

## 9. Screening in Special Situations

Screening is the practice of identifying a condition or illness, which could benefit from early diagnosis, preventative or curative intervention.<sup>318</sup> Screening should only be undertaken where an illness is sufficiently prevalent, has a known natural history and appropriate and agreed diagnostic techniques and treatment(s) are available. Illnesses being screened for may not cause symptoms that would lead a patient to seek medical care of his/her own volition. In addition, there should be an agreed policy on whom to treat and the cost of screening should be economically balanced.

Screening for TB should be focused ('targeted screening') on groups or individuals with a greater risk or incidence of TB than the general population, and should be undertaken with the following aims:

- To detect and treat active disease, thereby reducing the possibility of transmission to susceptible individuals
- To identify those with LTBI and offer treatment and counselling as appropriate
- To obtain baseline data on TST status for comparison with data from routine surveillance to facilitate reassessment of levels of risk in high-risk groups.

Targeted screening should be conducted depending on local epidemiology and resource availability. It is important to be aware that high risk groups for screening may change over time. The committee agreed that in Ireland, priority groups for screening at this time include:

- HCWs
- New entrants to Ireland
- Prisoners
- Homeless individuals and
- Persons with HIV infection (chapter 10).

### 9.1 Healthcare Workers

Estimates of the risk of infection in HCWs vary according to time, geographical location, exposure intensity and duration (depending on type of hospital and job category).<sup>319-321</sup> In low-incidence countries, active disease among HCWs is often associated with non-occupational exposures.<sup>322</sup> Two UK studies reported that the risk of active disease in HCWs was two to three times higher than in the general population when matched for employment and socioeconomic status.<sup>323,324</sup> A questionnaire-survey of incidents involving potential transmission from HCWs found 105 incidents occurred in 2005, which mainly included non-UK born doctors and nurses, despite occupational screening at employment. Infection is thought to have been acquired in the past in their country of origin.<sup>325</sup> In 2006, HCWs were found to comprise 5% of all notified cases of TB in the United Kingdom, and were more likely to be non-UK born (89%) and female (67%).<sup>14</sup> In Ireland, the proportion of annual TB cases reported in HCWs has increased slightly from 5.7% in 2002 to 7.3% in 2006 (personal communication, HPSC). Between 2002 and 2006, 68.4% of HCW cases were aged between 20 and 40 years of age. Forty-two percent were Irish born individuals with the majority of non-Irish born HCWs originating from India (34.6%), Pakistan (15.4%) and the Philippines (12.8%).

#### Recommendation:

A pre-placement screen is recommended for all clinical staff working with patients or clinical specimens (this may also be applicable to ancillary staff as determined by a risk assessment).

#### Health questionnaire

All new HCWs should initially complete a pre-placement health declaration undertaken by occupational health which includes screening questions for active TB, details of previous immune status investigations and BCG status.

The following information should be recorded:

- Suggestive symptoms
- History of BCG (scar check by health professional or documentary evidence of date or age administered)
- Previous history of TB disease (dates or age, duration and type of treatment, name and address of treating physician) including family history
- Previous TST and result within the previous 5 years if available (documentary evidence of date/age, type of test and result, name and address of treating physician) and
- History and details of contact with known cases of TB (date/age, relationship to the case/s, degree of infectivity of the case).<sup>326</sup>

#### Recommendation:

If an employee has unexplained and suggestive symptoms such as cough lasting three or more weeks that is unresponsive to usual interventions and weight loss or fever, a chest X-ray and sputum examination should be carried out. Such employees should not start work. If an employee has no suspicious symptoms, completion of the pre-placement questionnaire should be followed by an appropriate medical evaluation.

#### Medical evaluation

In the US, CDC recommend that baseline testing for TB is performed for all new healthcare workers, regardless of their occupational risk of exposure to TB.<sup>229</sup> It is the view of this committee that in Ireland, screening of new employees (undertaken by occupational medicine) by TST (2TU Mantoux) should be prioritised as follows:

- **High priority\*\*\*\***  
HCWs arriving in Ireland (or returning to Ireland) from countries with a high incidence of TB ( $\geq 40/100,000$  TB cases notified per year). Such individuals require a chest X-ray (provided they are not pregnant) to rule out active TB in addition to a TST (2TU Mantoux test) to detect LTBI regardless of BCG vaccination status (section 9.2).<sup>326</sup>
- **Intermediate priority††††‡‡‡‡**  
HCWs (regardless of BCG status and not in the high priority group ) working in units managing and treating patients with MDR-TB or XDR-TB and patients who are immunocompromised, physiotherapists, laboratory,<sup>327</sup> mortuary,<sup>275</sup> endoscopy and bronchoscopy staff <sup>229,278,328</sup> should all have a TST (2TU Mantoux test) to rule out LTBI or active TB.
- **Low priority**  
In this group, TST is only offered to those who have no (or inconclusive) evidence of prior BCG vaccine.<sup>326</sup> This group constitutes the vast majority of HCWs. The Mantoux test is undertaken in this situation to obtain a baseline in case of future exposure in the healthcare setting and to offer BCG vaccine if necessary.

\*\*\*\*This prioritisation is based both on the increased likelihood of the HCW having TB due to country of origin and because of this the increased risk of transmission to patients if TB is undetected.

††††This prioritisation is based on both the procedures undertaken by the HCW which increases their risk of contracting TB and also on the risk of transmission to immunocompromised patients if the HCW has TB.

‡‡‡‡Healthcare associated transmission of *M. tuberculosis* has been linked to close contact with persons with TB disease during aerosol-generating or aerosol-producing procedures including bronchoscopy, autopsy, sputum induction, endotracheal intubation and open abscess irrigation.

## HCWs-Tuberculin Skin Testing

### Recommendation:

HCWs from countries of high TB incidence ( $\geq 40$  cases of TB per 100,000 per year) with a positive TST (Mantoux test) defined as  $\geq 10$ mm (table 2.1) should be referred to a respiratory or infectious disease clinician (with a chest X-ray) for a medical assessment to rule out TB disease or LTBI. However, an occupational medicine consultant may wish to treat these patients if appropriate protocols, audit of care and resources are in place.

Irish HCWs or HCWs from low incidence countries ( $< 40$  cases of TB per 100,000 per year) with a positive TST (Mantoux test) defined as  $\geq 15$ mm (table 2.1) should be referred to a respiratory or infectious disease clinician (with a chest X-ray) for a medical assessment to rule out TB disease or LTBI. However, an occupational medicine consultant may wish to treat these patients if appropriate protocols, audit of care and resources are in place.

Treatment for active TB should be considered in HCWs with a positive TST (as outlined above) if the chest X-ray is abnormal, and treatment for LTBI if the chest X-ray is normal and signs and symptoms of disease are absent. IGRA testing may be used as a confirmatory test in those individuals with a positive TST.

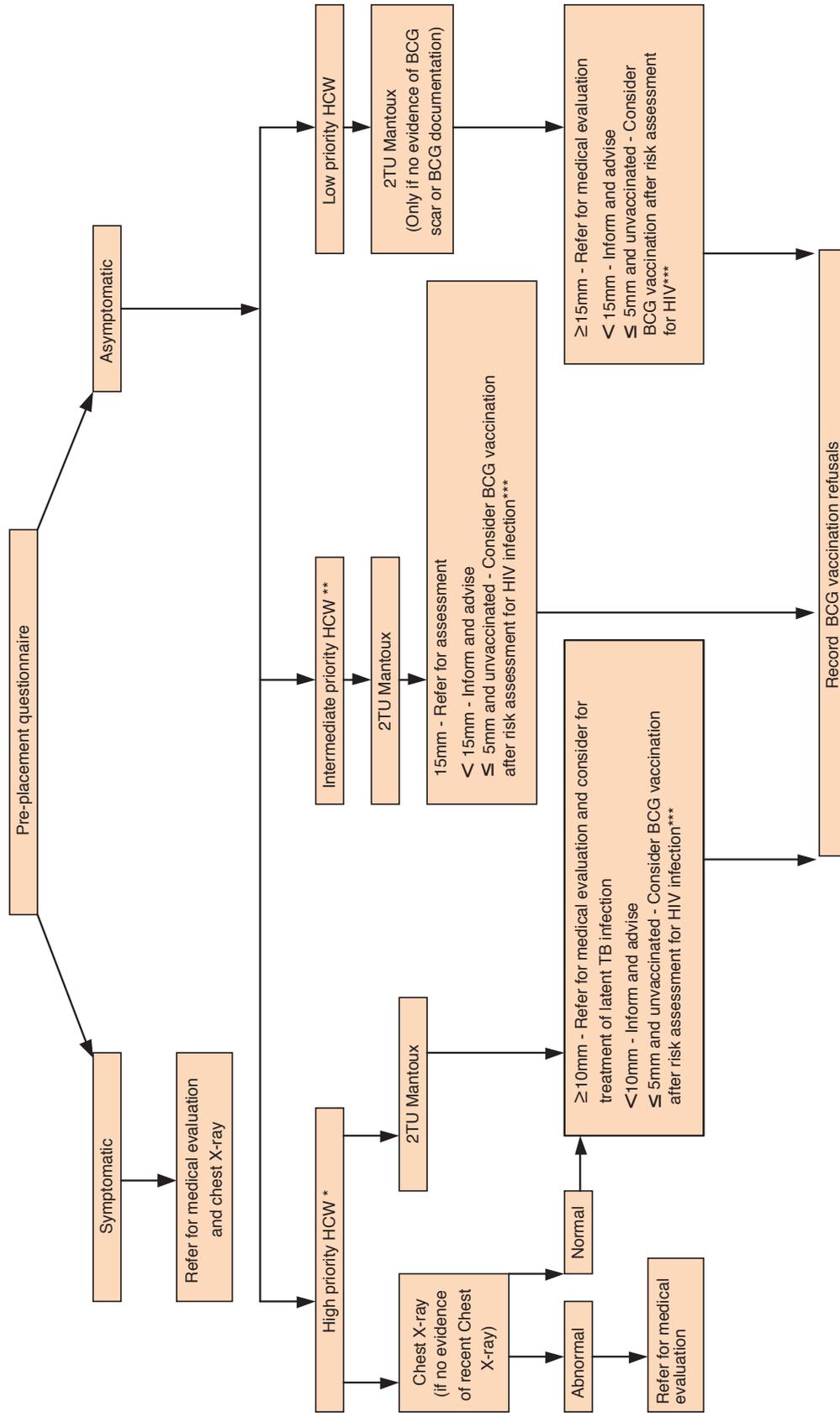
HCWs with active TB should not work while infectious (chapter 6). They will be advised in this regard and when to return to work following joint discussion between the treating physician and the occupational medicine consultant. The employer will need to consider each case individually taking account of employment and health and safety obligations.<sup>329</sup>

If HCWs with LTBI refuse treatment, the risk of developing TB disease should be explained to them including health and safety issues and the oral explanation supplemented by written advice (see information leaflet in appendix 6). In addition, they should be advised to report promptly to the occupational health department if they become symptomatic. All HCWs should complete an annual health questionnaire and be given an annual reminder of the signs and symptoms of TB disease and actions required if they become symptomatic (appendix 6).

The following groups should be informed of the signs and symptoms of TB and advised to seek prompt medical attention if they develop these symptoms (see figure 9.1):

- Employees from high incidence countries ( $\geq 40$  cases per 100,000 per year) with a TST result  $\leq 10$ mm
- All other employees with a TST result  $\leq 15$ mm.

Figure 9.1: Algorithm for screening new health care workers (HCWs)



\* All HCWs from countries with annual TB rates  $\geq 40$  per 100,000 population as described in section 9.1

\*\* All indigenous HCWs and HCWs from countries with annual TB rates  $< 40$  per 100,000 population who are working in high risk areas as described in section 9.1

\*\*\* BCG is indicated for unvaccinated healthcare workers (HCWs) aged  $< 35$  years who are TST negative and who will have contact with patients or with clinically contaminated materials. Not all HCWs are at equal risk of TB. A risk assessment should be carried out to see if BCG is indicated for unvaccinated HCWs aged 35 years and older who are TST negative, taking into account their country of origin and the nature of their work. For more details see page 114.

BCG is indicated for unvaccinated healthcare workers (HCWs) aged <35 years who are TST negative and who will have contact with patients or with clinically contaminated materials.

Not all HCWs are at equal risk of TB. A risk assessment should be carried out to see if BCG is indicated for unvaccinated HCWs aged 35 years and older who are TST negative, taking into account their country of origin and the nature of their work. For more details see page 114.

BCG should only be offered to such individuals if deemed appropriate following a risk assessment for HIV (chapter 7). If an employee declines BCG vaccination, the risks should be explained and supplemented by written advice. It is not advisable that such individuals work where there is a high risk of exposure, however judgements should be made on a case-by-case basis taking account of employment and health and safety obligations.<sup>329</sup> Individuals who decline and are classified as high or intermediate priority HCWs should be offered an annual TST (Mantoux test). Previously vaccinated TST negative employees should not receive a second BCG vaccination.

HCWs arriving in Ireland to work for one to two years from low- and medium-incidence countries without programmes of HCW BCG vaccination (Australia, New Zealand and North America) should all receive a baseline TST. If the TST is negative, they should be informed and advised of the symptoms of TB and of the need to be assessed if they are exposed to TB in the future. However, HCWs from these countries intending to work in high-risk locations e.g. units specialising in the care and treatment of MDR-TB or XDR-TB and immunocompromised patients should be offered BCG vaccination. An annual TST should be offered to those HCWs who belong to the high and intermediate priority categories who decline BCG vaccine.

### **Employees from countries with a high incidence of tuberculosis**

Often HCWs from high incidence countries supply results of TB screening performed in their country of origin. The quality and authenticity of these results should be considered. Chest X-rays should contain the individual's name, date of birth, passport number and be co-signed by the radiographer and the healthcare worker and performed within the previous three months. Chest X-rays that do not meet Irish standards should be repeated. Employees with abnormal chest X-rays and/or signs or symptoms of TB should be referred to a TB clinic.

### **Follow-up**

The professional code of practice from regulatory bodies in the UK and Ireland requires HCWs exposed to a communicable disease to promptly seek and follow professional advice about testing and treatment. This reduces the need for repeat testing. It is recommended that annual reminders of the signs and symptoms of TB are circulated in healthcare settings or a one-off reminder provided following a TB incident on a ward. Those working in high risk facilities or wards should maintain an increased awareness of TB.

Issues of compliance with screening, vaccination and treatment are some factors likely to affect outcomes from occupational screening programmes.<sup>330</sup>

## **9.2 New Entrants to Ireland**

The incidence of TB in immigrants has been rising in some previously low-incidence countries. Patients born outside the UK represented 72% of all TB cases in England, Wales and Northern Ireland in 2007.<sup>15</sup> A much lower rate was observed in Ireland, with approximately one third of annual notifications in 2006 born outside Ireland.<sup>19</sup> In the same year, the crude TB rate in the indigenous population in Ireland was 8.3/100,000 and 26.3/100,000 in the foreign-born population, with the majority from Asia (36.6%) and Africa (36%) and a smaller proportion from Europe (21%).<sup>19</sup> In addition, the percentage of all TB cases in the foreign-born has risen from 16.5% of cases in 2001 to 34.6% in 2006.<sup>19</sup> The incidence of disease in immigrant groups is high particularly within the first few years following arrival, principally due to reactivation of latent infection. Infected individuals entering the UK are most likely to develop TB disease within five years of entry.<sup>331</sup> Immigrants are often at increased risk of disease as they can originate from countries with a high incidence of TB and HIV.

All new entrants to Ireland who originate from a country with a high incidence of TB should be provided with an opportunity to be screened for TB. Every effort should be made to identify candidates either at

reception centres for asylum seekers or by immigration authorities who would in turn notify the relevant HSE areas. Ideally, GPs should refer newly arrived individuals to a combined public health/TB clinic for screening. New entrants are defined as those who have recently arrived or returned from a country with an incidence of TB of  $\geq 40$  cases per 100,000 population per year and will be spending at least three months in Ireland.

**Recommendation:**

All new entrants to Ireland who originate from a country with a high incidence of tuberculosis ( $\geq 40$  cases per 100,000 population per year) and will be spending at least three months in Ireland should be provided with an opportunity to be screened for TB.

Improved access to care for new entrants and especially illegal migrants is important for TB control. A good follow-up system is very important to maximise the yield from entry screening. Proper follow-up is needed to minimise withdrawals during screening and to maximise coverage of the target group as well as treatment adherence. Screening for active TB disease can only be beneficial for public health if treatment success rates are high. A continuum of TB diagnosis, care and support needs to be offered to new entrants at high risk for TB. It should also be recognised that TB prevention and control is not the only service that new entrants need. Specific TB care should be offered in the context of a holistic approach to ensure the health and well being of new entrants.

**HIV infection**

TB is the most common opportunistic infection in HIV-infected individuals. HIV infection acts by weakening the immune system, thereby heightening susceptibility to infection and progression to active TB. It is not known how many new entrants with TB are tested for HIV. WHO initiated their ProTEST initiative (Promote HIV voluntary counselling and testing) in 1997 to campaign for improved collaboration between TB and HIV programmes. This initiative was aimed at promoting voluntary testing for HIV as a means of ensuring a more inclusive approach to dealing with TB in areas with a high prevalence of HIV.

Screening for HIV should be accompanied by culturally sensitive counselling and support (chapter 10).

**Recommendation:**

An expanded programme of screening for TB including voluntary screening for HIV in new entrants should be established. The committee believes that this should be part of a broader health screening programme to improve the health of new entrants to Ireland.

The 2004 DoHC<sup>332</sup> guidance on '*Communicable Disease Screening for Asylum Seekers*' recommended that all new entrants to the Irish health care system undergo screening for TB. This is important as new entrants are most likely to develop disease within five years of entry and in particular, within the first two years of arrival.<sup>331</sup> TB screening for active disease and LTBI should be encouraged.

*Health questionnaire*

A health questionnaire should be undertaken for all new entrants, and enquire into past history of TB and BCG status, current symptoms, and recent contact with a TB case. All new entrants should complete a health screening questionnaire and those with symptoms should be urgently referred to a TB clinic for further clinical assessment (chest X-ray and sputum smear direct examination).

<sup>333</sup> These countries include Botswana, Cambodia, Djibouti, Lesotho, Namibia, Sierra Leone, South Africa, Swaziland, Timor-Lest, Zambia and Zimbabwe.

### *Chest X-ray*

Chest X-rays should be offered to all new entrants aged  $\geq 16$  years (provided they are not pregnant). All those with abnormal chest X-ray results suggestive of active disease or of inactive TB (chapter 2) should be referred for medical evaluation. Treatment of LTBI should be considered in those with radiological evidence of inactive TB. Asymptomatic individuals with a normal chest X-ray in a selected group i.e. those aged 16 to 35 years from sub-Saharan Africa or a country with a TB incidence greater than 500 per 100,000<sup>§§§§</sup> should be offered a TST (2TU Mantoux test) regardless of BCG vaccination status.

### *TST (Mantoux test)*

#### Individuals $\geq 16$ years

Asymptomatic individuals with a normal chest X-ray in a selected group i.e. those aged 16 to 35 years from sub-Saharan Africa or a country with a TB incidence greater than 500 per 100,000<sup>§§§§</sup> should be offered a TST (2TU Mantoux test) regardless of BCG vaccination status. Pregnant females (no chest X-ray, see above) should also have a TST (2TU Mantoux test), regardless of BCG vaccination status. A risk assessment for HIV should be undertaken for all individuals having a TST or receiving BCG vaccination which takes into account the HIV rates in the individual's country of origin.

Those with TST results  $\geq 10$ mm should be referred for further medical evaluation and considered for LTBI treatment. Individuals with TST results  $< 10$ mm should be informed and advised of the signs and symptoms of TB disease and asked to seek medical care if they experience these symptoms. Consider BCG vaccination for all those aged  $\leq 35$  years with TST results  $\leq 5$ mm who are previously unvaccinated (figure 9.2 - see page 120).

While all age groups should be considered for treatment of LTBI, care should be taken when prescribing LTBI therapy for those with co-morbidities which increase the likelihood of hepatotoxicity. The use of DOT should also be considered in this population (chapter 3).

#### Individuals $< 16$ years

##### 1. Unvaccinated (BCG)

New entrants aged 0 to 15 years should be screened initially by health questionnaire and TST (2TU Mantoux test). All those under 16 years of age with a negative TST result ( $\leq 5$ mm) should be offered BCG vaccination after consideration has been given to the individual's HIV status.

Unvaccinated children under five years of age with a Mantoux reading of 6-9 mm should be referred to a TB clinic where treatment for LTBI should be considered if the chest X-ray is normal. Unvaccinated children aged five to 15 years with a Mantoux reading of 6-9mm and without a history of recent contact with a TB case should be advised of the signs and symptoms of TB. All unvaccinated children (aged 0 to 15 years) with a Mantoux reading of  $\geq 10$ mm should be referred to the TB clinic where chemoprophylaxis should be considered if the chest X-ray is normal (figure 9.2 - see page 120).

##### 2. Vaccinated with BCG

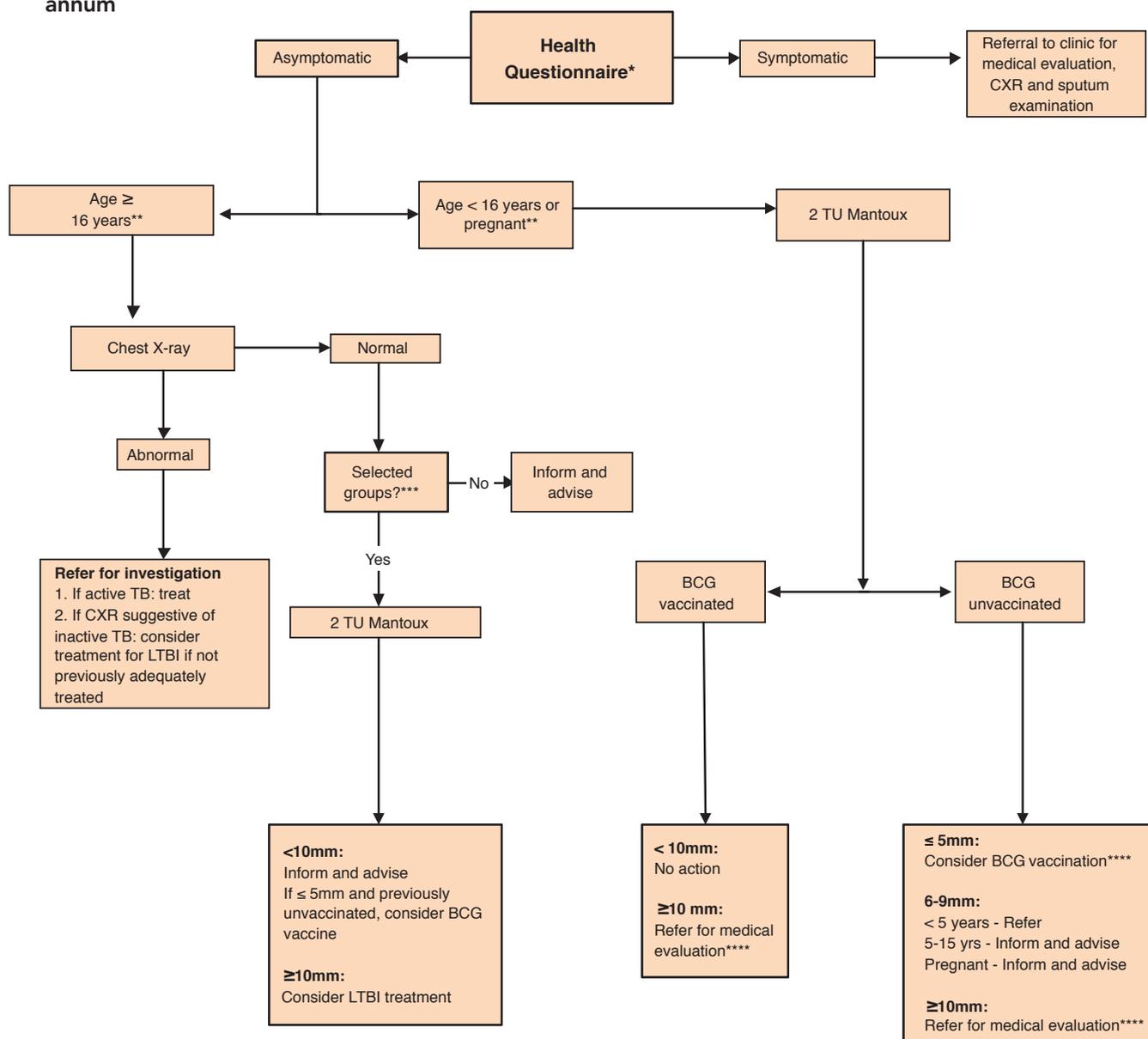
Vaccinated children should be referred for a chest X-ray and chemoprophylaxis considered if the Mantoux reading is  $\geq 10$ mm. If the result is  $< 10$ mm, no further action is required.

### *IGRA testing*

Foreign-born individuals can have a higher incidence of LTBI and may be more likely to have clinical conditions such as HIV infection that increase the likelihood of reactivation of LTBI.<sup>296</sup> False-negative TST results have been observed in such individuals.<sup>296</sup> Although the use of IGRA in screening new entrants has not clearly been demonstrated to date, the use of IGRA can be considered:

- As a confirmatory test in those individuals with a positive TST
- In screening new entrants with concomitant conditions that increase the individual's risk of reactivation of LTBI.

<sup>§§§§</sup> These countries include Botswana, Cambodia, Djibouti, Lesotho, Namibia, Sierra Leone, South Africa, Swaziland, Timor-Lest, Zambia and Zimbabwe.

**Figure 9.2: Algorithm for screening new entrants from countries with  $\geq 40$  cases of TB per 100,000 per annum**

\*If history of recent contact with an infectious TB case, follow algorithms 8.1 and 8.2, Chapter 8.

\*\* All persons from countries with annual TB notifications  $\geq 40/100,000$

\*\*\*Age 16-35 years from sub-Saharan Africa or a country with TB incidence  $> 500/100,000$

\*\*\*\* Timing of X-ray and BCG may be dependent on pregnancy status

### 9.3 Prisons, Remand and Detention Centres

High TB incidence rates<sup>308</sup> and outbreaks associated with multidrug-resistance and HIV co-infection<sup>309;311</sup> have been observed in prison populations in recent decades. High rates have been attributed to a disproportionate number of prisoners being of low socioeconomic status, at risk of disease due to alcohol, substance misuse, HIV infection and having recently arrived from areas of high endemicity (the risk of disease development is greatest within five years or arrival).<sup>331</sup> Prison facilities can often be over-crowded, poorly ventilated, with prisoners living in close proximity.<sup>333-336</sup> Short stays and movement between and within prison facilities increase the likelihood of exposure to TB patients and enhance the potential for transmission. This mobility also creates difficulties for the implementation of control strategies. Despite this, the congregation of many disadvantaged individuals in this setting provides an opportunity to improve the health of those who may not otherwise receive medical care.

### Screening in prisons

TB screening in prisoners should be provided as part of a routine health professional-led health screening exercise on entry to prison. The 1996 TB guidelines recommended routine use of a simple questionnaire on entry to prison, followed by chest X-ray to investigate only those with signs and symptoms.<sup>113</sup> Ideally, inmate screening should be undertaken at the beginning of every prison sentence in order to identify active cases of disease and latent infection and to initiate treatment before individuals join the main prison population.<sup>312</sup>

At a minimum, all prisoners should be screened for symptoms using a health questionnaire at entry. Symptomatic inmates should have a chest X-ray, three sputum samples (at least one of which is a morning sample), and should be isolated from the main prison population until microscopy results can verify the individual's sputum smear status.<sup>26</sup> Symptom screening alone is unsatisfactory in facilities where TB has been detected and where factors for increased risk of TB exist (e.g. prisoners with a condition/factor that increases the risk of TB, environmental factors).<sup>312</sup> Ideally, HIV testing should be offered as part of routine health screening for prisoners starting every prison sentence (assists interpretation of TST, also HIV infection is a contraindication for BCG vaccination).<sup>312</sup>

A risk assessment should be undertaken to establish an increased risk for TB transmission. Facilities at increased risk of transmission include the following:

- Documented cases of infectious TB have occurred in the facility in the last year
- The facility houses substantial numbers of inmates with risk factors for TB (e.g. HIV infection and injection-drug use) and
- The facility houses substantial numbers of new immigrants (i.e. persons arriving in Ireland within the previous 5 years from countries where the annual TB notification rate is  $\geq 40$  cases per 100,000).<sup>312</sup>

If the facility is deemed high risk, then individuals should be screened with a TST (2TU Mantoux test) and if this is positive, a chest X-ray will be required.<sup>312</sup>

Prisoners with a positive TST result or abnormal chest X-ray should be referred to a TB clinic. In congregate settings, a TST induration of 10mm<sup>312</sup> or greater is considered a positive result (for both prisoners and prison workers) (see table 2.1). An induration of greater than 5mm is positive in:

- Persons who are recent contacts of patients with TB disease
- Persons with fibrotic changes on their chest radiograph consistent with previous disease
- Organ transplant recipients
- Immunocompromised individuals (including persons with HIV) and
- Persons suspected of having TB disease.

Prisoners with a TST result of  $\geq 10$ mm and normal chest X-ray findings should be considered for LTBI treatment. Treatment of LTBI should be administered under medical supervision designated by the prison service. If prisoners decline LTBI treatment, a questionnaire screening for symptoms of TB should be completed annually. Chest X-ray follow-up at three and 12 months is also recommended.

HIV-infected or other immunosuppressed inmates (or those with other clinical conditions that render individuals at greater risk of latent infection) should have a TST and an IGRA test (which may be considered in light of false-negative TST results in immunocompromised individuals) to detect LTBI in addition to a chest X-ray to rule out active TB disease.<sup>312</sup>

A multidisciplinary approach to treating a case of active TB disease or LTBI is advised. The decision to refer an infectious case to a tertiary facility should be considered by the treating physician, consultant microbiologist, public health and the prison services. Individuals admitted for inpatient care in tertiary medical facilities should only be discharged back to the prison facility when the patient is deemed non-infectious (as defined in chapter 6).

Prison medical services should have liaison and handover arrangements to ensure continuity of care before any prisoner on TB treatment is transferred between prisons.<sup>26</sup>

**Recommendation:**

A programme of screening for TB in prisoners should be provided.

Prisoners should receive chemotherapeutic treatment for active disease or LTBI by DOT, as high rates of treatment failure have been observed in this population.<sup>337</sup> Patients undergoing any form of TB treatment should be assigned a key worker (a health professional) to promote compliance, monitor treatment effectiveness and the occurrence of adverse events.<sup>26</sup>

Prison medical services should liaise with community TB services to ensure the continuation of DOT after release from prison.

**Prison staff**

New staff should receive pre-placement screening which is equivalent to screening undertaken for new HCWs.<sup>26</sup> BCG should be offered to prison workers aged 35 years and under<sup>26;255;257</sup> if they are previously unvaccinated and tuberculin negative ( $\leq 5\text{mm}$ ) (chapter 7).

A high index of suspicion for TB should be maintained in all prisons and prison HCWs should raise awareness of TB symptoms among prisoners and staff. It is important that prison officers are educated to recognise the signs and symptoms of TB, the need to seek an early diagnosis by referral, methods of diagnosis and the effectiveness of treatment, the importance of compliance with TB treatment and monitoring for adverse events.

**9.4 Homeless Individuals**

Elevated rates of TB have been found in homeless individuals in low incidence countries.<sup>338, 339</sup> Many have concomitant risk factors for TB such as substance misuse, immunosuppression and malnutrition. High levels of infectious and drug resistant TB have been observed and poor adherence to treatment regimens and loss to follow up care in this population pose a challenge to TB control.<sup>340</sup> Providing health services to this high risk group is problematic, as they are often mobile and hard-to-reach through conventional channels. Therefore, screening in this population should focus on the detection of active disease.

**Recommendation:**

An opportunistic active case finding strategy is advised among homeless individuals. Screening by chest X-ray is recommended. TST and IGRA are believed to be less useful, as people may move before test reading/results are available.<sup>26</sup>

Screening on an opportunistic basis and/or symptomatic basis is advised, as is the use of incentives (hot drinks/snacks).<sup>26</sup> A recommendation on the frequency of screening was not made by the NICE guideline development committee due to an absence of evidence, whilst in other European countries, e.g. the Netherlands, illicit drug users and homeless individuals are screened twice per year by digital chest X-ray for two years (this is already used for screening prisoners and asylum seekers).<sup>341</sup> Although routine screening of homeless individuals is a preferred strategy for detecting disease in this high risk population, it is recognised that this is not always possible. Therefore, screening of homeless individuals in accordance with UK guidance is recommended.<sup>26</sup> As homeless individuals are at risk of failing to complete treatment, appropriate steps should be taken to encourage compliance.

**Recommendation:**

Nomination of a key worker for homeless patients receiving treatment and the provision of DOT are considered an optimal strategy for treatment completion.

In addition, statutory and voluntary organisations working with homeless individuals should be educated about TB and referral pathways, as this can aid early detection of disease.