Guidelines for Tuberculosis Control in New Zealand 2010
Chapter 7: Contact Investigation
Acknowledgements

These guidelines have been updated with contributions by:
Dr Andrew Woodhouse
Mr Arthur Morris
Dr Cass Byrnes
Dr Cathy Pikholz
Dr Chris Lewis
Dr Don Bandaranyake
Ms Helen Heffernan
Dr Joshua Freeman
Dr Lesley Voss
Dr Margot McLean
Dr Mark Thomas
Dr Mitzi Nisbet
Dr Nigel Raymond
Dr Noel Karalu
Dr Peter Martin
Dr Sally Roberts
Ms Sharnita Singh
Contents

Summary 1

1 Contact Investigation 2
   1.1 Structuring a contact investigation programme 2
   1.2 Establishing limits for contact investigations 2
   1.3 Determining the period of infectiousness 3
   1.4 Identifying contacts to be assessed 3

2 Assessing Risks 4
   2.1 Assessing contacts’ risks for progression to disease 4
   2.2 Assessing the risk of infection 4

3 Medical Assessment and Management of Contacts 5
   3.1 Overview of medical assessment 5
   3.2 Mantoux or interferon gamma release assay testing 6
   3.3 Children aged under five years 7
   3.4 Pregnancy 7
   3.5 Initial chest X-rays 8
   3.6 Treatment of latent tuberculosis infection (LTBI) 8
   3.7 Monitoring of people not being treated 8
   3.8 Contacts of MDR-TB cases 8
   3.9 Contacts with TB symptoms who refuse follow-up 8
   3.10 BCG vaccination 9
   3.11 Non-tuberculous mycobacteria 9

4 Contact Investigations in Special Circumstances 10
   4.1 Hospitals and other health care facilities 10
   4.2 Schools 11
   4.3 Correctional facilities 11
   4.4 Aircraft contact investigations 11
   4.5 Outbreaks 12

5 Practical Aspects of Contact Investigation 13
   5.1 Documentation 13
   5.2 Education 13
   5.3 Cross-cultural communication 13
   5.4 Public health follow-up of non-infectious tuberculosis 13
   5.5 Repeat contact tracing for re-exposed contacts 15
   5.6 DNA fingerprinting 15
   5.7 Source cases discharged into community while smear-positive 15
   5.8 Communication 15
   5.9 Media management 16
   5.10 Reviewing local findings 16

References 19
List of Figures

Figure 1.1: Concentric circle approach to contact tracing 3
Figure 3.1: Contact investigation flow chart 6
Figure 5.1: Contact record form 17
Figure 5.2: Summary of contact information 18
Summary

This chapter provides guidance on conducting a contact investigation, including extent of follow-up, medical assessment of contacts exposed to tuberculosis (TB), and the importance of communication and liaison.

All contact tracing exercises should be supervised by the medical officer of health of the district in which the index case is notified. The chapter is intended to guide public health and other health staff who may be involved in contact tracing, including DHB occupational health and infection control staff. General practitioners and other clinical staff should not undertake contact tracing activity for TB, but may find the chapter useful if one of their patients has been identified as a TB contact.

The aim of contact investigation is to minimise morbidity resulting from transmission of tuberculosis (TB). The objectives of contact investigation are to:

- identify infected contacts who may require treatment of TB disease or latent TB infection (LTBI)
- identify uninfected contacts under the age of five years who may benefit from BCG vaccination
- identify the source case if not known
- identify environmental factors that may be contributing to the transmission of TB
- educate contacts about TB.

Contact tracing activity should be audited periodically to ensure quality and consistency with guidelines and to inform future work.
1 Contact Investigation

1.1 Structuring a contact investigation programme

Refer to the Centers for Disease Control and Prevention 2005 Guidelines for the Investigation of Contacts of Persons with Infection Tuberculosis for more detailed information if required.\(^1\)

1.1.1 Establishing priorities

The estimated probability of transmission (section 2.2) will influence the priority, rapidity and extent of contact investigation.

1.1.2 Classifying contacts

The first step is to allocate contacts into groups with higher and lower risk of infection.

Members of the immediate household and others who have shared accommodation with the index case are close contacts and are usually the top priority. However, contacts in work, leisure or other settings are not always ‘casual’ contacts.

Work sites should be visited: if there is overcrowding and poor ventilation these contacts may be considered ‘close’.\(^2\) Other settings such as church groups may also result in significant exposure.\(^3\) Contact tracing is often unnecessarily extensive in schools,\(^4,5\) but a large outbreak in a New Zealand school required the whole school to be screened.\(^6\)

See section 4 for more information on contact tracing in special circumstances.

1.2 Establishing limits for contact investigations

The concept of the ‘stone in the pond’ or ‘concentric circle’ is used to limit contact investigations (see Figure 1.1).\(^7,8\)

By initially evaluating the higher-risk contacts for evidence of TB infection and/or disease, the infectiousness of the index case can be inferred. To limit the extent of a contact investigation follow these guidelines.

1 Start with higher-risk contacts. If there is no evidence of recent transmission of infection in this group, do not extend the investigation.

2 If investigations suggest recent infection in the higher-risk group, extend to progressively lower-risk contacts until the levels of infection detected approximate the likely levels of infection in the local community.

3 Periodically review the findings to determine whether to stop or extend the investigation.
1.3 Determining the period of infectiousness

Contact investigation should extend back to the date of onset of cough in the index case or for three months if the date of onset of cough is unknown or there is no history of cough. The period of inquiry about contact exposure may also need to be extended if the source case is highly infectious (see section 2.2).

1.4 Identifying contacts to be assessed

Screening of contacts by the public health service should begin as soon as possible after notification. The recommended timeframes for starting contact assessment after notification are within:

- three working days for contacts of a smear-positive pulmonary case
- three working days for child contacts (under five years of age) of any pulmonary case
- seven working days for contacts of a smear-negative pulmonary case
- seven working days for all other cases.

As soon as the case is notified, a public health nurse should inform the household that a contact investigation will be taking place soon and reassure them that there is no immediate threat to their health. The household should be given an estimated date for the public health nurse’s first visit.

At the initial interview with the index case, explain why infected contacts need to be identified. Ask the index case for a list of all close and casual contacts during the period of infectiousness. This question should be asked again in subsequent weeks, as a patient may not remember every contact at the first interview or may initially be reluctant to divulge names and details.
2 Assessing Risks

Consider risk factors for infection and for progression to disease separately.\textsuperscript{11}

2.1 Assessing contacts’ risks for progression to disease

The risk factors for each contact should be assessed. Factors increasing the risk of progression to disease include very young or old age, immuno-suppression and certain concurrent medical conditions. These conditions are listed in Chapters 2 and 8. They must be taken into account when planning a contact tracing exercise.

A contact who is at relatively low risk of infection but at high risk of disease (if infected) warrants careful follow-up. For example, a relatively low dose of inhaled organisms may pose a serious risk of disease to an HIV-positive person with a low CD4 count.

2.2 Assessing the risk of infection

2.2.1 Source case characteristics

Important source case characteristics indicating a higher risk of transmission include:

- sputum status – large numbers of acid-fast bacilli on direct smear
- extensive pulmonary disease
- cavitatory disease
- frequent cough
- laryngeal TB.\textsuperscript{12,13}

In the case of MDR-TB, contacts should be rapidly identified and evaluated. Close contacts of an infectious MDR-TB case, especially those who are aged under five years or are immunocompromised, are especially important to screen.

2.2.2 Duration and proximity of contact

Risk of infection is greatest for contacts who have been closest to the source case for the longest time.

Usually it takes many hours or days to transmit an infectious dose, but casual exposures may lead to transmission if the case is sufficiently infectious and the environmental air conditions are favourable or if the contact is at high risk of infection.\textsuperscript{14,15}

2.2.3 Environmental air factors

Droplet nuclei are transported from the source through the air; the greater the concentration in air, the greater the risk to contacts. The degree of ventilation or filtration in the environment is important (see Chapter 12).
3 Medical Assessment and Management of Contacts

3.1 Overview of medical assessment

Contacts are investigated by:

- inquiring into symptoms of TB disease
- assessing the risk profile and BCG vaccination status
- Mantoux or interferon gamma release assay (IGRA) testing
- chest X-ray (CXR) examination, if appropriate.

The results of the investigation determine:

- whether the contact is likely to have been infected
- if the contact is infected, whether investigation for possible active or inactive TB is needed or treatment for latent TB infection is appropriate
- the type of TB education that should be offered.

An overview of contact investigation is shown in Figure 3.1.
3.2 Mantoux or interferon gamma release assay testing

The Mantoux reaction takes up to eight weeks to convert after exposure.\textsuperscript{16} If the contact is identified more than eight weeks after their last exposure to the case, only one test is necessary. IGRA tests also require a ‘window period’ of at least eight weeks.\textsuperscript{17}

If the contact is identified less than eight weeks after their last exposure to the case, then it may be possible to demonstrate conversion. Two Mantoux or IGRA tests are necessary: one as soon as the contact is identified and, if that is negative, a second test eight weeks after the last exposure to the infectious case. However, if the person develops symptoms of possible TB disease during this interval, second test should be administered without delay and investigations for TB disease started.

If the contact has a pre-existing documented Mantoux or IGRA result within the past 12 months, an initial baseline test is not necessary (see Chapter 8). If the person has previously had TB disease, or an earlier Mantoux of 15 mm or more, screening will need to be with IGRA and CXR.
3.3 Children aged under five years

In young children (aged under five), the risk of developing TB disease after infection is as high as 40%, especially in infancy, and disease can develop within weeks of infection.20

Mantoux rather than IGRA is recommended for children aged under seven years.

3.3.1 Close contacts

Refer all children aged under five years who are close contacts of pulmonary cases to a specialist.

If Mantoux-positive, a child under five should receive treatment for presumed latent TB infection (LTBI).

If Mantoux-negative (< 5 mm), preventive treatment for possible LTBI should be given for eight weeks, when a second Mantoux test is done.

If the Mantoux converts, a CXR is done and treatment is continued until complete. If the Mantoux increases by less than 10mm (so does not reach the criteria for conversion) the paediatrician should consider continuing treatment until complete, especially if the child is under two years of age.

If the Mantoux remains negative, treatment is stopped and BCG vaccination offered.

3.3.2 Casual contacts

Children with casual exposure to a pulmonary case should be referred to a paediatrician only if the tuberculin test is positive or becomes positive on a second test.

3.3.3 Mantoux or IGRA positive individual in a house containing an infant

If a Mantoux or IGRA positive individual is found in a house containing an infant (under one year old), enquire about TB symptoms in all adults and adolescents in the household in case there is a source case who may infect the infant.

3.4 Pregnancy

The Mantoux test is safe in pregnancy. Mantoux or IGRA positive contacts need investigation.

- if there are no symptoms of TB disease, CXR can usually be deferred until after the pregnancy, or at least until after the first trimester. CXR should be done with shielding

- discuss with a TB specialist if there are concerns about symptoms or the risk factor profile in those with a Mantoux test > 15 mm or positive IGRA. The public health and clinical TB specialists should discuss with the lead maternity carer and woman to determine if the risk justifies investigation for TB disease or treatment of LTBI.
3.5 Initial chest X-rays
Contacts require a CXR if:
- they have symptoms of TB
- they have a positive Mantoux or IGRA or a conversion
- the contact is a child aged under five who is a contact of pulmonary case (such children should have a CXR before starting treatment irrespective of their Mantoux reaction)
- a false-negative Mantoux or IGRA is suspected, especially in patients with immunosuppression or age over 60 (see Chapter 8).

3.6 Treatment of latent tuberculosis infection (LTBI)
People who are Mantoux or IGRA positive must be considered for treatment of LTBI (see Chapter 8).

3.7 Monitoring of people not being treated
People at higher risk of developing TB disease, who have declined treatment or for whom the decision has been made not to treat for LTBI, should be monitored with CXRs at six, 12 and 24 months. This group includes:
- children aged under five who are close contacts of smear- or culture-positive cases
- HIV-positive contacts
- contacts of multi-drug-resistant (MDR-TB) source cases
- people with inactive fibrotic scars on CXR.

CXR monitoring of other people who are untreated for LTBI is not usually recommended.

3.8 Contacts of MDR-TB cases
The balance of benefits and harms associated with treatment of LTBI in people exposed to MDR-TB is unclear. Whether they are treated for LTBI or not, all contacts of MDR-TB cases should be educated about the need for lifelong awareness of the symptoms and signs of active TB disease, and should be monitored closely for at least two years.

3.9 Contacts with TB symptoms who refuse follow-up
If a person has symptoms and/or signs of active TB disease, especially if it is suspected that the person may have pulmonary TB, but is refusing to be investigated further, this should be brought to the attention of the medical officer of health. This situation may apply if contacts of active TB cases refuse to be investigated or followed up. The medical officer of health can write an order (a letter) under section 9 of the Tuberculosis Act 1948, requiring such a person suspected to have TB disease to undergo compulsory investigations to determine whether or not they have active TB disease.
3.10 BCG vaccination

A BCG vaccination should be offered to unvaccinated Mantoux-negative contacts (< 5 mm) aged under five years.

If two Mantoux tests are needed to test for conversion, a BCG vaccination should not be given until after the second test has been confirmed to be negative.

3.11 Non-tuberculous mycobacteria

Patients with non-tuberculous mycobacterial disease, such as *Mycobacterium avium-intracellularare*, are of negligible infectivity and do not represent a disease threat to healthy contacts. They do not need public health follow-up.

If the notifying physician suspects that the diagnosis might be non-tuberculous mycobacterial disease, the public health service should be told this at the time of notification so contact tracing can be restricted until the diagnosis is confirmed.
4 Contact Investigations in Special Circumstances

4.1 Hospitals and other health care facilities

If a case of pulmonary disease has been in a hospital or other health care facility before diagnosis of TB and isolation, staff and patients may need assessment. Good communication between the public health service and the infection control and occupational health services in the facility is needed to clarify roles and responsibilities.

A risk assessment should be undertaken which takes into account:

- the degree of infectivity of the index case
- the length of time before the infectious person was isolated
- whether other patients are unusually susceptible to infection
- the proximity of contact.

Contact tracing and testing should only be carried out for patients for whom the risk is regarded as significant.21

In general, patients should be regarded as at risk of infection if they have spent more than eight hours in the same bay or room as an inpatient with smear-positive TB who had a cough.

NICE guidelines21 advise that such patients should be given ‘inform and advise’ information and their general practitioner informed. If patients were exposed to a patient with sputum smear-positive TB for long enough to be equivalent to a household contact, or an exposed patient is known to be particularly vulnerable to infection, they should be managed as close contacts.

Exposed patients may have been discharged by the time the contact investigation begins and public health should follow up these contacts.

Health care workers may be less likely to comply with screening recommendations than non-health professionals,22 so management support may be needed. If a health care worker, who has a documented Mantoux or IGRA test result within the past 12 months, is exposed to infectious TB, only one test is necessary to detect conversion. This test should be done eight weeks after the date of last exposure.

The medical officer of health must maintain an overview of the investigation, both of patients and staff. Data on the outcome of contact investigation in hospitals should be supplied to the medical officer of health, who should also provide feedback to hospital infection control and occupational health staff about the outcome of contact investigations, so that all parties have the same picture of the infectivity of the source case.
4.2 Schools
TB in schools requires particular care because of the potential for spread of infection and the likely level of anxiety among parents and staff. Following diagnosis of TB in a school pupil or staff member, and after discussion with the patient and family, the public health service should make contact with the school principal. Prevention and control activities will need to be clearly explained to staff, parents and if necessary the media.

If a pupil has sputum smear-positive TB, the rest of his or her class (if there is a single class group) or the rest of the year group who share classes should be assessed as part of contact tracing.\textsuperscript{21,23}

If a teacher has sputum smear positive TB, the pupils in his or her classes in the preceding three months should be screened.

Consider extending the contact tracing on the basis of:
\begin{itemize}
  \item high infectivity of index case
  \item length of time of contact
  \item whether contacts are unusually susceptible to infection
  \item the proximity of the contact.
\end{itemize}

If an index case cannot be found among the case’s household or other close contacts, consider extending the screening to all staff to search for a source case.

4.3 Correctional facilities
See Chapter 9. When an infectious TB case is discovered in prison, the clinician should alert Department of Corrections and public health teams about the infectious potential and treatment plan.

The prison medical service and public health service need to liaise closely throughout the period of treatment and follow-up, and communications must be well documented.

Public health staff are responsible for conducting education and contact investigation among staff and prisoners. Prison contacts will often be released before their investigation and management is complete. Good liaison between prison services and public health will allow identification and education of families at risk for TB exposure.

4.4 Aircraft contact investigations
Transmission of TB on aircraft has been documented, but the risk is very low. Only contacts seated within two rows of an infectious case, on flights lasting longer than eight hours, need to be traced. Although a recent review suggests that even this level of screening is not required,\textsuperscript{24} this remains the current WHO recommendation.\textsuperscript{25}
Passenger information can be divulged to the medical officer of health under Principle 11 of the Privacy Act 1993. The aircraft seating diagram and passengers’ seat numbers can be obtained from the airline. Passenger arrival cards (often with limited address information) can be obtained from the New Zealand Customs Service. Details of exposed passengers who are no longer in New Zealand can be referred to an overseas public health service for follow-up (see section 7.5.8).

4.5 Outbreaks

An outbreak of TB is defined as two or more cases known to be linked by epidemiological investigation or DNA fingerprinting. (A cluster of cases all living in a single household is not considered an outbreak.) Such clusters need to be identified early. Outbreak control activities that must be considered include:

- workforce planning
- communications with the affected group
- inter-district communication
- communication with the Ministry of Health
- media management
- notification of the outbreak on EpiSurv.
5 Practical Aspects of Contact Investigation

5.1 Documentation
Collect data about each contact as shown in the suggested form in Figure 5.1. Compile a summary of the full contact investigation, as shown in Figure 5.2, preferably electronically.

5.2 Education
Contacts should be provided with information about the:
- contact investigation procedures and role of public health in supervising community treatment
- symptoms of TB disease
- transmission of TB
- difference between TB disease and LTBI
- success of treatment for TB infection and disease
- importance of early medical assessment of TB symptoms
- principles of privacy, confidentiality and their rights as a health care consumer.

At the end of screening, contacts with abnormal findings should be given a summary of their results. Stress the importance of lifelong awareness of the symptoms of TB for infected contacts (even if treated for LTBI) and the need to seek medical attention promptly if symptoms occur.

5.3 Cross-cultural communication
Public health workers conducting contact investigations should be trained and ready to address cross-cultural issues in their interactions with clients. If necessary use a trained interpreter.

5.4 Public health follow-up of non-infectious tuberculosis
During the public health follow-up of non-infectious TB cases, it is important to consider whether it is necessary to search for the person who is the source of this TB case's infection. This is particularly important if the case is a young child.

Different public health follow-up is advised in the following three scenarios.
Scenario 1: Adult case, normal chest X-ray, non-respiratory tuberculosis (such as bone or kidneys)

A source case is unlikely to be found because the infection leading to the TB disease probably occurred many years ago. The search for a source case is confined to asking whether any of the current close contacts of the case have symptoms of TB, such as fever, sweats, chronic cough, weight loss. Anybody answering ‘yes’ to these questions should be offered a Mantoux or IGRA test and CXR. Otherwise, Mantoux or IGRA testing and CXRs for the case’s social circle are not necessary.

Contact tracing is not necessary because the case is not infectious.

Scenario 2: Paediatric case, with or without pulmonary disease

The child is likely to have been recently infected by an adult so an urgent search for a source case is essential. All those in the child’s immediate social circle should be screened. It is efficient to focus screening for the adult source on adults with a history of TB or symptoms of TB. Contact tracing is seldom necessary. Children aged under 12 years with pulmonary disease seldom infect others, because:

- the natural history of primary TB means children rarely form cavities
- children are usually diagnosed relatively early
- younger children do not generate a sufficiently powerful cough to disseminate many acid-fast bacilli.

However, it is incorrect to assume that a child can never transmit disease. The paediatrician must assess the infectious potential of children with pulmonary disease and discuss with the public health service.

Scenario 3: Person placed on preventive treatment for inactive tuberculosis with up to four drugs

A person placed on preventive treatment for inactive tuberculosis may have had active pulmonary disease in the past. Treatment is given preventively because the prescribing clinician is concerned about a possibility of relapse.

It is unnecessary to search for a source case or to undertake a contact investigation because it is likely the case has been non-infectious for a long time. As a precaution, current close contacts should be asked about symptoms of TB, such as fever, sweats, chronic cough and weight loss. Contacts with these symptoms should be offered a Mantoux or IGRA test and CXR. Contacts without symptoms do not need investigation.
5.5 **Repeat contact tracing for re-exposed contacts**

It is possible to develop disease following re-infection with TB. Therefore, people re-exposed to infectious TB must be re-evaluated, even if they have been treated for LTBI in the past. See Chapter 8.

5.6 **DNA fingerprinting**

DNA fingerprinting is discussed in detail in Chapter 11. Its purpose is to detect clusters of TB of the same typing. The results of DNA typing need to be regularly reviewed at the district and national levels as clusters may require further investigation and action.

5.7 **Source cases discharged into community while smear-positive**

All contacts newly exposed to a case who is still smear-positive after discharge from hospital should be identified and receive two Mantoux or IGRA tests eight weeks apart.

Any conversions should be drawn to the attention of the medical officer of health, who should discuss with the clinician treating the case the need for a review of treatment efficacy and for induced sputum testing.

5.8 **Communication**

5.8.1 **Communication between districts**

The public health office in the district in which a case is notified must co-ordinate and finalise the contact investigation and enter all data onto EpiSurv. They must ensure:

- contacts are followed up if they move to another district
- complete assessment information is obtained on the outcome of screening in all districts.

When requesting that a public health service in another district investigates contacts in their district, provide a fully completed TB case report form on the index case and communicate culture and sensitivity results as soon as available.

When asked by another public health service to investigate contacts residing in your district, supply interim and final outcome information to the requesting district (see Figure 5.2). Do not enter these cases or contacts onto EpiSurv in your district.

5.8.2 **General practitioners**

Contact investigation and medical evaluation are specialised tasks and should be provided by public health. General practitioners who are consulted by contacts need to refer those contacts to the local public health service.
Medical officers of health need to:

- ensure general practitioners in their districts are aware of the local TB policy and procedures
- provide information and support to general practitioners to ensure smooth and effective service delivery for patients
- advise a general practitioner if the public health service is investigating any of the practice’s patients as a TB contact and communicate any abnormal results, hospital referrals and problems
- alert the general practitioner to the possibility of future TB in all Mantoux- or IGRA-positive contacts, particularly those not receiving treatment for LTBI, and the need for a repeat CXR if the person develops symptoms.

General practitioners should:

- understand the process the public health service follows for contact investigation
- refer contacts to the medical officer of health and not to the clinician managing the treatment of the index case
- know the indications for BCG vaccination and the availability of community BCG clinics.

5.8.3 DHB and private specialists

All specialists treating cases of TB disease must contact the local public health service to notify the case and enable appropriate contact investigation.

5.8.4 Notification to overseas health authorities

Medical officers of health must notify overseas health authorities about:

- TB cases diagnosed in New Zealand who temporarily or permanently travel overseas
- overseas contacts of cases who have recently arrived in New Zealand
- overseas source cases of TB diagnosed in New Zealand.

This is done via the Ministry of Health Focal Point and is a requirement of the International Health Regulations 2005.

5.9 Media management

Responsibility for media comment should be agreed between those involved and should usually be carried out by the medical officer of health.

5.10 Reviewing local findings

Regular audits are important to ensure screening activities are optimal and to avoid unnecessary screening. Medical officers of health should collect and periodically analyse contact investigation data to evaluate local screening activities.
Figure 5.1: Contact record form

| Name ............................................................................................. | NHI number ................................................ |
| Address ................................................................................................................................................................ |
| Age ....................  DOB ...................  Sex M / F  Ethnicity ............................................................. ........ .... |
| General practitioner .............................................................................................................................................. |
| Interpreter details ................................................................................................................................................... |
| Previous BCG: Y / N  Symptoms of TB: Y / N |

**Risk factors**

**Risk factors for infection**

<table>
<thead>
<tr>
<th>Source case</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smear-positive pulmonary: Y / N</td>
<td>Close: Y / N (eg, lives with case)</td>
</tr>
<tr>
<td>Cough: Y / N</td>
<td>Prolonged: Y / N (eg, many hours exposure)</td>
</tr>
<tr>
<td>Cavity: Y / N</td>
<td>Unventilated environment: Y / N (eg, closed windows)</td>
</tr>
</tbody>
</table>

**Risk factors for progression to TB disease**

- Age < 5 years or documented Mantoux conversion: Y / N
- Immuno-suppressed by disease or treatment: Y / N
- Undernourished: Y / N

*The more YES responses you have circled, the higher the risk for this contact.*

What is the cutting point for a positive Mantoux in this person?

**Results** *(see following pages for key to codes)*

<table>
<thead>
<tr>
<th>1st Mantoux mm</th>
<th>R</th>
<th>LTF</th>
<th>NR</th>
<th>2nd Mantoux mm</th>
<th>R</th>
<th>LTF</th>
<th>NR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st IGRA</td>
<td></td>
<td></td>
<td></td>
<td>2nd IGRA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CXR 1 result</td>
<td>N</td>
<td>TB</td>
<td>R</td>
<td>LTF</td>
<td>NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CXR 2 result</td>
<td>N</td>
<td>TB</td>
<td>R</td>
<td>LTF</td>
<td>NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CXR 3 result</td>
<td>N</td>
<td>TB</td>
<td>R</td>
<td>LTF</td>
<td>NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CXR 4 result</td>
<td>N</td>
<td>TB</td>
<td>R</td>
<td>LTF</td>
<td>NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment</td>
<td>N</td>
<td>LTBI</td>
<td>TB</td>
<td>TBO</td>
<td>U</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actions</td>
<td>Dis</td>
<td>TB</td>
<td>X-ray</td>
<td>BCG</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The key to this table is under Figure 5.2.
### Figure 5.2: Summary of contact information

<table>
<thead>
<tr>
<th>Health district of index case:</th>
<th>Name of contact tracer:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of index case:</td>
<td>EpiSurv number of index case:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surname</th>
<th>Given name</th>
<th>NHI number of index case:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Contact name

<table>
<thead>
<tr>
<th>(Surname first)</th>
<th>Assessment</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Dis</td>
</tr>
<tr>
<td></td>
<td>LTBI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TBO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X-ray</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BCG</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(Surname first)</th>
<th>Assessment</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Dis</td>
</tr>
<tr>
<td></td>
<td>LTBI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TBO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X-ray</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BCG</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(Surname first)</th>
<th>Assessment</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Dis</td>
</tr>
<tr>
<td></td>
<td>LTBI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TBO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X-ray</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BCG</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(Surname first)</th>
<th>Assessment</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Dis</td>
</tr>
<tr>
<td></td>
<td>LTBI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TBO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X-ray</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BCG</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(Surname first)</th>
<th>Assessment</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Dis</td>
</tr>
<tr>
<td></td>
<td>LTBI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TBO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X-ray</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BCG</td>
<td></td>
</tr>
</tbody>
</table>

When investigation is complete, please return this to the infectious diseases clerk at the public health unit.

**Key to Figures 5.1 and 5.2 – tuberculosis contact tracing**

<table>
<thead>
<tr>
<th>Mantoux test</th>
<th>Chest X-ray (CXR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>Refused testing</td>
</tr>
<tr>
<td>LTF</td>
<td>Lost to follow-up; cannot be located</td>
</tr>
<tr>
<td>NR</td>
<td>Not required (ie, not medically indicated)</td>
</tr>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>TB</td>
</tr>
<tr>
<td></td>
<td>R</td>
</tr>
<tr>
<td></td>
<td>LTF</td>
</tr>
<tr>
<td></td>
<td>NR</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>No evidence of TB infection or disease</td>
</tr>
<tr>
<td></td>
<td>Dis</td>
</tr>
<tr>
<td>LTBI</td>
<td>TB</td>
</tr>
<tr>
<td>TB</td>
<td>X-ray</td>
</tr>
<tr>
<td>TBO</td>
<td>BCG</td>
</tr>
<tr>
<td>U</td>
<td>Unknown because complete assessment was not possible. Did not complete testing because of loss to follow-up or refusal or another reason.</td>
</tr>
</tbody>
</table>
References


