children's hospital (thereby raising costs). |
| 1.1.1.16 Offer an interferon-gamma test to new NHS employees who have recently arrived from high-incidence countries or who have had contact with patients in settings where TB is highly prevalent. | 1.2.1.18 Offer Mantoux testing as the initial diagnostic test for latent TB infection in new NHS employees who have recently arrived from a high-incidence country. If the Mantoux test is positive (5 mm or larger, regardless of BCG history):<br>• assess for active TB (see section 1.3.1), and<br>• consider treating them for latent TB infection (see section 1.2.2).<br>If this is unavailable offer an interferon-gamma release assay test. **[new 2015]**<br>1.2.1.19 Offer an interferon-gamma release assay test to new NHS employees who have had contact with patients in settings where TB is highly prevalent. | The part of the recommendation for new NHS employees who have recently arrived from high-incidence countries has been amended to be consistent with the new recommendation on the diagnosis of latent TB in new entrants from high-incidence countries, which is based on a new evidence review and |

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| | **[2011, amended 2015]** | economic model. The part of the recommendation for new NHS employees who have had contact with patients in settings where TB is highly prevalent remains unchanged. |
| 1.1.1.18 Offer people from hard-to-reach groups a single interferon-gamma test. | 1.2.1.21 Offer adults aged 18 to 65 from under-served groups a single interferon-gamma release assay. **[2011, amended 2015]**<br>1.2.1.22 Substance misuse services with access to an interferon-gamma release assay should provide testing for adults aged 18–65 years if they:<br>• live in a high incidence area<br>• are likely to be involved with substance misuse services or other support services on a regular basis (for example, for opioid substitution therapy), when support should be available for directly observed preventive therapy. **[2012, amended 2015]**<br>1.2.1.23 In high incidence areas (and at prisons that receive prisoners from high incidence areas), prison health services should offer an interferon-gamma release assay test for TB to inmates younger than 65 years who are in regular contact with substance misuse services or other support services. This is provided arrangements have been made for this support to continue after release. **[2012, amended 2015]**<br>1.2.1.24 Substance misuse services and prison health services should incorporate | The upper age-limit for offering testing to diagnose latent TB was previously 35 years, but has been increased to 65 years. Although evidence on contact-tracing in adults of different ages was not reviewed as part of the 2015 update, the age threshold for testing is directly dependent on evidence of the benefits, harms and costs of treating latent TB. The Committee has reviewed this evidence and concluded that people should be offered treatment up to the age of 65 years. Therefore, it is necessary to |

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| | interferon-gamma release assay testing with screening for hepatitis B and C, and HIV testing. They should refer prisoners and people who misuse substances with positive interferon-gamma release assay tests to local multidisciplinary TB teams for further clinical investigations. For prisoners, these investigations should be done in the prison if practically possible. **[2012, amended 2015]** | amend this recommendation to reflect the revised upper age-limit for treatment. |
| 1.1.2.1 … multiple sputum samples (at least three, with one early morning sample) should be sent for TB microscopy and culture for suspected respiratory TB before starting treatment if possible or, failing that, within 7 days of starting | 1.3.1.5 Send multiple respiratory samples (3 deep cough sputum samples, preferably with 1 early morning sample) for TB microscopy and culture. **[2015]**<br>• This should be before starting treatment if possible or, failing that, within 7 days of starting treatment in people with life-threatening disease. **[2006, amended 2015]**<br>• Obtain spontaneously-produced, deep cough sputum samples if possible, otherwise use:<br>– 3 gastric lavages or 3 inductions of sputum in children and young people (see recommendation 1.5.1.0) **[new 2015]**, or<br>– induction of sputum or bronchoscopy and lavage in adults (see recommendation 1.5.1.0). **[2006, amended 2015]**<br>• Laboratory practices should be in accordance with Public Health England's Standards for Microbiology Investigations. **[new 2015]** | The Committee felt that the recommendation needed clarifying with regards to the desired type of respiratory sample.<br>Furthermore, they felt that it was more important to obtain good diagnostic samples than rushing to start treatment, unless the patient had disease severe enough to be life-threatening. |
| 1.1.2.1 … spontaneously | 1.3.1.5 … Obtain spontaneously- | Recommendati |

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| produced sputum should be obtained if possible; otherwise induction of sputum or bronchoscopy and lavage should be used | produced, deep cough sputum samples if possible, otherwise use:<br>• induction of sputum or bronchoscopy and lavage in adults…**[2006, amended 2015]** | on reworded for clarity. Children have a separate recommendation, based on evidence reviewed for the 2015 update. |
| 1.1.2.2 … if non-respiratory TB is a possibility, part or all of any of the following samples should be placed in a dry pot (and not all placed in formalin) and sent for TB culture:<br>• lymph node biopsy<br>• pus aspirated from lymph nodes<br>• pleural biopsy<br>• any surgical sample sent for routine culture<br>• any radiological sample sent for routine culture<br>• histology sample<br>• aspiration sample<br>• autopsy sample | 1.3.1.13 Do not place part or all of any of the samples in formalin (or other fixative agent) when sending for TB culture. **[2006, amended 2015]** | The recommendation was previously a bullet point housed alongside a number of other recommendations for diagnosing nonrespiratory TB; it was felt that having standalone recommendations was clearer. The group also felt that the type of fixative agent to be avoided should not be restricted to formalin alone, and that the type of sample that should not be placed in such a fixative agent should include all samples sent for culture, not just those previously listed. These changes were consensus-based, as was the original recommendation. |

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| 1.1.2.1 … the standard recommended regimen should be continued in patients whose subsequent culture results are negative<br>1.1.2.2 … the appropriate drug regimen should be continued even if subsequent culture results are negative. | 1.3.1.3 Consider completing the standard recommended regimen, even if subsequent culture results are negative. **[2006, amended 2015]** | Recommendation reworded for clarity: we changed the verb to 'consider' to reflect the strength of the evidence, and combined the recommendations for respiratory and non-respiratory TB. |
| 1.1.2.2 … microbiology staff should routinely perform TB culture on the above samples (even if it is not requested) | 1.3.1.1 If TB is a possibility, microbiology staff should consider carrying out TB culture on samples, even if it is not requested. **[2006, amended 2015]** | The Committee felt that the recommendation needed refining to reflect their view of current best practice. |
| 1.2.1.4 A thrice-weekly dosing regimen should be considered for patients receiving directly observed therapy (DOT).<br>1.2.1.5 A twice-weekly dosing regimen should not be used for the treatment of active TB. | 1.3.2.10 Do not offer anti-TB treatment dosing regimens of fewer than 3 times per week. **[2006, amended 2015]**<br>1.3.2.11 Offer a daily dosing schedule to people with active pulmonary TB. **[2006, amended 2015]**<br>1.3.2.13 Consider 3 times weekly dosing for people with active TB only if:<br>• risk assessment identifies a need for directly observed therapy and enhanced case management (see section 1.7) and<br>• daily directly observed therapy is not possible. **[2006, amended 2015]** | New evidence for adults not reviewed for the 2015 update; new evidence was reviewed for children. It was decided that a minimum of 3 times weekly dosing was still desirable, though daily dosing remains the preferred option if resource constraints relating to the need for directly observed therapy and enhanced case management are not preventing it. The rationale is essentially that: 1) 3 times |

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| | | weekly dosing is only considered appropriate (that is, the patient is not at risk of receiving 'inadequate' treatment) when DOT and enhanced case management are performed, and 2) that if possible daily dosing would still be the preferable option, but given the situation in which a need for DOT has been identified but it cannot (e.g. for resource reasons) be performed daily, then 3 times weekly DOT may be considered.<br>Although prescription of a once-weekly regimen would be unlikely, the Committee felt that rewording 1.2.1.5 such that twice- and once-weekly regimens were explicitly excluded was useful. This is supported by the evidence reviews. |
| 1.2.2.2 Unless there is a clear clinical or socioeconomic need, such as homelessness, people with TB at any site of | 1.5.1.5 Unless there is a clear clinical or public health need, such as homelessness, people with suspected infectious or confirmed | The Committee felt that the recommendation needed |

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| disease should not be admitted to hospital for diagnostic tests or for care. | pulmonary TB should not be admitted to hospital for diagnostic tests or for care. **[2006, amended 2015]** | refining to reflect their view of current best practice. |
| 1.3.1.2 Clinicians prescribing treatment for active meningeal TB should consider as first choice:<br>• a daily dosing schedule<br>• using combination tablets.<br>1.3.2.1 For patients with active peripheral lymph node tuberculosis, the first choice of treatment should:<br>• be the standard recommended regimen<br>• use a daily dosing schedule<br>• include combination tablets.<br>1.3.3.2 Clinicians prescribing treatment for active bone and joint tuberculosis should consider as first choice:<br>• a daily dosing schedule<br>• using combination tablets.<br>1.3.5.1 For patients with active pericardial TB, the first choice of treatment should:<br>• be the standard recommended regimen<br>• use a daily dosing schedule<br>• include combination tablets.<br>1.3.6.1 For patients with disseminated (including miliary) TB, the first choice of treatment should:<br>• be the standard recommended regimen<br>• use a daily dosing schedule | 1.3.2.9 Use fixed-dose combination tablets as part of any TB treatment regimen.**[2006]**<br>1.3.2.10 Do not offer anti-TB treatment dosing regimens of fewer than 3 times per week. **[2006, amended 2015]**<br>1.3.2.12 Consider a daily dosing schedule as first choice in people with active extrapulmonary TB. **[2006, amended 2015]**<br>1.3.2.13 Consider 3 times weekly dosing for people with active TB only if:<br>• risk assessment identifies a need for directly observed therapy and enhanced case management (see section 1.7) and<br>• daily directly observed therapy is not possible. **[2006, amended 2015]** | A review for dosing frequency in children was done, though no new evidence was found. New evidence for duration of treatment for TB in extrapulmonary sites was also reviewed. Although re-worded for clarity, the standard recommended regimens remained unchanged.<br>New evidence for dosing frequency in adults was not reviewed for the 2015 update, nor were the evidence or recommendations for the use of combination tablets.<br>It was decided that a minimum of 3 times weekly dosing was still desirable, though daily dosing remains the preferred option if resource constraints relating to the |

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| • include combination tablets.<br>1.3.7.1 For patients with:<br>• active genitourinary TB, or<br>• active TB of any site other than:<br>• respiratory system<br>• CNS (typically meninges)<br>• peripheral lymph nodes<br>• bones and joints<br>• pericardium<br>• disseminated (including miliary) disease<br>the first choice of treatment should:<br>• be the standard recommended regimen<br>• use a daily dosing schedule<br>• include combination tablets. | | need for directly observed therapy and enhanced case management are not preventing it. The rationale is essentially that: 1) 3 times weekly dosing is only considered appropriate (that is, the patient is not at risk of receiving 'inadequate' treatment) when DOT and enhanced case management are performed, and 2) that if possible daily dosing would still be the preferable option, but given the situation in which a need for DOT has been identified but it cannot (e.g. for resource reasons) be performed daily, then 3 times weekly DOT may be considered. |
| 1.8.4.4 Clinicians conducting contact tracing in a school should consider extending it to include children and teachers involved in extracurricular activities, and non-teaching staff, on the basis of:<br>• the degree of infectivity of the index | 1.6.1.18 Consider extending contact tracing in schools to include children and teachers involved in extracurricular activities, and non-teaching staff, on the basis of:<br>• the degree of infectivity of the index case<br>• the length of time the index case was in contact with | Recommendation changed to allow these actions to be completed by both clinical and non-clinical staff. |

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| case<br>• the length of time the index case was in contact with others<br>• whether contacts are unusually susceptible to infection<br>• the proximity of contact. | others<br>• whether contacts are unusually susceptible to infection<br>• the proximity of contact. **[2006, amended 2015]** | |
| 1.7.3.1 Routine BCG vaccination is not recommended for children aged 10–14.<br>• Healthcare professionals should opportunistically identify unvaccinated children older than 4 weeks and younger than 16 years at increased risk of TB (see section 1.6.1) who would have qualified for neonatal BCG and provide Mantoux testing and BCG (if Mantoux negative).<br>• This opportunistic vaccination should be in line with the Chief Medical Officer's advice on vaccinating this age group following the end of the school-based programme. | 1.1.3.11 Routine BCG vaccination is not recommended for children aged 10–14 years.<br>• Healthcare professionals should opportunistically identify unvaccinated children older than 4 weeks and younger than 16 years at increased risk of TB (see section 1.2.1) who would have qualified for neonatal BCG and provide Mantoux testing and BCG vaccination (if Mantoux negative).<br>• This opportunistic vaccination should be in line with the Green Book. **[2006, amended 2015]** | This recommendation was amended to reflect current sources of information and guidance. |
| 1.7.5.1 BCG vaccination should be offered to healthcare workers, irrespective of age, who:<br>• are previously unvaccinated (that is, without adequate documentation or a characteristic scar), and<br>• will have contact with patients or clinical materials, and | 1.1.3.16 Offer BCG vaccination to healthcare workers and other NHS employees who have contact with patients and/or clinical specimens, irrespective of age, who:<br>• are previously unvaccinated (that is, without adequate documentation or a BCG scar), and<br>• are Mantoux (or interferon-gamma release assay) negative. **[2006, amended 2015]** | Merged to reduce repetition. |

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| • are Mantoux (or interferon-gamma) negative.<br>1.9.1.5 Employees new to the NHS should be offered BCG vaccination, whatever their age, if they will have contact with patients and/or clinical specimens, are Mantoux negative (less than 6 mm) and have not been previously vaccinated. | | |
| 1.8.1.2 Screening should be offered to the household contacts of any person with active TB, irrespective of the site of infection. Household contacts are defined as those who share a bedroom, kitchen, bathroom or sitting room with the index case. Screening should comprise:<br>• standard testing for latent TB for those aged 35 or younger, and consideration of BCG or treatment for latent TB infection once active TB has been ruled out<br>• interferon-gamma test 6 weeks after the Mantoux test, and consideration of BCG or treatment for latent TB infection once active TB has been ruled out, for those who:<br>– are previously unvaccinated and<br>– are household contacts of a person with sputum-smear-positive TB and<br>– are Mantoux | 1.6.1.2 Offer screening to the household contacts of any person with pulmonary TB. Household contacts are defined as those who share a bedroom, kitchen, bathroom or sitting room with the index case. **[2006, amended 2015]** | The Committee has revised this recommendation – which previously referred to 'all people with active TB' – to limit testing to contacts of people with potentially infectious TB. |

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| negative (less than 6 mm)<br>• chest X-ray (if there are no contraindications) for those older than 35, possibly leading to further investigation for active TB. | | |
| 1.8.1.2 Screening should be offered to the household contacts of any person with active TB, irrespective of the site of infection. Household contacts are defined as those who share a bedroom, kitchen, bathroom or sitting room with the index case. Screening should comprise:<br>• standard testing for latent TB for those aged 35 or younger, and consideration of BCG or treatment for latent TB infection once active TB has been ruled out<br>• interferon-gamma test 6 weeks after the Mantoux test, and consideration of BCG or treatment for latent TB infection once active TB has been ruled out, for those who:<br>– are previously unvaccinated and<br>– are household contacts of a person with sputum-smear-positive TB and<br>– are Mantoux negative (less than 6 | 1.6.1.3 Assess symptomatic household contacts for active TB. **[new 2015]**<br>1.6.1.4 In asymptomatic household contacts younger than 65 years, consider standard testing for latent TB, followed by consideration of BCG or treatment for latent TB infection once active TB has been ruled out (see section 1.3.1) out for people who:<br>• are previously unvaccinated, and<br>• are household contacts of a person with sputum-smear-positive TB, and<br>• are Mantoux negative (se section 1.3.1). **[2006, amended 2015]**<br>1.6.1.5 In asymptomatic household contacts older than 65 years, consider a posterior–anterior chest X-ray (if there are no contraindications), possibly leading to further investigation for active TB (se section 1.3.1). **[2006, amended 2015]** | The Committee felt that a distinction between symptomatic – that is, those who are more likely to have active disease, who should therefore proceed more quickly to diagnosis for active disease – and asymptomatic contacts.<br>Furthermore, the upper age-limit was raised. Although evidence on contact-tracing in adults of different ages was not reviewed as part of the 2015 update, the age threshold for testing is directly dependent on evidence of the benefits, harms and costs of treating latent TB. The Committee has reviewed this evidence and concluded that |

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| mm)<br>• chest X-ray (if there are no contraindications) for those older than 35, possibly leading to further investigation for active TB. | | people should be offered treatment up to the age of 65 years. Therefore, it is necessary to amend this recommendation to reflect the revised upper age-limit for treatment.<br>Further guidance has been added on the type of X-ray that should be performed. This was done to improve clarity and consistency within the guideline. |
| 1.8.1.3 For people with sputum-smear-positive TB, other close contacts should be assessed. These may include boyfriends or girlfriends and frequent visitors to the home of the index case. Occasionally, a workplace associate may be judged to have had contact equivalent to that of household contacts, and should be assessed in the same way. | 1.6.1.6 For people with pulmonary TB, assess other close contacts. These may include boyfriends or girlfriends and frequent visitors to the home of the index case. Occasionally, a workplace associate may be judged to have had contact equivalent to that of household contacts, and should be assessed in the same way. **[2006, amended 2015]** | The Committee felt that this is a more informative description of the population – that is, those who are potentially infectious. |
| 1.8.1.5 The need for tracing casual contacts of people with TB should be assessed if:<br>• the index case is judged to be particularly infectious (for example, evidenced by transmission to close contacts), or<br>• any casual contacts are known to possess features that put them | 1.6.1.8 Assess the need for tracing casual contacts of people with pulmonary TB if:<br>• the index case is judged to be particularly infectious (for example, evidenced by transmission to close contacts), or<br>• any casual contacts are known to possess features that put them at high risk of going on to develop active TB. **[2006, amended 2015]** | The Committee has revised this recommendation – which previously referred to 'all people with active TB' – to limit testing to contacts of people with potentially infectious TB. Additionally, the |

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| at special risk of infection. | | recommendation has been edited to be in the active voice, rather than passive. |
| 1.8.7.2 Assessment for, and management of TB in new entrants should consist of the following.<br>• Risk assessment for HIV, including HIV prevalence rates in the country of origin, which is then taken into account for Mantoux testing and BCG vaccination.<br>• Assessment for active TB if interferon-gamma test is positive; which would include a chest X-ray.<br>• Treatment for latent TB infection for people aged 35 years or younger in whom active TB has been excluded, with a positive Mantoux test inconsistent with their BCG history, and a positive interferon-gamma test.<br>• Consideration of BCG for unvaccinated people who are Mantoux negative.<br>• 'Inform and advise' information for people who do not have active TB and are not being offered BCG or treatment for latent TB infection. | 1.6.2.1 Assess and manage TB in new entrants from high incidence countries as follows:<br>• assess risk of HIV, including HIV prevalence rates in the country of origin, and take this into account in deciding whether to give a BCG vaccination<br>• offer testing for latent TB (see section 1.2.1)<br>• assess for active TB if the test for latent TB is positive (see section 1.31)<br>• offer treatment to people aged 65 years or younger in whom active TB has been excluded but who have a positive Mantoux test inconsistent with their BCG history and a positive interferon-gamma release assay for latent TB infection (see section 1.2.2)<br>• consider offering BCG for unvaccinated people who are Mantoux negative<br>• give 'inform and advise' information to people who do not have active TB and are not being offered BCG or treatment for latent TB infection. **[2006, amended 2011 and 2015]** | The Committee added 'from high incidence countries as follows' for greater clarity of the target population.<br>Instead of giving recommendations on the diagnosis of latent TB infection here – which would duplicate recommendation 1.2.1.11 – the group preferred to keep this strictly about the process of case-finding. This mirrors the approach taken to evaluation of active disease in bullet 3 (no clinical instructions given, these are simply cross referenced) and treatment of latent infection in bullet 4 (again, no clinical instructions given, these are simply cross referenced).<br>Furthermore, the upper age-limit was |

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| | | raised. Although evidence on contact-tracing in adults of different ages was not reviewed as part of the 2015 update, the age threshold for testing is directly dependent on evidence of the benefits, harms and costs of treating latent TB. The Committee has reviewed this evidence and concluded that people should be offered treatment up to the age of 65 years. Therefore, it is necessary to amend this recommendation to reflect the revised upper age-limit for treatment.<br>The wording was also amended such that clinicians are asked to 'offer' testing and treatment for latent TB and BCG. This is to better reflect the fact that no one in England and Wales has the power to force new entrants to accept testing or treatment for |

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| | | latent TB. |
| 1.8.7.4 Any healthcare professional working with new entrants should encourage them to register with a GP. | 1.6.2.2 Primary care services should support local, community-based and voluntary organisations that work with vulnerable migrants to ensure they:<br>• register with a primary care provider<br>• know how to use NHS services (emergency or primary care). **[2012]** | Recommendation merged with a related recommendation from Identifying and managing tuberculosis among hard-to-reach groups. |
| 1.8.8.1 Active case finding should be carried out among street homeless people (including those using direct access hostels for the homeless) by chest X-ray screening on an opportunistic and/or symptomatic basis. Simple incentives for attending, such as hot drinks and snacks, should be considered. | 1.6.2.5 Multidisciplinary TB teams should consider using simple incentives, such as providing hot drinks and snacks, to encourage people to attend for screening. **[2006, amended 2012, amended 2015]** | Recommendation merged with a related recommendation from Identifying and managing tuberculosis among hard-to-reach groups. |
| 1.8.8.2 Healthcare professionals working with people with TB should reinforce and update education about TB, and referral pathways, to primary care colleagues, social workers and voluntary workers who work with homeless people. | 1.1.1.1 Multidisciplinary TB teams (in collaboration with Public Health England, primary care, the voluntary sector and Health Education England) should identify and support an ongoing TB education programme for local professionals in contact with the general public and at-risk groups in particular. This includes, for example, staff in emergency departments, GPs and wider primary care staff, people who work in housing support services, staff who support migrants and those working in walk-in centres, hostels, substance misuse projects and prisons. **[2012, amended 2015]** | Recommendation merged with a related recommendation from Identifying and managing tuberculosis among hard-to-reach groups. |
| 1.9.1.4 Employees who will be working with patients or clinical specimens and who are Mantoux negative (less than 6 mm) should have an individual risk assessment for HIV infection before BCG vaccination is given.<br>1.9.1.6 Employees of any age who are new to the NHS and are from countries of high TB | 1.1.4.5 Employees who will be working with patients or clinical specimens and who are Mantoux negative (see section 1.2.1) should have an individual risk assessment for HIV infection before BCG vaccination is given. **[2006, amended 2015]**<br>1.1.4.6 Employees of any age who are new to the NHS and are from countries of high TB incidence, or | Although not updated by a new review, the Committee felt strongly that the threshold for test positivity in healthcare workers should be brought in |

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| incidence, or who have had contact with patients in settings with a high TB prevalence should have an interferon-gamma test. If negative, offer BCG vaccination as with a negative Mantoux result. If positive, the person should be referred for clinical assessment for diagnosis and possible treatment of latent infection or active disease. | who have had contact with patients in settings with a high TB prevalence should have an interferon-gamma release assay. If negative, offer BCG vaccination as with a negative Mantoux result (see section 1.2.1). If positive, refer the person for clinical assessment for diagnosis and possible treatment of latent infection or active disease. **[2006, amended 2015]** | line with both international guidance and the other recommendations in this section. The previous threshold for test positivity of 6 mm from is inconsistent with the new recommendations, which opted for a threshold of 5 mm, as well as with the new clinical- and cost-effectiveness reviews and the new health economic modelling on which these were based. This is particularly an issue given that the 2011 recommendations were consensus-based, not driven by evidence. For this reason, the recommendation now simply references the recommendations on the diagnosis of latent TB infection.<br>See section 4.1.3.4 of the full guideline for further information. |
| 1.9.1.7 If a new employee from the UK or other low-incidence setting, without | 1.1.4.7 If a new employee from the UK or other low-incidence setting, who has not had a BCG | Further guidance provided on the |

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| prior BCG vaccination, has a positive Mantoux and a positive interferon-gamma test, they should have a medical assessment and a chest X-ray. They should be referred to a TB clinic for consideration of TB treatment if the chest X-ray is abnormal, or for consideration of treatment of latent TB infection if the chest X-ray is normal. | vaccination, has a positive Mantoux test (see section 1.2.1) and a positive interferon-gamma release assay, they should have a medical assessment and a posterior–anterior chest X ray. They should be referred to a TB clinic to determine whether they need TB treatment if the chest X-ray is abnormal, or to determine whether they need treatment of latent TB infection if the chest X-ray is normal. **[2006, amended 2011, amended 2015]** | type of X-ray that should be performed. This was done to improve clarity and consistency within the guideline. 'For consideration' changed to 'to determine' for clarity, |
| 1.9.3.1 Healthcare workers providing care for prisoners and remand centre detainees should be aware of the signs and symptoms of active TB. TB services should ensure that awareness of these signs and symptoms is also promoted among prisoners and prison staff. | 1.1.1.1 Multidisciplinary TB teams (in collaboration with Public Health England, primary care, the voluntary sector and Health Education England) should identify and support an ongoing TB education programme for local professionals in contact with the general public and at-risk groups in particular. This includes, for example, staff in emergency departments, GPs and wider primary care staff, people who work in housing support services, staff who support migrants and those working in walk-in centres, hostels, substance misuse projects and prisons. **[2012, amended 2015]** | Recommendation merged with a related recommendation from Identifying and managing tuberculosis among hard-to-reach groups. |
| 1.4.3.3 TB services should consider the following interventions to improve adherence to treatment for active or latent TB if a patient defaults:<br>• reminder letters in appropriate languages<br>• health education counselling<br>• patient-centred interview and health education booklet<br>• home visits<br>• patient diary<br>• random urine tests and other monitoring (for example, pill counts) | 1.7.2.2 Multidisciplinary TB teams should implement strategies for active and latent TB to encourage people to follow the treatment plan and prevent people stopping treatment early. These could include:<br>• reminder letters, printed information, telephone and SMS messages and apps using an appropriate language **[2006, amended 2015]**<br>• health education counselling and patient-centred interviews **[2006, amended 2015]**<br>• tailored health education booklets from quality sources (see | • TB services changed to MDTB team to reflect specific group responsible<br>• More descriptive text requested by the Committee explaining why action should be taken.<br>• To reflect increased |

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| • information about help with paying for prescriptions<br>• help or advice about where and how to get social security benefits, housing and social services. [2006] | recommendation 1.1.2) **[2006, amended 2015]**<br>• home visits **[2006]**<br>• random urine tests and other monitoring (for example, pill counts) **[2006]**<br>• access to free TB treatment for everyone (irrespective of eligibility for other NHS care) and information about help with paying for prescriptions **[2006, amended 2015]**<br>• social and psychological support (including cultural case management and broader social support). **[new 2015]**<br>• advice and support for parents and carers **[new 2015]**<br>• incentives and enablers to help people follow their treatment regimen. **[new 2015]** | options and technological advances.<br>• To remove duplication and reflect new recommendations on information for the public and quality assurance and changes in the adherence section.<br>• Patient diary removed – Committee considered outdated.<br>• Random urine tests removed – Committee considered inappropriate and does not happen in practice.<br>• TB treatment is free to all added to information on prescription charges<br>• Social and psychological support, cultural case management, incentives and enablers |

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| | | added to reflect evidence. |

## *Amended recommendation wording from Identifying and managing tuberculosis among hard-to-reach groups*

Recommendations are labelled **[2012, amended 2015]** if:

- The evidence has not been reviewed, but a change has been made to clarify roles or actions in the original recommendation, extrapolate to the whole population, or where system changes such as establishment of TB control boards have been reflected
- NICE has made editorial changes to the wording to clarify the action to be taken, but where there is no change of meaning to the original recommendation.
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These changes are marked with yellow highlighting.

| ***Recommendation in 2012 guideline*** | ***Recommendation in current guideline*** | ***Reason for change*** |
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| ***Recommendation 1 Strategic oversight and commissioning of TB prevention and control activities*** | 1.8.1 Strategic oversight and commissioning of TB prevention and control activities | |
| The NHS Commissioning Board, in partnership with Public Health England, should take responsibility for national oversight of TB prevention and control activities | 1.8.1.1 Public Health England, in partnership with NHS England, should take responsibility for national oversight of TB prevention and control activities. This includes setting up TB control boards (see section 1.8.2). **[2012, amended 2015]** | This change reflects the change in name of NHS commissioning board to NHS England, and the establishment of TB control boards, which is |

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| | | a new system change. |
| Public Health England and commissioners should ensure the TB prevention and control programme targets all ages, including children. In addition, it should cover all aspects of TB prevention and control as follows:<br>◦ active case-finding (contact investigations and screening of high-risk groups)<br>◦ awareness-raising activities<br>◦ diagnostic and treatment services<br>◦ standard and enhanced case management (including the provision of directly observed therapy)<br>◦ finding those lost to follow-up and encouraging them back into treatment<br>◦ identification and management of latent infection<br>◦ immunisation<br>◦ incident and outbreak control<br>◦ cohort review (see recommendation 3)<br>◦ monitoring and evaluation<br>◦ the gathering of surveillance and outcome data | 1.8.1.3 Clinical commissioning groups and local authority public health teams working in partnership with Public Health England and NHS England should consider collaborative commissioning arrangements through TB control boards. This could, for example, include working with 1 or more clinical commissioning groups to cover a major metropolitan district, region or TB control board area taking into account:<br><br>• local TB incidence<br>• local at-risk populations and their movements across different geographical areas<br>• existing service configurations for organisations involved in TB prevention and control<br>• the need to share services, such as mobile X-ray facilities, across different geographical areas. **[2012, amended 2015]** | This change reflects the who is responsible for the decision making and the establishment of TB control boards, which is a new system change, and to further clarify the recommendation.<br><br>In addition the bullet list has been reduced to reduce duplication with TB control board roles and responsibilitiesin the next section of recommendations. |
| Public Health England and commissioners should ensure TB prevention and control programmes are led by a director of public | 1.8.1.5 An executive director of local commissioning groups, working with the local director of public health or another nominated public health consultant, should lead | This change reflects the establishment of TB control boards, and the |

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| health or another nominated public health consultant. The lead should ensure a comprehensive prevention and control programme is commissioned to support the level of need (see recommendation 2). | implementation of the programme in their locality. The lead should ensure a comprehensive prevention and control programme is commissioned to support the level of need (see section 1.8.6) and that they work with the control board regularly. **[2012, amended 2015]** | need to consider who on a iwder geography may need to be involved. |
| Public Health England and commissioners should ensure TB prevention and control programmes set up multidisciplinary TB teams to provide all TB services (see recommendation 4) | 1.8.1.6 Working together through TB control boards and local networks, commissioners, local government and Public Health England should ensure TB prevention and control programmes set up multidisciplinary TB teams to provide all TB services (see section 1.8.8). They should ensure that local strategy and service commissioning focuses on an end-to-end pathway. **[2012, amended 2015]** | This change reflects the establishment of TB control boards, and other groups or specific commissioners who need to consider TB service requirements. In addition it reflects the need to consider the service as a whole from a prevention to cure perspective. |
| Public Health England and commissioners should ensure the TB prevention and control programme is informed by relevant NICE guidance and developed in collaboration with relevant clinical services. It should also be informed by the standard minimum data set collected through local needs assessment and service audit (see recommendation 2). | 1.8.1.7 Working together through TB control boards, commissioners and Public Health England should ensure the TB prevention and control programme is informed by relevant NICE guidance and developed in collaboration with clinical services. It should also be informed by the standard minimum data set collected through local needs assessment and service audit (see section 1.8.6). **[2012, amended 2015]** | This change reflects the establishment of TB control boards. |
| Public Health England | 1.8.1.8 Working together through TB | This change |

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| and commissioners should ensure the TB prevention and control programme targets all ages, including children. In addition, it should cover all aspects of TB prevention and control as follows:<br>• active case-finding (contact investigations and screening of high-risk groups)<br>• awareness-raising activities<br>• diagnostic and treatment services<br>• standard and enhanced case management (including the provision of directly observed therapy)<br>• finding those lost to follow-up and encouraging them back into treatment<br>• identification and management of latent infection<br>• immunisation<br>• incident and outbreak control<br>• cohort review (see recommendation 3)<br>• monitoring and | control boards, commissioners and Public Health England should ensure the TB prevention and control programme targets all ages, including children, and covers all aspects of TB prevention and control (see recommendations 1.8.2.1 and 1.8.2.2), including but not limited to:<br>• active case finding (contact investigations and identifying latent TB in high-risk groups)<br>• awareness-raising activities<br>• standard and enhanced case management (including providing directly observed therapy and free treatment)<br>• finding those lost to follow-up and encouraging them back into treatment<br>• incident and outbreak control<br>• monitoring, evaluating and gathering surveillance and outcome data. **[2012, amended 2015]** | reflects the establishment of TB control boards, which is a new system change. Additional wording on what the responsibilities of TB control boards are has been added for clarification. |

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| evaluation<br>• the gathering of surveillance and outcome data. | | |
| Public Health England and commissioners should ensure TB prevention and control programmes take account of the need to work with other programmes targeting hard-to-reach groups (including those in the voluntary sector). Examples include programmes focused on: the health of asylum seekers and refugees, vulnerable children, homelessness and housing, offenders and substance misusers. | 1.8.1.9 Working together through TB control boards, commissioners, Public Health England and the voluntary sector should ensure TB prevention and control programmes take account of the need to work with other programmes targeting specific high-risk groups, such as those who are under-served. Examples include programmes focused on the health of asylum seekers and refugees, under-served children, homelessness and housing, offenders and people who misuse substances. **[2012, amended 2015]** | This change reflects the establishment of TB control boards, which is a new system change, and ensures the voluntary sector's role is clear. |
| ***Recommendation 2 Local needs assessment*** | 1.8.5 Local Needs Assessment | |
| Directors of public health and others who lead TB prevention and control programmes should use cohort review (see recommendation 3) and other methods to collect data on the following, to inform local needs assessment:<br>• Number of annual notified TB cases (see Enhanced TB | 1.8.5.4 Directors of public health and TB control boards should use cohort review (see section 1.8.6) and other methods to collect data on the following, to inform local needs assessment:<br>• Number of annual notified TB cases (see Public Health England's enhanced TB surveillance data and annual 'suite of indicators').<br>• Size, composition (for example, age and ethnicity) and distribution of local at-risk groups[23].<br>• Indices of social deprivation. | This change reflects the establishment of TB control boards, which is a new system change, and also adds clarification.<br><br>In addition the need for data on HIV or other topics have been added support the addition of the |

[23] Potential sources include: census data, the National Drug Treatment Monitoring Service, records of locally detained populations, records of homeless people in residential accommodation, the number of rough sleepers and the size of vulnerable migrant communities.

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| surveillance on the Health Protection Agency website).<br>• Size, composition (for example, age and ethnicity) and distribution of local at-risk groups.<br>• Indices of social deprivation.<br>• Local statutory and non-statutory services working with these groups.<br>• Organisation of local TB services, including the composition and capacity of the local multidisciplinary TB and location of services.<br>• Numbers requiring enhanced case management (see recommendation 15).<br>• Numbers receiving directly observed therapy from the start, or at any point during, treatment (see Enhanced TB surveillance on the Health | • Local statutory and non-statutory services working with these groups.<br>• Organisation of local TB services, including the composition and capacity of the local multidisciplinary TB team (see the results of local audit) and location of services. This may also include data to support evaluating the need for integrated TB/HIV services including joint clinics.<br>• Numbers needing enhanced case management (see section 1.7)<br>• Numbers receiving directly observed therapy from the start of, or at any point during, treatment (see Public Health England's enhanced TB surveillance data).<br>• Evidence of recent transmission (for example, using DNA fingerprinting or surrogate markers such as number of cases in children under 5 – See 'UK TB strain-typing database' and local incident and outbreak reports).<br>• Completeness and yield of contact investigations. This includes: proportion of sputum-smear-positive cases with 0, 5 or more contacts identified; proportion of identified contacts clinically assessed; and proportion of contacts with latent TB infection who successfully complete treatment (see section 1.6 and 1.8.6).<br>• Active case-finding initiatives, incident contact investigations and identification of latent TB infection in high risk groups<br>• Treatment outcomes for everyone grouped according to social risk factors and by the use of directly observed therapy (including rates of loss to follow-up and treatment interruptions – see Public Health England's | recommendation on integration of TB-HIV clinical in the strategic oversight recommendations or other downstream recommendation changes |

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| Protection Agency website).<br>• Evidence of recent transmission (for example, using DNA fingerprinting or surrogate markers such as number of cases in under 5s).<br>• Completeness and yield of contact investigations. This includes: proportion of sputum-smear-positive cases with none, five or more contacts identified; proportion of identified contacts clinically assessed; and proportion of contacts with latent TB infection who successfully complete treatment. (See also recommendation 13.)<br>• Active case-finding initiatives.<br>• Treatment outcomes for everyone grouped according to social risk factors and by the use of directly | enhanced TB surveillance data and see sections 1.6 and 1.8.6).<br>• Local education and awareness-raising programmes for under-served groups, professionals and practitioners working with them.<br>• Views and experiences of people with TB, carers and the services working with them. **[2012, amended 2015]** | |

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| observed therapy (including rates of loss to follow-up and treatment interruptions – see Enhanced TB surveillance on the Health Protection Agency website and recommendation 13).<br>• Local education and awareness-raising programmes for hard-to-reach groups and professionals working with them.<br>• Views and experience of TB patients and the services working with them | | |
| Directors of public health should provide TB prevention and control programme commissioners (see recommendation 1) with local needs assessment information on an annual basis | 1.8.5.2 Directors of public health should provide commissioners of TB prevention and control programmes and TB control boards (see sections 1.8.1 and 1.8.8) with local needs assessment information annually using data provided by Public Health England. **[2012, amended 2015]** | This change reflects the establishment of TB control boards. |
| Directors of public health should ensure TB is part of the joint strategic needs assessment in areas of high need | 1.8.5.1 Directors of public health, in discussion with local health protection teams, should ensure that TB is part of the joint strategic needs assessment. **[2012, amended 2015]** | To support decision making as health protection teams can provide the relevant information to support this |
| Commissioners of TB | 1.8.5.3 Commissioners of TB prevention | This change |

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| prevention and control programmes should ensure services reflect the needs of their area, as identified by needs assessment | and control programmes should ensure services reflect the needs of their area, identified by needs assessment. Health and wellbeing boards should ensure that local TB services have been commissioned based on local needs identified through needs assessment. **[2012, amended 2015]** | reflects the role of health and wellbeing boards as a result of the Health and Social Care act |
| **Recommendation 3 Cohort review** | **1.8.6 Cohort review** | |
| TB prevention and control programme leads should initiate, audit and evaluate cohort reviews within their commissioning area. Quarterly cohort review meetings should take place in the area covered by the programme. | 1.8.6.1 TB control boards and prevention and control programme leads should initiate, audit and evaluate cohort reviews in their commissioning area. Quarterly cohort review meetings should take place in the area covered by the programme. Combine these meetings with others if possible, or use technology to make it easier for clinicians and case managers to attend. **[2012, amended 2015]** | This change reflects the establishment of TB control boards, resulting from the National TB strategy. It also adds clarification on how the cohort review meetings can more easily be implemented in practice. |
| TB case managers should present standardised information on each case, including: demographic information, status (clinical, laboratory, radiology), adherence to treatment and the results of contact investigations.<br>TB case managers and key allied professionals from the TB prevention and control programme should attend cohort review meetings. Either a paediatrician with training and expertise in TB management, or a paediatric infectious disease specialist, should be present when cases of children with TB are presented | 1.8.6.2 TB case managers should present standardised information on each case, including: demographic information, HIV test results, pre-treatment and ongoing status (clinical, laboratory, radiology), adherence to treatment and the results of contact investigations. **[2012, amended 2015]**<br>1.8.6.3 TB case managers and key allied professionals from the TB prevention and control programme should attend cohort review meetings. This could include the lead clinician (who may or may not be the case manager). Either a paediatrician with training and expertise in TB management or a paediatric infectious disease specialist should be present when cases of children with TB are presented. **[2012, amended 2015]** | Clarification on what may be useful and to extrapolate to all people with TB |

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| The chair of the cohort review should be neutral, that is, they should not work for any of the TB services included in the review. Examples of possible chairs include the director of public health, a specialist physician from a different geographical area, or a representative from the local Public Health England unit | 1.8.6.4 The chair of the cohort review should not work for any of the TB services included in the review. Examples of possible chairs include a public health consultant, a specialist physician or a senior TB nurse, preferably from a different geographical area. Alternatively the chair could be a representative from the local Public Health England health protection team or the TB control board. **[2012, amended 2015]** | Examples added to support implementation |
| Public Health England units, in conjunction with the TB prevention and control programme lead, should collate and then present cohort review data on TB treatment and the outcome of contact investigations at the review meetings. In addition, progress towards national, regional and local service targets should be presented | 1.8.6.5 Multidisciplinary TB teams, in conjunction with Public Health England units and the TB control boards, should collate and present cohort review data on TB treatment and the outcome of contact investigations at the review meetings. In addition, progress towards national, regional and local service targets should be presented. **[2012, amended 2015]** | Reflect that it is the MDTB teams who are the primary actor and to account for the establishment of TB control boards. |
| Those participating in a cohort review should review the results and evaluate local services | 1.8.6.8 People participating in a cohort review should review the results and evaluate local services (for example, auditing adverse outcomes, rates of culture confirmation, treatment completion rates or time to diagnosis). **[2012, amended 2015]** | Examples added to support implementation and aid clarity |
| TB prevention and control programme leads should ensure outputs from the cohort review feed into the needs assessment for TB services. These leads should attend the cohort review at least once a year | 1.8.6.6 TB control boards, directors of public health and local public health consultants should ensure outputs from the cohort review feed into the needs assessment for TB services. TB control board directors should attend the cohort review at least once a year. **[2012, amended 2015]** | This change reflects the establishment of TB control boards, and to reflect the other primary actors for delivery of this recommendation due to other changes in the system as a result of the Health and |

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| | | Social care act. |
| TB case managers should feed back promptly to MDTB teams on issues identified as a result of cohort review. The chair of the cohort review should feed back to commissioners via needs assessment | 1.8.6.7 TB case managers should feed back promptly to multidisciplinary TB teams on issues identified as a result of cohort review. The results of the cohort review should be collated locally and agreed by the chair before being fed back to TB control boards, commissioners and health and wellbeing boards regularly and via needs assessment. **[2012, amended 2015]** | This change reflects the establishment of TB control boards, who have a responsibility to monitor the cohort review process as part of their work it also supports implementation, by providing additional detail on which elements of the process are relevant for different people. |
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| **Recommendation 4 Commissioning multidisciplinary TB support for hard-to-reach groups** | 1.8.7 Commissioning multidisciplinary TB support | |
| Have the skills and resources to manage those who are not from hard-to-reach groups. (One whole-time equivalent case manager is recommended per 40 incident cases requiring standard management.) | 1.8.7.1 Commissioners should ensure multidisciplinary TB teams:<br>• Have the skills and resources to manage the care of people with active TB who are not from under-served groups. (A minimum of 1 whole-time equivalent case manager is recommended per 40 incident cases needing standard management.) **[2012, amended 2015]**<br>• … | Clarification added to highlight that this recommendation applies to all those with active TB and not latent TB |
| Include at least one TB case manager with responsibility for planning and coordinating the care of hard-to-reach people. (One whole-time equivalent case manager is recommended per 20 incident cases requiring enhanced | 1.8.7.1…<br>• …<br>• Include at least 1 TB case manager with responsibility for planning and coordinating the care of under-served people and those with active TB who receive enhanced case management. (One whole-time equivalent case manager is recommended per 20 incident cases needing enhanced case management.) | Clarification added to highlight that this recommendation applies to all those with active TB |

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| case management | **[2012, amended 2015]**<br>• … | |
| Include an appropriate range of clinical specialties including paediatrics, infection control and respiratory medicine | 1.8.7.1…<br>• …<br>• Include a range of clinical specialties in the multidisciplinary TB team, including paediatrics, infection control and respiratory medicine. **[2012]**<br>• … | Small change to wording added for clarification |
| Can provide rapid access TB clinics for hard-to-reach groups. | 1.8.7.1…<br>• …<br>• Can provide rapid access TB clinics for all cases, including under-served groups. **[2012, amended 2015]**<br>• … | All cases added to highlight that this recommendation applies to all cases of TB. PH37 was limited in scope to only those who where deemed 'hard-to-reach', however the Committee discussed that had the scope of PH37 been broader this recommendation would still have been made as it applies to all cases. |
| Have the resources to provide a continuous service throughout the year | 1.8.7.1…<br>• …<br>• Have the resources to provide a continuous service throughout the year, ensuring the TB service accounts for the following to manage continuity of care:<br>– planned absence (for example, professional development, mandatory training, annual, maternity or paternity leave)<br>– unplanned absence (such as sickness absence). **[2012, amended 2015]**<br>• **…** | Amended to clarify meaning and aid implementation. |
| Have access to funds that can be used | 1.8.7.1…<br>• … | This recommendation |

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| flexibly to improve adherence to treatment among hard-to-reach groups. For example, funds could be used to provide transport to clinics, to provide incentives for treatment, or for paying outreach workers or community services to support directly observed therapy. Funds may also be used to provide accommodation during treatment (see recommendation 14). | • Have access to funds through local government and clinical commissioning groups that can be used flexibly to improve adherence to treatment among under-served groups. For example, funds could be used to provide transport to clinics, to provide support or enablers for treatment, or for paying outreach workers or community services to support directly observed therapy. Funds may also be used to provide accommodation during treatment (see section 1.8.11). **[2012, amended 2015]…**<br>• … | has been amended to reflect the role of local government and clinical commissioning groups and give clear actions for groups who the Committee consider are accountable for delivering the recommendations.<br><br>Changed to 'enablers' as incentives may be considered unethical in this recommendation. |
| Have the resources to provide ongoing TB awareness-raising activities for professional, community and voluntary (including advocacy) groups that work with hard-to-reach groups | 1.8.7.1…<br>• …<br>• Have the resources to provide ongoing TB awareness-raising activities for professional, community and voluntary (including advocacy) groups that work with populations at high risk of TB (see section 1.1.1). These resources could be financed by local government or clinical commissioning groups. **[2012, amended 2015]**<br>• … | Recommendation extrapolated to all people with TB not just under-served groups. |
| **Recommendation 5 Raising and sustaining awareness of TB among health professionals and those working with hard-to-reach groups** | Among health professionals and those working with at-risk groups | |
| MDTB teams should identify and support an ongoing TB education programme for local professionals in contact with hard-to-reach groups. This | 1.1.1.1 Multidisciplinary TB teams (in collaboration with Public Health England, primary care, the voluntary sector and Health Education England) should identify and support an ongoing TB education programme for local professionals in contact with the general | Reflects system changes and additional groups with a role. Extrapolated to the general public from hard |

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| includes, for example, staff in accident and emergency departments, GPs, staff who support vulnerable migrants and those working in walk-in centres, hostels, substance misuse projects and prisons | public and at-risk groups in particular. This includes, for example, staff in emergency departments, GPs and wider primary care staff, people who work in housing support services, staff who support migrants and those working in walk-in centres, hostels, substance misuse projects and prisons. **[2012, amended 2015]** | to reach groups. |
| MDTB teams should ensure the education programme increases other professionals' awareness of the possibility of TB disease and reduces the stigma associated with it. The programme should include detail on the:<br>• Causes of TB, how it is transmitted and the signs and symptoms.<br>• Lifestyle factors that may mask symptoms.<br>• Local epidemiology, highlighting at-risk, hard-to-reach groups.<br>• Principles of TB control: early diagnosis and active case-finding; how to support treatment (including directly observed therapy); drug resistance; awareness of drug interactions; and contact | 1.1.1.2 Multidisciplinary TB teams should ensure the education programme increases other professionals' awareness of the possibility of TB and reduces the stigma associated with it. The programme should include detail on:<br>• causes of TB, how it is transmitted, and the signs and symptoms<br>• lifestyle factors that may mask symptoms<br>• local epidemiology, highlighting under-served groups, other high-risk groups and the fact that TB also occurs in people without risk factors<br>• principles of TB control:<br>– early diagnosis and active case-finding<br>– how to support treatment (including directly observed therapy)<br>– drug resistance<br>– awareness of drug interactions (including factors such as effect on contraception efficacy)<br>– contact investigation after diagnosing an active case<br>– the importance of adhering to treatment<br>– treatment for TB is free for everyone (irrespective of eligibility for other NHS care)<br>– social and cultural | Amended to improve implementation and reduce risk that it is not just seen as a health need in under-served or migrant groups.<br><br>Also reflects need for tailoring to meet people needs. |

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| investigations following diagnosis of an active case.<br>• Importance of adhering to treatment.<br>• Fact that treatment is free for everyone.<br>• Social and cultural barriers to accessing health services (for example, fear of stigma and staff attitudes).<br>• Local referral pathways, including details of who to refer and how.<br>• Role of allied professionals in awareness-raising, identifying cases and helping people complete treatment.<br>• Misinformation which causes fear about TB, including concerns about housing people with the condition | barriers to accessing health services (for example, fear of stigma and staff attitudes)<br>– local referral pathways, including details of who to refer and how<br>– the role of allied professionals in awareness-raising, identifying cases and helping people complete treatment<br>– misinformation that causes fear about TB, including concerns about housing people with the condition<br>– the best ways to effectively communicate all the above topics with different groups. **[2012, amended 2015]** | |
| Statutory, community and voluntary organisations and advocates working with hard-to-reach groups should disseminate information on TB education and awareness training to | 1.1.1.3 Statutory, community and voluntary organisations and advocates working with the general public, and under-served and high-risk groups in particular, should share information on TB education and awareness training with all frontline staff. (They should get information on this from the local multidisciplinary TB team.) **[2012,** | Extrapolated to the general public from hard to reach groups |

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| all frontline staff. (They should get information on this from the local MDTB team.) | **amended 2015]** | |
| Where possible, statutory, community and voluntary organisations should ensure peers from hard-to-reach groups with experience of TB contribute to, or lead, awareness-raising activities. (Peers who lead such activities will need training and support.) | 1.1.1.4 If possible, statutory, community and voluntary organisations should ensure peers from under-served groups and anyone else with experience of TB contribute to, or lead, awareness-raising activities. (Peers who lead such activities will need training and support.) **[2012, amended 2015]** | Extrapolated to the general public from hard to reach groups |
| ***Recommendation 6 Raising and sustaining awareness of TB among hard-to-reach groups*** | ***Among at-risk groups*** | |
| MDTB teams should help professionals working in relevant statutory, community and voluntary organisations to raise awareness of TB among hard-to-reach groups. These professionals should be able to explain that treatment is free and confidential for everyone (irrespective of immigration status). They should also be able to provide people with details on:<br>• How to recognise symptoms in adults and children.<br>• How people get TB.<br>• The benefits of diagnosis and treatment (including the | 1.1.1.5 Multidisciplinary TB teams should help professionals working in relevant statutory, community and voluntary organisations to raise awareness of TB among under-served and other high-risk groups. These professionals should be able to explain that treatment for TB is free and confidential for everyone (irrespective of eligibility for other NHS care). They should also be able to provide people with details of:<br>• how to recognise symptoms in adults and children<br>• how people get TB<br>• the benefits of diagnosis and treatment (including the fact that TB is treatable and curable)<br>• location and opening hours of testing services<br>• referral pathways, including self-referral<br>• the potential interaction of TB medication with other drugs, for example, oral contraceptives and opioids (especially methadone) and HIV treatment | Extrapolated to other high risk groups such as those who are immune-compromised and to support all aspects of TB prevention and control |

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| fact that TB is treatable and curable).<br>• Location and opening hours of testing services.<br>• Referral pathways, including self-referral.<br>• Where relevant, the potential interaction of TB medication with other drugs, for example, oral contraceptives and opioids (especially methadone) and HIV treatment.<br>• TB/HIV co-infection.<br>• How to address the myths about TB infection and treatment (for example, to counter the belief that TB is hereditary).<br>• How to address the stigma associated with TB.<br>• The risk of vulnerable migrants from high-incidence countries developing active TB – even if they have already screened negative for it | • TB/HIV co-infection<br>• how to address the myths about TB infection and treatment (for example, to counter the belief that TB is hereditary)<br>• how to address the stigma associated with TB<br>• the risk of migrants from high-incidence countries developing active TB – even if they have already screened negative for it<br>• contact tracing. **[2012, amended 2015]** | |

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| MDTB teams and others working with hard-to-reach groups should use high quality material to raise awareness of TB. The material should be current, culturally and linguistically appropriate and available in a range of media formats (that is, not just in a written format). This material should be modified to meet the specific needs of the audience, if necessary | 1.1.1.6 Multidisciplinary TB teams and others working with at-risk groups should use high quality material to raise awareness of TB (see section 1.1.2). **[2012, amended 2015]** | A new section has been written on what good information looks like and this has been cross-referenced here |
| MDTB teams and others working with hard-to-reach groups should include information on TB with other health-related messages and existing health promotion programmes tailored to the target group | 1.1.1.7 Multidisciplinary TB teams and others working with the general public, and with under-served and other high-risk groups in particular, should include information on TB with other health-related messages and existing health promotion programmes tailored to the target group. **[2012, amended 2015]** | Extrapolated to the general public from hard to reach groups |
| MDTB teams should work in partnership with voluntary organisations and 'community champions' to increase awareness of TB among hard-to-reach groups at risk of infection. Where possible, peers from these groups who have experience of TB should contribute to awareness-raising activities | 1.1.1.8 Multidisciplinary TB teams should work in partnership with voluntary organisations and 'community champions' to increase awareness of TB, in particular among under-served groups at risk of infection but also in the general population. If possible, peers who have experience of TB should contribute to awareness-raising activities and support those in treatment. **[2012, amended 2015]** | Extrapolated to the general public from hard to reach groups |
| ***Recommendation 8 Identifying and managing active TB in prisons or immigration removal centres: organisational factors*** | 1.8.10 **Identifying and managing active TB in prisons, custody suites or immigration removal centres: organisational factors** | |

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| MDTB teams, prison and immigration removal centre healthcare services should have named TB liaison leads to ensure they can communicate effectively with each other | 1.8.10.1 Multidisciplinary TB teams, prisons, custody suites and immigration removal centre healthcare services should have named TB liaison leads to ensure they can communicate effectively with each other. **[2012, amended 2015]** | Amended to include an additional high risk setting |
| Prison and immigration removal centre healthcare services should develop a TB policy by working with the MDTB team and the local Public Health England unit | 1.8.10.2 Prison, custody suites and immigration removal centre healthcare services should develop a TB policy by working with the TB control board and multidisciplinary TB team and the local Public Health England health protection team. **[2012, amended 2015]** | This recommendation has been amended to reflect the role of TB control boards |
| MDTB teams, in conjunction with prison and immigration removal centre healthcare services, should agree a care pathway for TB to ensure any suspected or confirmed cases are reported to, and managed by, the MDTB team | 1.8.10.3 Multidisciplinary TB teams, in conjunction with prisons, custody suites and immigration removal centre healthcare services, should agree a care pathway for TB. This is to ensure any suspected or confirmed cases are reported to, and managed by, the multidisciplinary TB team. **[2012, amended 2015]** | High risk setting added |
| MDTB teams, in liaison with prison or immigration removal centre healthcare providers, should manage all cases of active TB. Investigations and follow-up should be undertaken within the prison or immigration removal centre, wherever practically possible | 1.8.10.4 Multidisciplinary TB teams, in liaison with prisons, custody suites or immigration removal centre healthcare providers, should manage all cases of active TB. Investigations and follow-up should be undertaken within the prison or immigration removal centre if possible. **[2012, amended 2015]** | High risk setting added |
| ***Recommendation 10 Managing active TB in prisons or immigration removal centres*** | ***1.5 Infection control***<br>***1.5.2 Non-healthcare settings*** | Amended to enable improved incorporation and placement in the guideline |
| Everyone with X-ray | 1.5.2.2 In prisons or immigration | "In prisons or |

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| changes indicative of active TB, and those with symptoms who are awaiting X-ray, should be isolated in an individual room or cell. Prisoners and detainees should be retained on medical hold until they have:<br>• proven smear negative and had an X-ray that does not suggest active TB or<br>• had a negative risk assessment for multi-drug resistant (MDR)-TB and completed 2 weeks of the standard treatment regimen. | removal centres, everyone with X-ray changes indicative of active TB, as well as those with symptoms who are awaiting X-ray, should be isolated in an adequately ventilated individual room or cell. Prisoners and detainees should be retained on medical hold until they have:<br>• proven smear negative and had a posterior-anterior X-ray that does not suggest active TB, or<br>• had a negative risk assessment for multidrug-resistant TB and completed 2 weeks of the standard treatment regimen. **[2012, amended 2015]** | immigration removal centres" inserted to clarify setting; "adequately ventilated" individual room or cell inserted to better reflect the Committee's view of current best practice.<br>Further guidance has been added on the type of X-ray that should be performed. This was done to improve clarity and consistency within the guideline. |
| ***Recommendation 13 Contact investigations*** | 1.6.3 **Active case finding in under-served groups** | Amended to enable improved incorporation and placement in the guideline |
| MDTB teams should, where available and appropriate, encourage peer educators to help with contact investigations when it involves hard-to-reach people who have complex social networks | 1.6.3.3 Multidisciplinary TB teams should, if available and appropriate, encourage peer educators or TB programme support workers (see section 1.8.8) to help with contact investigations involving under-served people who have complex social networks. **[2012, amended 2015]** | Amended to reflect guideline changes |
| MDTB teams should investigate all those who have been in contact with hard-to-reach children who have pulmonary or non-pulmonary TB to identify the primary source of infection. If necessary, they should look beyond | 1.6.4.5 In all types of contact investigation scenario (active case finding, incident or outbreak investigations) multidisciplinary TB teams should investigate all those who have been in contact with children who have pulmonary or non-pulmonary TB to identify the primary source of infection. If necessary, they should look beyond immediate close contacts to find the source. **[2012, amended 2015]** | Amended to reflect guideline changes and new recommendation s |

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| immediate close contacts to find the source | | |
| ***Recommendation 14 Rapid-access TB services*** | 1.8.9 **Rapid-access TB services** | |
| MDTB teams should accept self-referrals to TB clinics by people from hard-to-reach groups | 1.8.9.3 Multidisciplinary TB teams should accept self-referrals to TB clinics by people who suspect they have TB or have recently been in contact with someone with TB. **[2012, amended 2015]** | Amended to better reflect practice according to the Committee and ensure all at risk can gain access quickly to reduce transmission risk to other people |
| Healthcare professionals from statutory organisations should refer people to TB clinics promptly. They should also ensure the results from first line diagnostic tests (including a sputum smear and chest X-ray) are available prior to the person seeing a physician. (Note: this should not delay the referral.) | 1.8.9.5 Healthcare professionals should consider urgent referral to TB clinics for people with suspected active TB. They should also ensure the results from first-line diagnostic tests (including a sputum smear and posterior–anterior chest X-ray) are available before the person sees a specialist. (Note: this should not delay the referral.) **[2012, amended 2015]** | Amended for clarity and to ensure referral was based on suspected 'active' TB for urgent referral. The Committee suggested the term 'urgent referral' has a specific meaning in the healthcare community that was appropriate here for active TB. |
| MDTB teams should use specialist TB nurses to triage referrals, so that case management starts promptly | 1.8.9.6 Multidisciplinary TB teams should have pathways to triage referrals, start investigations and collect clinical information before the person is seen by a physician. While triaging they should ensure everyone is given information about TB as part of the process (see section 1.1.2). This should include who the person should contact if they have any questions and how to access advice or information from support groups, national charities such as TB Alert and other sources such as local government, for example, public health or social care teams. **[2015]** | Expanded the recommendation for improved clarity and implementation support also incorporate some elements from other recommendation |
| MDTB teams should ensure people who have a smear-positive result are assessed within 24 hours. | 1.8.9.7 Multidisciplinary TB teams should ensure people who have a smear-positive result or imaging features highly suggestive of sputum-smear-positive TB (for | Amended for clarity and to split the recommendation (see below), and |

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| Others who are not smear-positive should be seen as soon as possible – and no later than 5 working days after a referral. Where necessary, outreach services should be used for assessment | example, evidence of cavitation on chest X-ray) are assessed the next working day. This is so that case management and infection control procedures start promptly. **[2012, amended 2015]** | to say newt working day which the committee consider is the best terminology to use here. |
| MDTB teams should ensure people who have a smear-positive result are assessed within 24 hours. Others who are not smear-positive should be seen as soon as possible – and no later than 5 working days after a referral. Where necessary, outreach services should be used for assessment | 1.8.9.8 The multidisciplinary TB team should assess people who are not sputum-smear-positive but have imaging that suggests pulmonary TB as soon as possible. This should be no later than 5 working days after a referral. **[2012, amended 2015]** | Amended for clarity, this is the second part of the split recommendation. |
| All those listed above should work together to agree a process for providing accommodation for homeless people diagnosed with active pulmonary TB who are otherwise ineligible for state-funded accommodation. The process should detail the person's eligibility and ensure they are given accommodation for the duration of their TB treatment | 1.8.11.2 Multidisciplinary TB teams, commissioners, local authority housing lead officers and other social landlords, providers of hostel accommodation, hospital discharge teams, Public Health England and the Local Government Association should work together to agree a process for identifying and providing accommodation for homeless people diagnosed with active pulmonary TB who are otherwise ineligible for state-funded accommodation. This includes people who are not sleeping rough but do not have access to housing or recourse to public funds. The process should detail the person's eligibility and ensure they are given accommodation for the duration of their TB treatment. **[2012, amended 2015]** | Amended to include the 'list from above'[ in the original recommendation, and to clarify who will benefit, which would also otherwise be missing from the incorporation of this recommendation from the original guidance. |
| Commissioners of TB prevention and control programmes should fund accommodation for homeless people | 1.8.11.3 Local government and clinical commissioning groups should fund accommodation for homeless people diagnosed with active TB who are otherwise ineligible for state- | Amended to clarify the responsible commissioners and to reflect the |

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| diagnosed with active TB who are otherwise ineligible for state-funded accommodation. Health or public health resources should be used | funded accommodation. Use health and public health resources, in line with the Care Act 2014. **[2012, amended 2015]** | changes in care legislation. |

## *Changes to recommendation wording for clarification only (no change to meaning)*

| Recommendation numbers in current guideline | Comment |
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| All recommendations except those labelled [new 2015] and recommendations 1.3.10, 1.1.3.12, 1.1.4.1, 1.1.4.2, 1.1.4.10, 1.1.4.14, 1.1.4.15, 1.6.1.1, 1.6.1.13, 1.6.1.13, 1.6.1.20, 1.6.2.2, 1.6.2.3, 1.6.2.8, 1.6.2.9, 1.6.2.11, 1.6.2.12, 1.6.2.13, 1.6.3.1, 1.6.3.2, 1.6.3.3, 1.7.3.1, 1.7.3.2, 1.7.3.4, 1.7.3.5, 1.7.3.6, 1.7.3.7, 1.7.3.8, 1.7.5.1, 1.7.5.3, 1.8.9.1, 1.8.9.2, 1.8.11.1 | Recommendations have been edited into the direct style and to reflect principles of person centred care (in line with current NICE style for recommendations in guidelines) where possible. Yellow highlighting has not been applied to these changes. |
| All recommendations except those labelled [new 2015] | Terminology has been changed in line with house style. For example, 'hard to reach' has been changed to 'under-served'; 'homeless people' has been changed to 'people who are homeless'; 'clients' has been changed to 'people'; 'elderly' has been changed to 'older; 'MDTB team' has been changed to 'multidisciplinary TB team'; 'children' has been changed to 'children and young people'. Yellow highlighting has not been applied to these changes. |
| All recommendations except those labelled [new 2015]. | Variations in terminology within and between CG117 and PH37 have been standardised for clarity, and the following consistent terms used throughout the guideline:<br>Interferon gamma-release assay (instead of IGRA or interferon-gamma test)<br>BCG scar (instead of scar, TB scar, characteristic scar)<br>Primary care provider (instead of primary care organisation)<br>Yellow highlighting has not been applied to these changes. |
| All recommendations except those | Internal cross references have been amended. Hyperlinks have been amended |

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| labelled [new 2015] | and links in footnotes have been moved into the recommendations where possible. Cross references between the ordinal clinical and public health guidelines, which have now been combined into this new guideline) have been removed.<br>Yellow highlighting has not been applied to these changes. |
| 1.1.3.13 | ‘or more’ added to final bullet on incidence for clarity. Yellow highlighting has been applied to this change. |
| 1.6.1.7 | ‘should not normally be assessed’ changed to ‘do not routinely assess’. Yellow highlighting has been applied to this change. |
| 1.6.1.10 | ‘should not routinely be undertaken’ changed to ‘do not routinely carry out’. Yellow highlighting has been applied to this change. |
| 1.6.1.21, 1.6.1.25 | Use of ‘manage’/’management’ amended to make the recommendation more person centred. |
| 1.6.1.22 | ‘a risk assessment should be undertaken’ changed to ‘do a risk assessment’. Yellow highlighting has been applied to this change. |
| 1.6.3.4, 1.6.2.14 | ‘radiography’ and ‘digital radiography’ changed to ‘X-ray’ for consistency with other recommendations. Yellow highlighting has been applied to this change. |
| 1.7.1.8 | ‘units’ changed to ‘teams’. Yellow highlighting has been applied to this change. |
| 1.1.1.1, 1.6.1.11, 1.6.1.12, 1.6.1.15, 1.6.1.27 | Defunct roles have been replaced by the roles that have replaced them, for example:<br>'CCDC' changed to ' consultant in communicable disease control or health protection<br>‘regional or national Health Protection Agency changed to ‘local or national Public Health England or Wales unit’<br>Yellow highlighting has been applied to these changes. |
| 1.1.3.17; 1.3.1.6 | Respiratory TB has been changed to pulmonary TB so that terminology is consistent and up to date throughout the guideline. Yellow highlighting has been applied to these changes. |

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