NHS
National Institute for Health and Clinical Excellence

**Quick reference guide**

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# Tuberculosis

Clinical diagnosis and management of tuberculosis, and measures for its prevention and control

Clinical Guideline 33
Developed by the National Collaborating Centre for Chronic Conditions

# Contents



# Patient-centred care

Treatment and care should take into account patients' individual needs and preferences. Good communication is essential, supported by evidence-based information, to allow patients to reach informed decisions about their care. Carers and relatives should have the chance to be involved in discussions unless the patient thinks it inappropriate.

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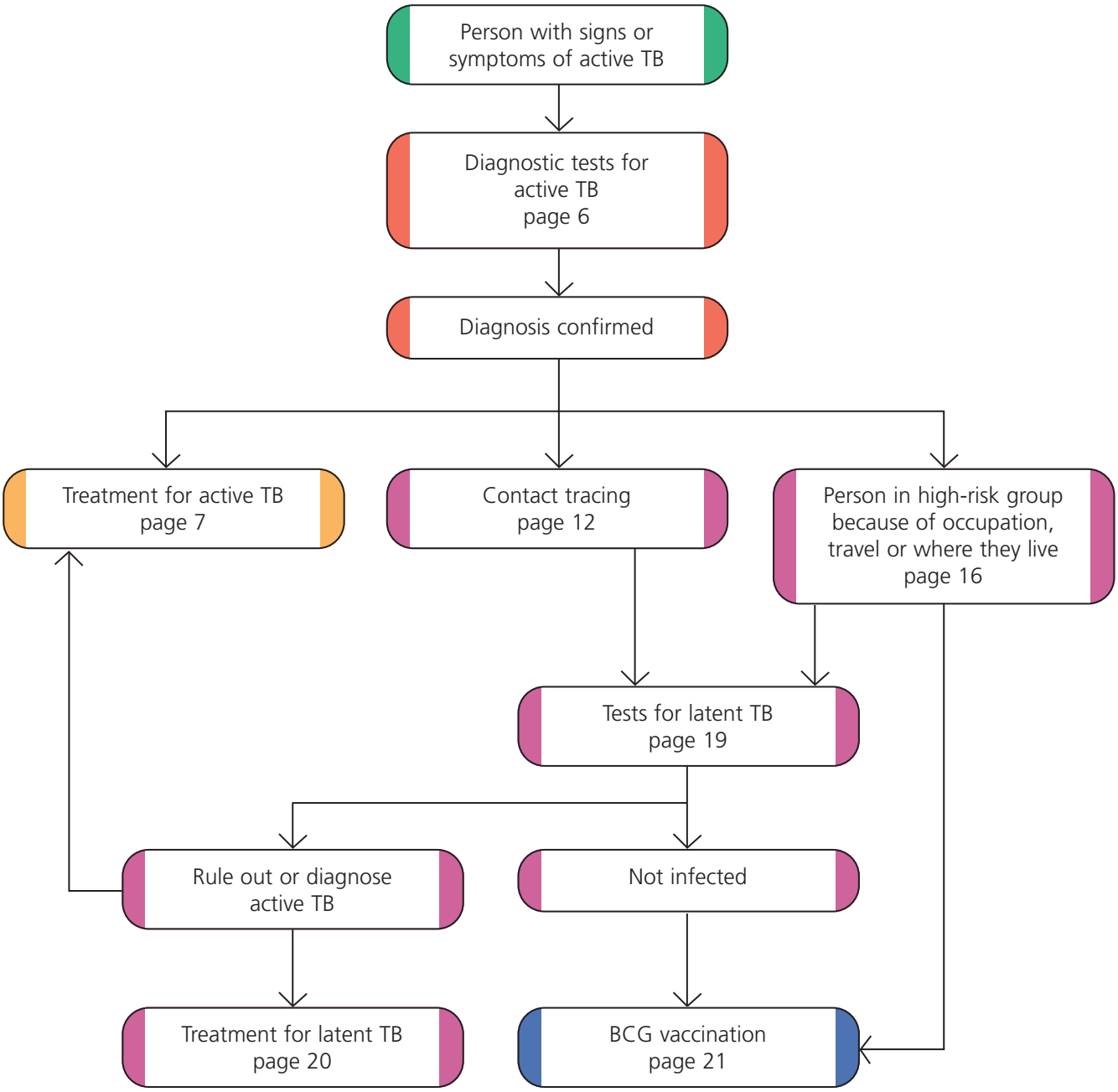
**This guidance is written in the following context**

This guidance represents the view of the Institute, which was arrived at after careful consideration of the evidence available. Healthcare professionals are expected to take it fully into account when exercising their clinical judgment. The guidance does not, however, override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

# Outline of care pathway



# Key priorities for implementation

The following recommendations have been identified as priorities for implementation.

## Management of active TB

- 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:
  - adults not known to be HIV-positive
  - adults who are HIV-positive
  - children.

This regimen is referred to as 'standard recommended regimen' in this guideline.

- Patients with active meningeal TB should be offered:
  - 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
  - a glucocorticoid at the normal dose range
    - adults – equivalent to prednisolone 20–40 mg if on rifampicin, otherwise 10–20 mg
    - children – equivalent to prednisolone 1–2 mg/kg, maximum 40 mg

    with gradual withdrawal of the glucocorticoid considered, starting within 2–3 weeks of initiation.

## Improving adherence

- Use of directly observed therapy (DOT) is not usually necessary in the management of most cases of active TB. 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:
  - street- or shelter-dwelling homeless people with active TB
  - patients with likely poor adherence, in particular those who have a history of non-adherence.
- 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.

## New entrant screening

- New entrants should be identified for TB screening from the following information:
  - Port of Arrival reports
  - new registrations with primary care
  - entry to education (including universities)
  - links with statutory and voluntary groups working with new entrants.

## BCG vaccination

- Neonatal BCG vaccination for any baby at increased risk of TB should be discussed with the parents or legal guardian.
- Primary care organisations with a high incidence of TB should consider vaccinating all neonates soon after birth.

# Definitions and abbreviations used in this guideline

**CCDC** Consultant in communicable disease control

**Close contacts** These may include a boyfriend or girlfriend and frequent visitors to the home of the index case, in addition to household contacts

**DOT** Directly observed therapy

**Green Book** The 2006 edition of 'Immunisation against infectious disease', published by the Department of Health. Updated chapters are available online (www.dh.gov.uk/PolicyAndGuidance/HealthAndSocialCareTopics/GreenBook/fs/en) and a printed version will be published during 2006

**High-incidence country** Country with more than 40 cases per 100,000 per year; these are listed by the Health Protection Agency – go to www.hpa.org.uk and search for 'WHO country data TB'

**High-incidence primary care organisation** Primary care organisation with more than 40 cases per 100,000 per year; these are listed by the Health Protection Agency – go to www.hpa.org.uk and search for 'TB rate bands'

**Household contacts** People sharing a bedroom, kitchen, bathroom or sitting room with the index case

**'Inform and advise' information** Advice on the risks and symptoms of TB, usually given in a standard letter

**Mantoux negative** Induration less than 6 mm

**Mantoux positive** Induration 6 mm or greater

**Mantoux strongly positive** Induration 15 mm or greater

**Negative-pressure rooms** Rooms where air pressure is continuously measured so that air cannot escape from the room into other parts of the hospital

**New entrants** People who have recently arrived in or returned to the UK from high-incidence countries

**Respiratory TB** TB affecting the lungs, pleural cavity, mediastinal lymph nodes or larynx

**Sputum smear-positive TB** TB where mycobacteria can be seen in sputum samples under the microscope

**Standard recommended regimen** The '6-month, four-drug initial regimen' of 2 months of isoniazid, rifampicin, pyrazinamide and ethambutol, followed by 4 months of isoniazid and rifampicin

# Diagnosing active TB

## Respiratory TB

Take a chest X-ray – if this suggests TB, arrange further tests.

- Send at least three sputum samples (including one early morning sample) for culture and microscopy.
- Samples should be spontaneously produced if possible. If not possible:
  - in adults, use induction of sputum or bronchoscopy and lavage
  - in children, consider induction of sputum if it can be done safely, or gastric washings if not.
- Take samples before starting treatment if possible, or within 7 days of starting.
- Start treatment without waiting for culture results if the patient has clinical signs and symptoms of TB, and complete treatment even if culture results are negative.
- Send autopsy samples for culture if respiratory TB was a possibility.

## Active non-respiratory TB

- Discuss the advantages and disadvantages of biopsy and needle aspiration with the patient.
- If non-respiratory TB is a possibility, place all or part of any of the following samples in a dry pot and send for TB culture:
  - lymph node biopsy or pus aspirated from lymph nodes
  - pleural biopsy
  - any surgical or radiological sample sent for routine culture
  - histology, aspiration and autopsy samples.
- If the histology and clinical picture are consistent with TB, start the appropriate treatment regimen without waiting for culture results (see page 7).
- Continue drug treatment even if culture results are negative.
- Do a chest X-ray to check for coexisting respiratory TB in all patients with non-respiratory TB, and consider other investigations (for details, see section 1.1.2 of the NICE guideline, available from www.nice.org.uk/CG033NICEguideline).

### Laboratory tests

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

- Use rapid diagnostic tests on primary specimens only if:
  - rapid confirmation of TB in a sputum smear-positive patient would alter their care, **or**
  - before conducting a large contact-tracing initiative.
- If clinical signs and other laboratory findings are consistent with TB meningitis, start treatment even if a rapid diagnostic test is negative.
- If a risk assessment suggests a patient has multidrug-resistant (MDR) TB:
  - do rapid diagnostic tests for rifampicin resistance
  - start infection control measures and treatment for MDR TB while waiting for the results (see page 10).

## Treatment of active TB

Patients diagnosed with active TB should be referred to a physician with training and experience in treating patients with TB.

### Drug treatment

- The standard recommended regimen is:
  - 6 months of isoniazid and rifampicin initially, plus pyrazinamide and ethambutol for the first 2 months.
- Use fixed-dose combination tablets as first choice.
- Use daily dosing for all types of non-respiratory TB as first choice.
- This regimen is for fully drug-susceptible TB at all sites except the CNS, and for patients of all ages, including patients who are HIV positive.
- Consider a thrice-weekly regimen for patients receiving directly observed therapy (see section 1.2.1 of the NICE guideline for details, www.nice.org.uk/CG033NICEguideline); do not use a twice-weekly regimen.

### Special considerations for active non-respiratory TB

| Site | Drug treatment | Other issues |
|---|---|---|
| Meninges | • Isoniazid, rifampicin, pyrazinamide and a fourth drug (such as ethambutol) for 2 months, then isoniazid and rifampicin for the rest of the treatment – initially 12 months<br>• Plus a glucocorticoid equivalent to prednisolone 20–40 mg if on rifampicin, otherwise 10–20 mg (adults); or 1–2 mg/kg, maximum 40 mg (children); consider gradual withdrawal starting within 2–3 weeks | |
| Peripheral lymph nodes | • First choice is the standard recommended regimen (see page 7)<br>• Use this regimen even if an affected lymph gland has been removed surgically | • Normally, stop treatment after 6 months, regardless of the appearance of new nodes, residual nodes or sinuses draining |
| Bones and joints | • First choice is the standard recommended regimen (see page 7) | • Do a CT or MR scan on patients with active spinal TB who have neurological signs or symptoms; treat as for meningeal TB if the spinal cord is directly involved<br>• For spinal TB, consider anterior spinal fusion if there is spinal instability or evidence of compression |
| Pericardium | • First choice is the standard recommended regimen (see page 7)<br>• Plus a glucocorticoid equivalent to prednisolone at 60 mg/day (adults) or 1 mg/kg/day (maximum 40 mg/day; children); consider gradual withdrawal, starting within 2–3 weeks | |
| Disseminated, including miliary | • First choice is the standard recommended regimen (see page 7)<br>• Start treatment even if initial liver function tests are abnormal; seek advice from a specialist if liver function deteriorates significantly on treatment | • Check for CNS involvement by CT or MR scan and/or lumbar puncture if there are CNS signs or symptoms, or a lumbar puncture if not<br>• Treat as for meningeal TB if the CNS is involved |

## Improving adherence

To promote adherence, involve patients in treatment decisions at the outset, and emphasise the importance of adherence.

- Everyone with TB should know who their named key worker is, and how to contact them. The key worker should educate the person about TB, and involve them in achieving adherence.
- Liquid preparations of anti-TB drugs should be available if needed.
- TB services should provide written patient information in languages used locally, and in other formats (such as audiovisual) as needed. See www.hpa.org.uk for examples.

**Possible interventions if a patient defaults from treatment**

- Reminder letters in appropriate languages.
- Health education counselling.
- Patient-centred interview and health education booklet.
- Home visits.
- Patient diary.
- Random urine tests and other monitoring (for example, pill counts).
- Information about help with paying for prescriptions.
- Help or advice about where and how to get social security benefits, housing and social services.

### Directly observed therapy

- Directly observed therapy (DOT) is not usually needed for most cases of active TB.

**Do a risk assessment for adherence to treatment for all patients.**

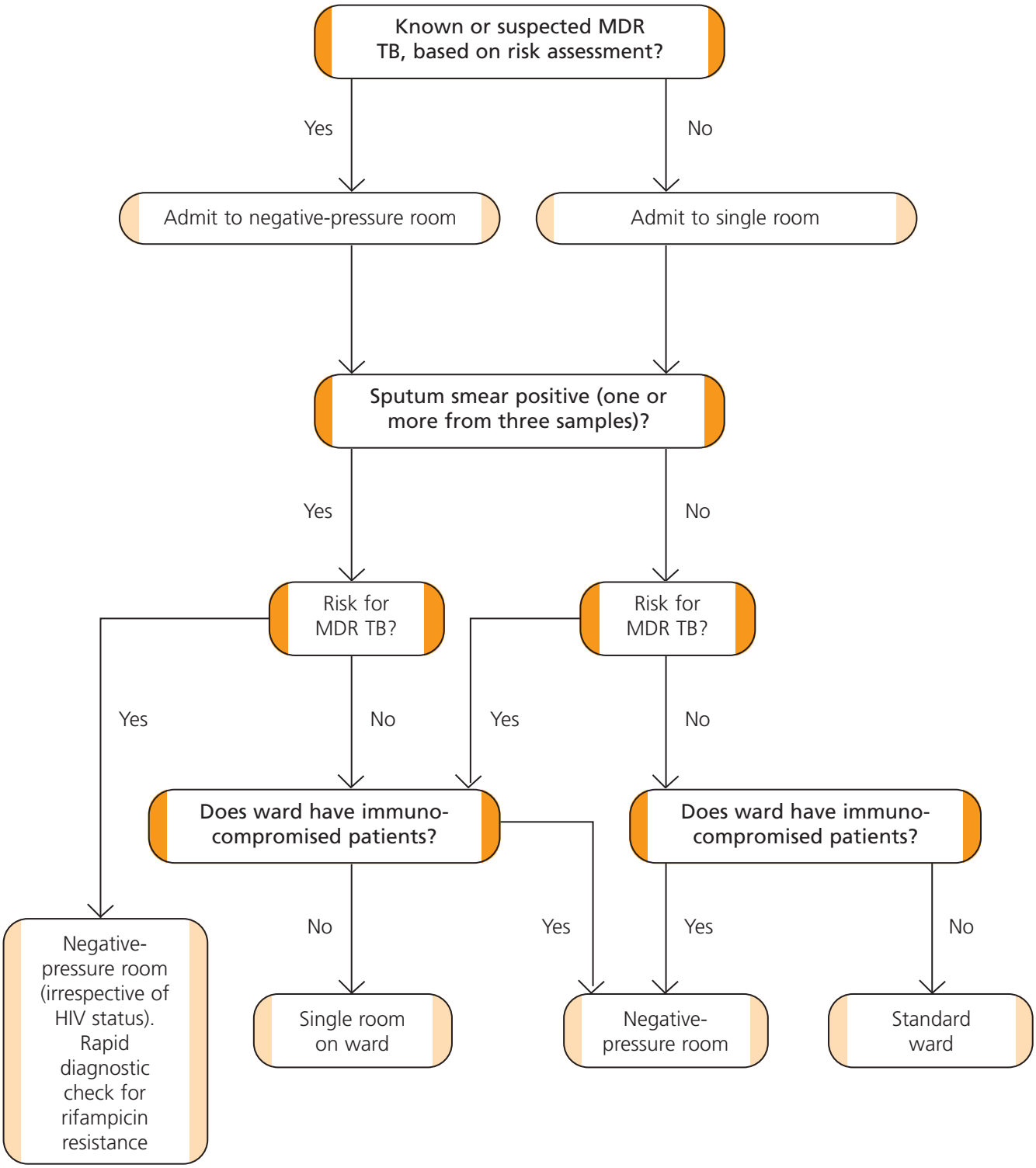
- Consider DOT for patients who have adverse factors, in particular:
  - street- or shelter-dwelling homeless people with active TB
  - patients with likely poor adherence, especially those who have a history of non-adherence.
- When planning a course of DOT, consider ways to mitigate the environmental, financial and psychosocial factors that may reduce adherence, including stability of accommodation, prescription charges and transport. Arrange the setting, observer and frequency of treatment 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.

## Treatment completion and follow-up

- Do not offer follow-up clinic visits routinely after treatment completion.
- Tell patients to watch for symptoms of relapse and how to contact the TB service rapidly – especially if they are at increased risk of relapse.
- Consider 12 months' follow up after completion of treatment for drug-resistant TB, and prolonged follow up for MDR TB.

## Infection control

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



**Admit people with TB at any site to hospital for diagnostic tests or care only if there is a clear clinical or socioeconomic need, such as homelessness.**

- Screen visitors to a child with TB in hospital as part of contact tracing, and keep them separate from other patients until they have been excluded as the source of infection.
- Perform aerosol-generating procedures such as bronchoscopy, sputum induction or nebuliser treatment in an appropriately engineered and ventilated area for:
  - all patients on an HIV ward, and
  - all patients in whom TB is possible, in any setting.
- Do not use masks, gowns or barrier nursing techniques unless:
  - you suspect a person has MDR TB, or
  - you are performing aerosol-generating procedures.

  Tell the patient why they are needed.
- Ask inpatients with smear-positive TB to wear a surgical mask whenever they leave their room until they have had 2 weeks' drug treatment, and explain why.

### Leaving isolation

- Smear-positive TB patients without risk factors for MDR TB (see below) may leave the single room after 2 weeks' treatment (see page 7), or on discharge. Extra precautions are needed for patients who will share a ward or home with HIV-positive or other immunocompromised patients (see the NICE guideline, section 1.2.2, www.nice.org.uk/CG033NICEguideline).

## Risk assessment and infection control for drug-resistant TB

*For more details, see section 1.5 of the NICE guideline, www.nice.org.uk/CG033niceguideline*

### Risk factors

- Assess risk of drug resistance for each patient with TB, based on these risk factors:
  1. a history of prior TB drug treatment; prior TB treatment failure
  2. contact with a known case of drug-resistant TB
  3. birth in a foreign country, particularly a high-incidence country
  4. HIV infection
  5. residence in London
  6. age profile (rates are highest between ages 25 and 44)
  7. male gender.
- If the TB service regards the risk as significant, arrange urgent rapid diagnostic tests for rifampicin resistance.
- Monitor response to treatment closely in patients at risk of drug resistance. If there is no clinical improvement, or if cultures remain positive after the 4th month of treatment, review treatment with a specialist.
- Discuss options for organising care for people with MDR TB with specialists. Take the patient's views into account and consider shared care.

# Preventing transmission and treating latent TB

## Contact tracing

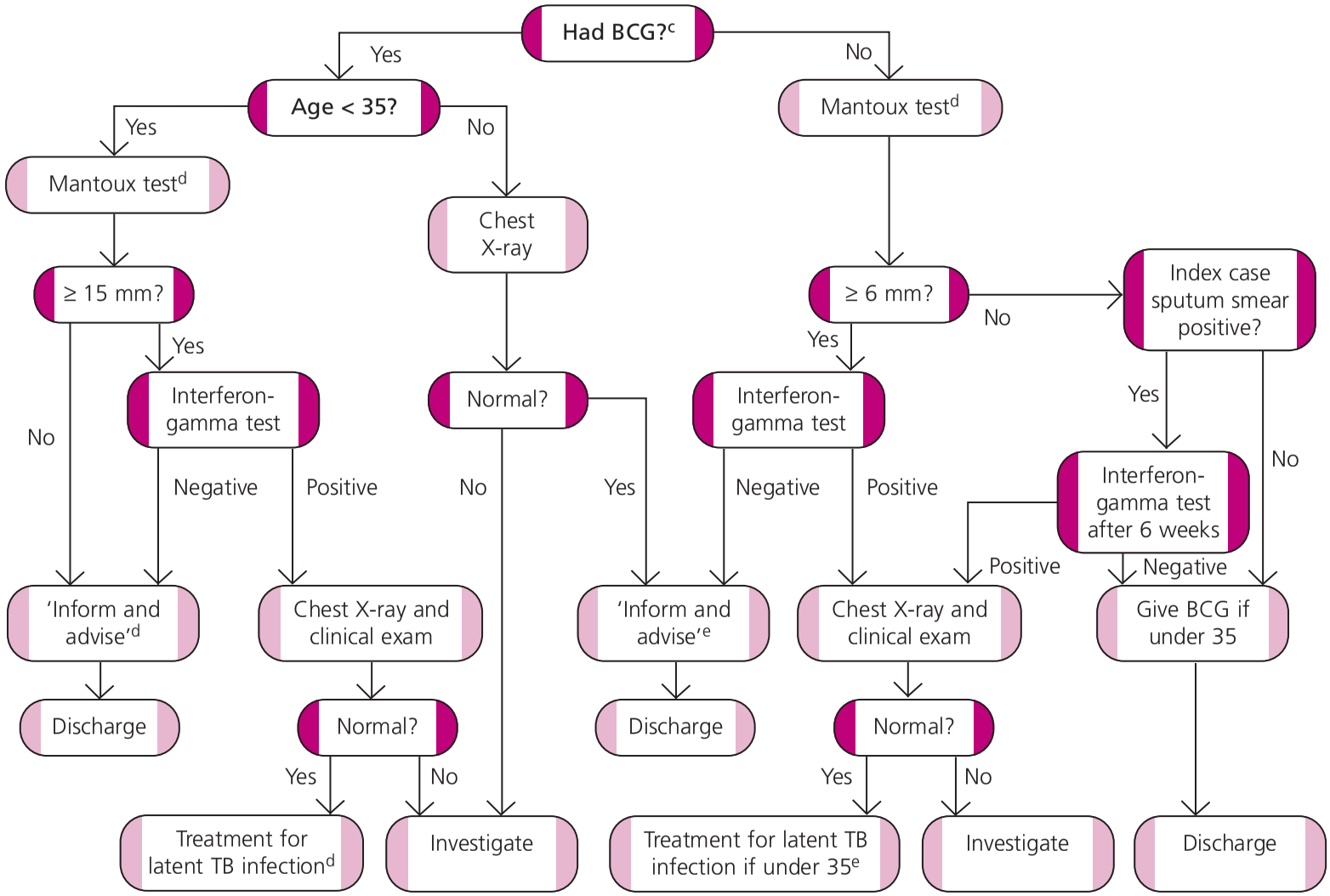
- Once a patient has been diagnosed with active TB, inform colleagues so that need for contact tracing can be assessed. Do not delay contact tracing until notification.

| Type of index case and contact | Assessment and screening | Notes |
|---|---|---|
| Person with active TB at any site – household contacts | • Offer screening:<br>– if aged 35 or younger, test for latent TB; consider BCG or treatment for latent TB infection once active TB has been ruled out<br>– if older than 35, do a chest X-ray (if there are no contraindications), and further investigation for active TB if needed | • Offer 'Inform and advise' information to contacts of people with sputum smear-positive TB<br>• See the algorithms on pages 14–15 for more details |
| Person with sputum smear-positive TB – close contact who is a neonate | • Treat with isoniazid 5 mg/kg for 3 months then do a Mantoux test<br>• If Mantoux positive, exclude active TB and continue isoniazid for total of 6 months<br>• If Mantoux negative, stop isoniazid and give BCG | • Offer 'Inform and advise' information to carers<br>• See the algorithms on pages 14–15 for more details |
| Person with sputum smear-positive TB – contact older than 4 weeks and younger than 2 years | • Offer screening and treatment as described in the algorithm on page 15 | |
| Person with sputum smear-positive TB – other close contacts | • Offer screening as for household contacts above | • Occasionally workplace contacts may be equivalent to household contacts; assess them in the same way<br>• Offer 'Inform and advise' information |
| Any person with TB – casual contacts | • Usually, do not offer contact tracing<br>• Consider contact tracing if:<br>– the index case is particularly infectious, **or**<br>– casual contacts are at special risk of infection | • This includes most workplace contacts<br>• Offer 'Inform and advise' information to all contacts of people with sputum smear-positive TB |
| Cattle with TB | • Offer tests for latent TB only for children younger than 16 who have not had BCG and have regularly drunk unpasteurised milk from animals with TB udder lesions | • Offer 'Inform and advise' information to all contacts |
| Aircraft passenger later found to have TB | • Contact tracing is not usually needed<br>• **But** tell the relevant CCDC if:<br>– the flight was in the past 3 months **and**<br>– the flight lasted for more than 8 hours **and**<br>– the index case is sputum smear-positive **and either**<br>◆ the index case coughed frequently during the flight **or**<br>◆ the index case has MDR TB. | • The CCDC should send 'Inform and advise' information to the airline, to send to passengers who sat in the same part of the plane as the index case |

| Type of index case and contact | Assessment and screening | Notes |
|---|---|---|
| Aircraft crew member with TB | • Contact tracing not usually needed for passengers<br>• Assess other members of staff as normal for workplace contacts | |
| TB in school pupil or teacher | • Assess:<br>– pupils sharing any classes with a pupil with sputum smear-positive TB<br>– pupils in the classes of a teacher with sputum smear-positive TB in the previous 3 months<br>• Consider tracing children and staff involved in extra-curricular activities and non-teaching staff depending on:<br>– degree of infectivity of the index case<br>– duration and proximity of contact<br>– whether contacts are unusually susceptible to infection | • The CCDC should be prepared to explain prevention and control procedures to staff, parents and the press<br>• Treat secondary cases of sputum smear-positive TB as an index case for contact tracing<br>• If the index case of a pupil's infection is not found, and the child is not in a high-risk group, consider contact tracing and symptom enquiry or chest X-ray for all relevant school staff |
| Sputum smear-positive TB in adult worker in childcare (including informal childcare) | • Assess need for contact tracing as for casual and close contacts of any person with sputum smear-positive TB (see page 12) | |
| Sputum smear-positive TB diagnosed in a hospital inpatient | • Do a risk assessment covering:<br>– degree of infectivity of the index case<br>– duration and proximity of contact<br>– susceptibility of other patients<br>• Do contact tracing and testing only in patients at significant risk<br>• Manage patients as household contacts if they were exposed for long enough to be equivalent, or are particularly susceptible to infection<br>• If the patient has MDR TB, or exposed patients are HIV positive, do contact tracing in line with the Interdepartmental Working Group on Tuberculosis guidelines[a] | • If in doubt seek advice from the Health Protection Agency and/or specialists<br>• Patients are at risk if they spent more than 8 hours in the same bay as a patient with sputum smear-positive TB and a cough. Document this in their notes, for the attention of their consultant. Give 'Inform and advise' information, and tell their GP |

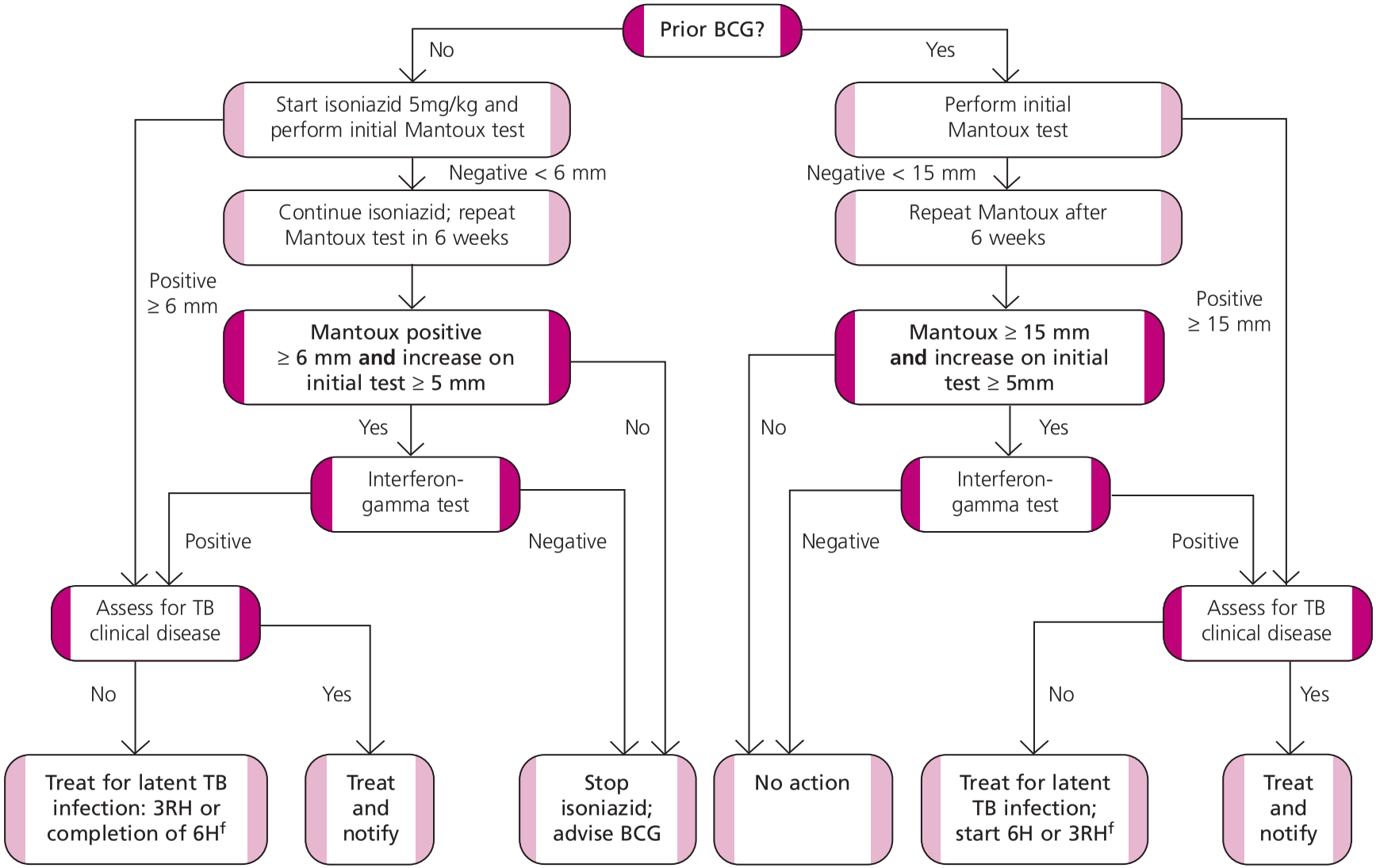
[a] The Interdepartmental Working Group on Tuberculosis (1998) *The prevention and control of tuberculosis in the United Kingdom: UK guidance on the prevention and control of transmission of: 1. HIV-related tuberculosis; 2. Drug-resistant, including multiple drug-resistant, tuberculosis*. London: The Department of Health.

## Testing and treating asymptomatic household and other close contacts of all cases of active TB[b]




[b] For children older than 4 weeks and younger than 2 years who are contacts of people with sputum smear-positive TB, see algorithm on page 15.
[c] Previous BCG vaccination cannot be accepted as evidence of immunity in HIV-infected patients.
[d] A negative test in immunocompromised people does not exclude TB infection.
[e] People advised to have treatment for latent TB infection, but who decline, should have 'Inform and advise' information reinforced and chest X-ray follow-up at 3 and 12 months.

## Testing and treating asymptomatic children older than 4 weeks but younger than 2 years who are contacts of people with sputum smear-positive TB




[f] Drug regimens are often abbreviated to the number of months a phase of treatment lasts, followed by letters for the drugs administered in that phase: H is isoniazid, R rifampicin, Z pyrazinamide, E ethambutol, S streptomycin.

So 3RH is three months of rifampicin and isoniazid, 6H is 6 months of isoniazid.

## High-risk groups and occupational health

### New entrants

- Health screening programmes for new entrants should:
  - detect active and latent TB and start treatment
  - give BCG vaccination to people in high-risk groups who have not been vaccinated before and are not infected
  - give information to all new entrants.
- Identify new entrants for TB screening from Port of Arrival reports, new registrations with primary care, entry to education (including universities), and links with statutory and voluntary groups working with new entrants.
- Encourage new entrants to register with a GP.

**Assessment and management of TB for new entrants**

- Chest X-ray if the person has not had one recently – unless younger than 11 or possibly pregnant.
- Clinical assessment for anyone with an abnormal chest X-ray.
- Risk assessment for HIV – take into account for Mantoux testing and BCG vaccination.
- Mantoux test if recent chest X-ray is normal and person is:
  - younger than 16, or
  - aged 16–35 and from sub-Saharan Africa or a country with a TB incidence greater than 500 per 100,000.
- Mantoux test for children younger than 11 years and pregnant women.
- Interferon-gamma test (if available) if Mantoux test is positive (unvaccinated person) or strongly positive (vaccinated person).
- Assessment for active TB if interferon-gamma test is positive; interpret chest X-ray first if it is not contraindicated.
- Treatment for latent TB infection in people aged 35 or younger after excluding active TB, if person has positive Mantoux test inconsistent with their BCG history, and positive interferon-gamma test, and is:
  - younger than 16, or
  - aged 16–35, from sub-Saharan Africa or a country with a TB incidence greater than 500 per 100,000.
- Consideration of BCG if unvaccinated and Mantoux negative (see page 21).
- 'Inform and advise' if not being offered treatment or vaccination.

### Street homeless

- Screen street homeless people (including those using direct access hostels) by chest X-rays, opportunistically and/or when they present with symptoms. Consider simple incentives for attending, such as hot drinks and snacks.
- Reinforce and update education about TB, and referral pathways, to primary care colleagues, social workers and voluntary workers who work with homeless people.

### Healthcare: new NHS employees

- 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 within the preceding 12 months.
- New NHS employees who will not have patient contact should not start work if they have signs or symptoms of TB.
- Health checks for employees new to the NHS should include:
  - assessment of personal or family history of TB
  - symptom and signs enquiry, possibly by questionnaire
  - documentary evidence of TB testing and/or BCG scar check by occupational health professional
  - Mantoux result within the last 5 years, if available.
- A Mantoux-negative healthcare worker who declines BCG vaccination after explanation of the risks should not work where there is a risk of exposure to TB.
- NHS trusts should ensure that all workers and students who have contact with patients or clinical materials are screened for TB to the same standard as employees new to the NHS. This includes:
  - clinical students, agency/locum staff and contract ancillary workers
  - healthcare workers in non-NHS settings caring for NHS patients.

### Tests and BCG vaccination for employees new to the NHS

- Mantoux or interferon-gamma test if:
  - there is no (or inconclusive) evidence of prior BCG vaccination
  - they are from a country of high TB incidence, or have had patient contact in a setting with high TB prevalence.
- Risk assessment for HIV infection before BCG vaccination if Mantoux negative.
- BCG vaccination, whatever their age, if they will have contact with patients or clinical specimens, are Mantoux negative and not previously vaccinated.
- Clinical assessment for diagnosis and possible treatment of latent infection or active disease if they are from a country of high TB incidence, or have had patient contact in a setting with high TB prevalence, and are Mantoux positive.
- Clinical assessment and a chest X-ray for anyone else with a positive Mantoux result. Referral to TB clinic for consideration of TB treatment if X-ray is abnormal, or consideration of treatment of latent TB infection if X-ray is normal.

### Healthcare: occupational health

- Include reminders of TB symptoms and the need for prompt reporting 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.
- Send one-off reminders after a TB incident on a ward.
- If there is no documentary evidence of prior screening, screen staff in contact with patients or clinical material who are changing jobs as if they were new employees (see page 17).
- For HIV-positive healthcare workers:
  - assess TB risks at the time of recruitment
  - be aware of settings with increased risk of exposure to TB.
- If HIV is diagnosed during employment, assess TB risk and modify the person's work if needed.

### Prisons and remand centres

- Be aware of the signs and symptoms of active TB, and promote awareness among prisoners and prison staff.
- Screen prisoners for TB by:
  - a health questionnaire on each entry to the prison system **then**
  - if there are signs and symptoms of active TB, a chest X-ray and microscopy on three sputum samples taken in 24 hours, including a morning sample.
- Provide DOT for all prisoners receiving treatment for active or latent TB.
- When a prisoner is transferred between prisons, make arrangements to ensure continuity of care.
- Have plans in place for continuing treatment after an early discharge, and give the prisoner contact details for a named key worker, who will visit them after release and liaise between services.
- Provide pre- and on-employment screening at the same level as for healthcare workers for prison staff and others who have regular contact with prisoners (for example, probation officers and education and social workers).

## Diagnosis and treatment of latent infection

### Diagnosis

- Do Mantoux testing in line with the Green Book.
- If positive (or in people for whom Mantoux testing could be less reliable) consider interferon-gamma testing if available locally.
- If tests are inconclusive, refer to a TB specialist.
- Exclude active TB by chest X-ray and examination, then consider treatment for latent TB infection.

### Treatment for latent TB infection for people identified by screening

| Group | Criteria for offering | Regimens | Notes |
|---|---|---|---|
| Under 36 (including children) | • Has not had BCG and is Mantoux positive<br>• Has had BCG and is strongly Mantoux positive<br>• Not known to have HIV | • 3 months of rifampicin and isoniazid<br>• Or 6 months of isoniazid | • 6 months of rifampicin if index case has isoniazid-resistant TB<br>• If index case has sputum smear-positive TB and the child is under 2, follow the advice on contact tracing and treatment on page 15 |
| Has HIV (any age) | • Has not had BCG and is Mantoux positive<br>• Has had BCG and is strongly Mantoux positive<br>• Is interferon-gamma positive | • 6 months of isoniazid | • 6 months of rifampicin if person is younger than 35 and index case has isoniazid-resistant TB |
| 36 or over and a healthcare worker | • Has not had BCG and is Mantoux positive<br>• Has had BCG and is strongly Mantoux positive<br>• Not known to have HIV | • 3 months of rifampicin and isoniazid<br>• Or 6 months of isoniazid | |
| Child aged 1–15 years identified through **opportunistic** screening | • Has not had BCG and is strongly Mantoux positive and interferon-gamma positive | • 3 months of rifampicin and isoniazid<br>• Or 6 months of isoniazid | |
| Has TB scars on chest X-ray and no history of adequate treatment (any age) | | • 3 months of rifampicin and isoniazid<br>• Or 6 months of isoniazid | |

- If a person declines treatment for latent TB infection, give 'Inform and advise' information and arrange chest X-rays 3 and 12 months later.
- Do not start treatment for latent TB infection in close contacts of people with sputum smear-positive MDR TB who are strongly Mantoux positive, because no regimen is of proven benefit. Monitor long-term for active disease.
- Be aware that people with latent TB in these groups are at increased risk of going on to develop active TB:
  - HIV-positive
  - injecting drug users
  - have had solid organ transplantation, jejuno-ileal bypass or gastrectomy
  - have a haematological malignancy
  - have chronic renal failure or receive haemodialysis
  - are receiving anti-TNF-alfa treatment
  - have silicosis.

# BCG vaccination

- Always discuss the benefits and risks when offering BCG. Give information tailored to the person, in an appropriate language, and taking into account cultural sensitivities and stigma.
- If the person was identified through occupational health, contact tracing or new entrant screening and could be at risk of having HIV, offer HIV testing before BCG vaccination.

| Group | Criteria for offering vaccination | Notes |
|---|---|---|
| Neonates | • Born in an area with notification rate > 40 per 100,000 **or**<br>• One or more parents or grandparents born in high-incidence country **or**<br>• Family history of TB in previous 5 years | • Primary care organisations with a high incidence of TB should consider vaccinating all neonates |
| Infants and older children (older than 4 weeks and younger than 16 years) | • Assessed as at increased risk, and would have qualified for neonatal vaccination **and**<br>• Mantoux negative | • Routine vaccination for children aged 10–14 years is not recommended<br>• Follow Chief Medical Officer's advice[g]<br>• Do not do routine Mantoux test before BCG in children younger than 6 years unless they were born in or visited (> 1 month) a high-incidence country |
| New entrants to the UK | • From high-incidence country **and**<br>• No evidence of vaccination from documentation or scar **and**<br>• Are aged<br>– younger than 16 years, or<br>– 16–35 years[h], from a sub-Saharan African country or a country with a TB incidence of 500 per 100,000 | |
| Healthcare workers in contact with patients or clinical specimens | • No evidence of vaccination from documentation or scar **and**<br>• Will have contact with patients or clinical materials **and**<br>• Mantoux or interferon-gamma negative | • Offer to workers of any age who meet the criteria<br>• The aim is to protect workers at risk of exposure to TB, and their patients |
| Contacts of people with active TB | • No evidence of vaccination from documentation or scar **and**<br>• Aged 35 years or younger **and**<br>• Mantoux negative | • Offer to healthcare workers of any age who are in contact with patients or clinical material |
| Other people at increased risk of TB | • Work with animals susceptible to TB **or**<br>• Work with prisoners **or**<br>• Work in a care home for elderly people **or**<br>• Work in a hostel for homeless people, refugees or asylum seekers **or**<br>• Intend to live or work with local people in a high-incidence country for more than a month | • See the Green Book for details |

[g] Available from www.dh.gov.uk/assetRoot/04/11/81/35/04118135.pdf

[h] The November 2005 draft of the Green Book recommends BCG for new entrants only up to the age of 16. 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 (see full guideline).

# Implementation

The Healthcare Commission will assess the performance of NHS organisations in meeting core and developmental standards set by the Department of Health in 'Standards for better health' issued in July 2004.

Implementation of clinical guidelines forms part of the developmental standard D2. Core standard C5 says that national agreed guidance should be taken into account when NHS organisations are planning and delivering care.

This guideline is supported by the following implementation tools available on our website (www.nice.org.uk/CG033).

- A slide set – key messages for local discussion.
- Costing tools:
  - a national costing report, which estimates the overall resource impact associated with implementation
  - a local costing template; a simple spreadsheet that can be used to estimate the local cost of implementation.
- Implementation advice – practical suggestions on how to address potential barriers to implementation.

Suggested audit criteria based on the key priorities for implementation are listed in appendix D of the NICE guideline (see www.nice.org.uk/CG033NICEguideline), and can be used to audit practice locally.

# Further information

## Quick reference guide

This quick reference guide to the Institute's guideline on tuberculosis contains the key priorities for implementation, summaries of the guidance, and notes on implementation. It has been distributed to healthcare professionals in England (see www.nice.org.uk/CG033distributionlist).

It is also available from www.nice.org.uk/CG033quickrefguide

For printed copies, phone the NHS Response Line on 0870 1555 455 and quote reference number N1008.

## NICE guideline

The NICE guideline, 'Tuberculosis: clinical diagnosis and management of tuberculosis, and measures for its prevention and control', is available from www.nice.org.uk/CG033NICEguideline

The NICE guideline contains the following sections: Key priorities for implementation; 1 Guidance; 2 Notes on the scope of the guidance; 3 Implementation in the NHS; 4 Research recommendations; 5 Other versions of this guideline; 6 Related NICE guidance; 7 Review date. It also gives details of the grading scheme for the evidence and recommendations, the Guideline Development Group and the Guideline Review Panel and technical detail on the criteria for audit.

## Full guideline

The full guideline includes the evidence on which the recommendations are based, in addition to the information in the NICE guideline. It is published by the National Collaborating Centre for Chronic Conditions. It is available from www.rcplondon.ac.uk/pubs/, the website of the National Library for Health (www.nlh.nhs.uk), and from www.nice.org.uk/CG033fullguideline

## Information for the public

NICE has produced a version of this guidance for people who have tuberculosis or are being tested for it, their families and carers, and the public, which is available from www.nice.org.uk/CG033publicinfo

For printed copies, phone the NHS Response Line on 0870 1555 455 and quote reference number N1009.

## Related guidance

There is no related NICE guidance.

For information about NICE guidance that has been issued or is in development, see the website (www.nice.org.uk).

## Review date

The process of reviewing the evidence is expected to begin 4 years after the date of issue of this guideline. Reviewing may begin before this if significant evidence that affects the guideline recommendations is identified. The updated guideline will be available within 2 years of the start of the review process.

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