Tuberculosis

Chapter 5

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Tuberculosis

TB infection vs. **TB** disease

There is a big difference between TB infection and TB disease. It is important for you to know the difference.

Infection (inactive)	OR	Disease (active)
Positive TB skin test	◄ SKIN TEST ►	Positive TB skin test
TB germ has entered the body but is not growing (latent)	◀ STATUS ►	TB germ has entered the body and is growing (replicating)
NOT CONTAGIOUS Cannot pass the TB germ to anyone else	◄ INFECTIOUSNESS ►	CONTAGIOUS If disease is in the lungs/ throat and not properly treated with medication
Normal chest x-ray		May have an abnormal chest x-ray OR evidence of TB in another part of the body
No symptoms	SYMPTOMS ►	Symptoms become more severe over time (e.g., new or worsening cough, chest pain, chills, weakness, fever, weight loss, night sweats, coughing up blood)
May be prescribed medication for nine months to prevent disease from developing		Requires treatment with several medicines for at least six months to cure disease
Person is at risk of developing disease in the future	ASSOCIATED ► RISKS	Person has disease and must be treated to prevent disease from getting worse and spreading to others

Information about tuberculosis (TB)

What is TB?

- Tuberculosis (TB) is a communicable disease caused by the bacteria called Mycobacterium tuberculosis.
- Pulmonary TB is active TB disease in the lungs and/or throat that can be spread to other people.
- Extra-pulmonary TB is active TB disease in another part of the body (e.g., lymph node, kidney, bone or joint, brain). This is usually not contagious.

How do you get TB?

- You can catch TB by spending time in close quarters with someone who has active pulmonary TB disease. When the person with active TB disease coughs, shouts, sings or sneezes, tiny germs will float in the air. People nearby can breathe the TB germs into their lungs and get TB infection.
- TB is not a highly infectious disease. Transmission usually requires close and frequent contact with someone who has active pulmonary TB disease.
- You cannot get TB from sharing clothes, bedding, drinks, cigarettes or dishes.

What happens if you breathe in TB germs?

- TB germs enter your lungs.
- Your immune system fights the TB germs by building a wall around them. The wall stops the germs from growing in the lungs or any other part of your body. If you have this, you have TB infection or (inactive) TB and:
 - you may never get sick
 - you cannot pass the germs on to others

How do you know if you have TB germs in your body?

• You can tell if you have TB infection (inactive) by having a TB skin test.

TB skin testing

What is the TB skin test?

- The TB skin test tells you if the TB germ is in your body. It is also called the Mantoux test or tuberculin skin test (TST).
- A nurse or doctor injects a small amount of clear fluid called "tuberculin" under the skin of your forearm. It will look like a mosquito bite. Two or three days later, the nurse or doctor examines your arm, measures the bump and tells you if the test result is positive or negative.
- The test is considered positive or negative depending on the size of the bump.
- You cannot catch TB from the TB skin test.
- Regular TB skin testing will not cause you to become positive later on.
- Even if you had a TB vaccine (BCG) in the past, you can still have the TB skin test. You should tell your healthcare professional if you have had BCG.
- It is safe to have the TB skin test if you are pregnant.



What does a positive TB skin test mean?

- If your skin test is "positive" it means you have TB germs in your body.
- You need a check-up by your doctor, a chest x-ray and sputum test to rule out active TB disease.
- A positive skin test, normal chest x-ray, normal physical exam and negative sputum test results mean you have TB infection (inactive).
- TB infection means your body has created a wall around the TB germs.
- If you are otherwise healthy, you have a five to 10 per cent chance of developing active TB disease in the future.
- You may take medicine (e.g., Isoniazid for nine months) to greatly reduce your chance of getting active TB disease in the future.

What does a negative TB skin test mean?

- If your TB skin test is "negative", it means the TB germs are not present or not showing in your body now.
- The germs may not be showing because people with a weakened immune system caused by diseases such as diabetes, HIV or cancer may not react to the skin test and should be referred to a TB specialist or clinic for further testing.

What is 2-step TB skin testing?

2-step TB skin testing is used only as the initial test for people who will be getting repeated TB skin tests

- The body's reaction to the TB skin test can decrease over time. A person who was infected with TB a long time ago may initially have a negative skin test. The test should be repeated (second step) in one to four weeks. If the second skin test is positive, this is caused by the booster effect and it shows the person was infected some time in the past.
- It is important to know the true TB skin test results of those people who will be tested regularly. People who work in places where there is a greater risk of becoming infected with TB should be tested regularly (e.g., people who work in shelters, hospitals, jails or those who regularly travel to or live in countries where TB is common). See page 59 and speak to your healthcare professional for more information.

• For those people whose current TB skin test is unknown, here is how 2-step skin testing works:

First TB skin test:

- If negative, you will have a second skin test.
- If positive, there is no need to have a second test.

Second TB skin test:

• The second TB skin test should be done one to four weeks after the first negative test.

• The results of the second TB skin test are recorded as your true reaction. All future TB skin test reactions are compared to this result.

• It is important to keep a record of your TB skin test results.

Active TB disease

Can TB germs make you sick?

When you have TB infection (inactive), the wall surrounding the TB germs can break down if your immune system is weakened because you are:

- ill with another disease, such as diabetes, cancer or HIV
- on steroid therapy
- stressed
- getting older
- underweight or malnourished

If this happens, the germs begin to grow and spread (become active) and you have active TB disease.

What are the symptoms of active TB disease?

- Cough new or worsening, lasting more than three weeks
- Chest pain, shortness of breath, coughing up blood
- Unexplained weight loss
- Fatigue
- Loss of appetite
- Fever, chills, night sweats
- If the TB disease is in another part of the body, the symptoms will depend on where it is located (e.g., enlarged lymph node, joint pain).

If you have any of these signs or symptoms, you should see a doctor or nurse right away. The doctor or nurse may collect sputum, send you for a chest x-ray and do other tests for TB.

Can TB disease be cured?

- TB disease can be cured with medicine (antibiotics). TB medicine is FREE.
- You will need to take four or five TB medicines (antibiotics) for at least six months.
- Your healthcare professional will decide when you are no longer contagious. The healthcare professional will check the sputum to make sure the TB disease is not contagious.
- It is important to take your medicine for as long as the doctor tells you to.
- Toronto Public Health staff will support you in taking your TB treatment (see page 63)



Every year in Toronto, approximately 370 – 400 people are diagnosed with TB disease. Approximately five per cent of these active TB cases are in the homeless and under-housed population. An outbreak of TB was identified in two downtown men's shelters in 2001 and 2004. Such outbreaks can take years to control.

TB risk factors

Some groups are at higher risk of having TB infection (inactive).

They include:

- People who have had close and prolonged contact with people who have active TB of the lungs or throat.
- People who have lived or travelled where TB is common (Asia, Africa, South America, some parts of Eastern Europe).
- People who have lived on a reserve or in an Inuit community.
- People who have HIV/AIDS.
- Staff and residents of long-term care facilities, hospitals and correctional centres.
- Older people, especially those who have lived through times when TB was common.
- Staff and residents of shelters or agencies that work with homeless and under-housed people.

Some groups who have TB infection (inactive) are at higher risk of developing active TB disease.

They include:

- People with a history of active TB disease that has not been treated properly.
- People with an abnormal chest x-ray.
- People with medical problems that reduce their ability to fight infection (e.g. cancer, diabetes, organ transplantation, chronic kidney failure, HIV/AIDS).

Why are homeless people at greater risk of TB?

People who are homeless are at increased risk for both TB infection (inactive) and active TB disease because some risk factors for TB are common among this group.

These risk factors include:

- Contact with other homeless people who have untreated active TB disease.
- Poor access to nutritious food.
- Poor access to healthcare.
- Difficulty keeping medical appointments or completing TB drug treatment.
- Difficulty getting close follow-up by healthcare professionals after exposure to TB.
- Increased likelihood of having chronic health conditions.
- Substance use, especially injection drug use and alcohol.
- Limited access to HIV education and prevention measures, increasing the risk of HIV infection.

Role of Toronto Public Health in TB prevention and control

TB is a reportable disease. This means that every case of both active TB disease and TB infection (inactive) must be reported by a healthcare professional to Toronto Public Health.

Management of Active TB disease

The Public Health Nurse will do the following:

- Verify that the client has active TB disease or TB infection (inactive)
- Contact the physician/hospital/clinic for additional information
- Visit the client to:
 - teach about active TB disease and how to prevent its spread
 - discuss TB medicines and their side effects
 - check that medicines are being taken properly
 - encourage medical follow-up appointments
 - identify contacts and refer them for follow-up
 - refer clients with other health/social needs to other sources of help
- Assess the need for Directly Observed Therapy

Directly Observed Therapy (DOT)

- It is a free program to help cure TB.
- A DOT worker regularly meets with the client to help them with his/her TB medicine.

How does the DOT program work?

A DOT worker will meet with the client:

- at home or another place (e.g., shelter or work)
- about five times a week until the treatment is finished

How can the DOT worker help the client?

A DOT worker will:

- support the client throughout the long TB treatment
- watch for side effects from the TB medicine
- help the client take the TB medicine correctly
- help the client to understand TB
- help the client with TB doctor appointments
- refer the client to appropriate agencies to address other concerns

Contact tracing

- All people reported with active TB disease are assessed by Public Health to determine if they are contagious.
- The purpose of contact tracing is to identify, notify and educate anyone who has been in close prolonged contact with someone who has active TB disease, and to make sure that they are tested so they know if they have been infected and may need treatment.
- If someone is contagious with active TB disease in a shelter or drop-in, Public Health will educate, advise and follow-up with staff, volunteers and clients.

Recommended TB policy for homeless service agencies

TB skin testing for staff and volunteers

All staff and volunteers, who spend regular ongoing time (an average of eight hours a month or more) in a drop-in or shelter in Toronto, should be tested for TB.

Initial testing

- TB testing should be done pre-employment, pre-volunteer or student placement.
- Initial testing should be 2-step TB skin testing.
- If a person has a positive TB skin test, a medical exam and chest x-ray will be required.
- The results of the TB skin test (doctor's note and chest x-ray results if needed) should be kept in a separate, confidential health file.
- If a person has a documented positive TB skin test in the past, repeated TB skin testing when starting work with homeless people is not necessary. The person should be aware of the signs and symptoms of TB, and seek medical follow-up if these symptoms occur.

NOTE: The purpose of TB skin testing at the start of work is to document current status; this makes medical follow-up for staff much more straightforward if they are exposed to someone with infectious TB later on at work. A negative TB skin test should never be a requirement of employment!

Annual follow-up

Annual testing is recommended if the initial 2-step TB skin test is negative. However, the follow up for a positive TB skin test includes seeing a doctor so active TB disease can be ruled out. There are no workplace or employment restrictions necessary for people who have a positive TB skin test.

TB education

Staff and volunteers should receive TB education within 30 days of starting work. Regular TB updates should be provided as needed.

Symptom screening

All staff who work directly with clients should be aware of the signs and symptoms of TB and must know how to refer someone who is ill for assessment and follow-up. The TB symptom screening form included in this manual (see Appendix 3, pages 105–106) can be used to obtain information for assessment and referral.

Environmental and infection control measures

The following environmental and infection control measures will help reduce the spread of TB:

- Instruct someone who is coughing or sneezing to cover their nose and mouth.
- Supply disposable tissue to the clients.
- Place each bed/cot as far from neighbouring beds/cots as possible in head-to-foot arrangements.
- Adequate ventilation and/or air circulation systems may help reduce the risk of TB. Consult your building engineer to make sure ventilation units are maintained regularly and operating properly (e.g., intake vents are open).
- Make sure all staff and volunteers have had appropriate TB skin testing (see section 8.1 of the Toronto Shelter Standards).

- Make sure regular surgical masks are available to give to clients who have possible TB symptoms. They should wear the masks until they can be seen by a healthcare professional.
- Make sure that one staff member per shift (e.g., shift manager/supervisor) has been fittested for an N95 mask. These will be needed only when providing direct support for a client with possible TB who is so severely ill that you have called an ambulance to get them to the emergency room.

Questions and Answers

How long do you have to be in a room with someone before you will catch TB?

The spread of this germ is influenced by many different factors including: sunlight, ventilation, closeness to the infected person and how sick the person is. Generally, it is said that you have to spend regular ongoing time (an average of eight hours a month or more) in contact with an infectious person before you might be at risk. However, routine screening for anyone dealing with high risk populations is recommended.

I've heard of someone who had TB in their elbow. Is this possible?

Yes, the TB germ can travel to many parts of the body and cause disease to happen. However, active TB disease is only contagious when it is in the lungs or throat.

I had my blood tested at the doctor, wouldn't they have checked for TB?

No. Even though a very expensive blood test has just been licensed for use in Canada (Winter 2005/2006), it is not widely available.

More information

Toronto Public Health TB Program Homeless – Underhoused: 416-392-7420

TB Drug Orders* and TB Immigration and Medical Surveillance: 416-392-7420

* All TB medications are free when a healthcare professional orders the medication from Toronto Public Health.

Specialized TB clinics in Toronto

The Hospital for Sick Children 555 University Ave. Main Floor 416-813-8327

St. Michael's Hospital 30 Bond St. 6th floor, Queen Wing 416-864-6060 ext. 2673

Toronto Western Hospital 399 Bathurst St. 8th Floor, New East Wing 416-603-5853

West Park Healthcare Centre 82 Buttonwood Ave., 2 east B 416-243-3600 ext. 2180

