Mantoux SKIN TEST

Preparing for a skin test

Prepare for TB skin testing by gathering a 26 or 27 mm needle, a 1.0 mL syringe, alcohol, PPD 5TU solution and ball point pen. Epinephrine Hydrochloride Solution (1:1000) and other appropriate agents should be available for immediate use in case an anaphylactic or acute reaction occurs.

The label on the vial should indicate the expiration date. If it has been open more than 30 days or the expiration date has passed, the vial should be discarded and a new vial used. When you open a new vial, write the date and your initials on the label to indicate when the vial was opened and by whom.

To ensure potency and accuracy of tubersol solution:

- Do not freeze – store in refrigerator between 2°C and 8°C.
- Store and transport in the dark and avoid exposure to light.

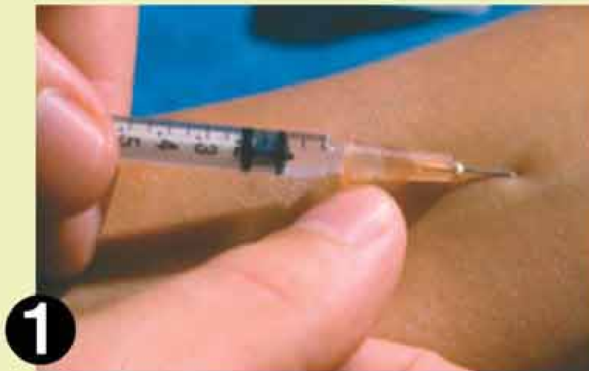
Patient education

- Discuss why the skin test is given, what is involved in the procedure and when the individual should return for the test to be read (result provided).
- If the individual cannot return within the 48-72 hour time period, do not administer the test. Instead, schedule another time that allows the individual to come for both the test and the return appointment.

NOTES:

- Follow appropriate hand washing and hand hygiene during the procedure.
- To prevent needlestick injuries, do not recap the used needle and dispose in puncture resistant container.
- If the intradermal implant does not produce a wheal, repeat the test on the opposite arm and make note of the second implant site.
- It is normal for a drop of blood to appear at the injection site, even when the needle is inserted properly. Should this happen, lightly blot the blood away with a gauze pad or cotton ball. Do not cover with an adhesive bandage as this will interfere with the test.
- Remember to instruct the individual to avoid scratching the site, keep the site clean and dry, and avoid putting creams, lotions or adhesive bandages on it. Mild itching, swelling or irritation may occur as normal reactions and usually go away within a week.
- Do not use EMLA or similar local anesthetic cream.

Implantation of Mantoux SKIN TEST



Approaching the skin

Cleanse the skin in the area to be tested with alcohol and allow to air dry. Prepare the syringe with 0.1 mL of PPD 5TU solution and clear the syringe of any air. With the bevel up, approach the skin at a 5°-15° angle. The injection should be placed on the palm-side up surface of the forearm, about 10 cm below the elbow.

The wheal (front view)

A wheal, which is elevated about 1 mm above the surrounding skin, is formed with an orange-peel like surface.

The wheal (side view)

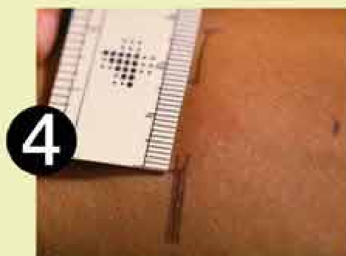
The wheal — 6-10 mm in diameter — will usually disappear within 10-15 minutes.

Marking the site

Using a pen, mark the test site so that in 48-72 hours the site can be readily located for reading.

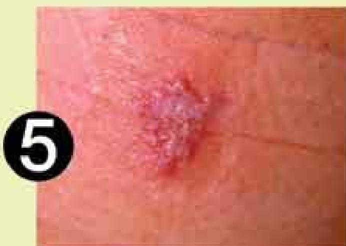
Reading the TB test

Mark the border of the induration by moving the tip of a pen at a 45° angle laterally toward the site of the injection. The tip will stop at the edge of the induration, if present. Repeat the process on the opposite side of the induration. **Read bump, not redness.**



Taking the measurement

Measure the induration in millimetres, using the transverse diameter to the long axis of the forearm. Record measurement in the individual's chart or record sheet. **Redness with no induration is read as '0' mm.** Recordings of positive, negative, doubtful, significant and non-significant are not recommended.



Necrotic pustular reaction

A necrotic pustular reaction results when the area tested is covered (note the marks left from the bandage) because of itching. As a result, the reaction is exacerbated.

Photos reproduced by permission of Dr Marc Steben

Interpretation of Positive TST

Size

The size of the reaction is only one element of interpreting a positive TST. Consideration should be given to the size, positive predictive value and risk of disease if the person is truly infected.

Interpretation of tuberculin test

Tuberculin reaction size (mm induration)	Situation in Which Reaction is Considered Positive
0-4	HIV infection with immune suppression AND the expected likelihood of TB infection is high (e.g.) patient is from a population with a high prevalence of TB infection, is a close contact of an active contagious case, or has an abnormal x-ray).
5-9	HIV infection Close contact of active contagious case Children suspected of having tuberculosis disease Abnormal chest x-ray with fibronodular disease Other immune suppression: TNF-alpha inhibitors, chemotherapy
≧10	All others

© Public Health Agency of Canada, 2007

Positive predictive value

The positive predictive value is the probability that the positive test result represents the true presence of TB infection. Factors to consider:

- **risk factors for TB (endemic country, close contact of an active case of TB)**
- **BCG vaccination**

BCG Key Information

BCG vaccination can be ignored as a cause of a positive TST if:

- BCG vaccination was given in infancy, and the person tested is now aged 10 years or older
- There is a high probability of TB infection: close contacts of an infectious TB case, Aboriginal Canadians from a high-risk community or immigrant/visitors from a country with high TB incidence
- There is a high risk of progression from TB infection to disease

BCG should be considered the likely cause of a positive TST if:

- BCG vaccine was given after 12 months of age AND the person is either Canadian-born non-Aboriginal OR an immigrant/visitor from a low TB incidence country

© Public Health Agency of Canada, 2007

Risk of developing active TB disease

After primary infection the lifetime cumulative risk for the development of active TB is generally estimated to be 10 per cent, half will occur in the first two years after infection. Certain factors increase the risk of TB reactivation including AIDS, HIV infection, transplantation, silicosis, chronic renal failure requiring hemodialysis, carcinoma of the head and neck, recent infection and abnormal chest x-ray.

Management of positive TST result

Medical evaluation after a positive reaction should include assessment for symptoms, risk factors and chest radiography. In the presence of symptoms or abnormal x-ray, sputum for acid-fast bacilli smear and culture should be taken. In subjects without evidence of active TB, a recommendation should be made regarding therapy for LTBI, based on the interpretation of the TST.

Please contact the health unit's TB Control Program at 1-877-721-7520 ext 8809 with any questions or concerns.

Contraindications for Mantoux SKIN TEST

The following persons should not undergo tuberculin testing:

- Individuals with severe blistering tuberculin reactions in the past or extensive burns or eczema present over testing site.
- Individuals with documented active tuberculosis or a well documented history of adequate treatment for TB infection or disease.
- Individuals with major viral infections.
- Those who have received measles immunizations within the past four weeks. No data are available regarding the effect on TST of other live virus immunizations — mumps, rubella, varicella and yellow fever — but it would seem prudent to follow the same four week guideline.

There is no contraindication for individuals who:

- are pregnant or are breastfeeding
- have a history of BCG
- or have an undocumented history of past positive TST.

PRECAUTIONS:

- Acute allergic reactions, including anaphylaxis, angioedema, urticaria and/or dyspnea have been very rarely reported following skin testing with Tubersol. See "Risk of Serious Allergic Reactions Following Tubersol [Tuberculin Purified Protein Derivative (Mantoux)] Administration" (available from: http://www.hc-sc.gc.ca/dhp-mps/medeff/advisories-avis/prof/2005/tubersol_hpc-cps_e.html).
- These reactions may occur in persons without a prior history of a TST.
- Epinephrine Hydrochloride Solution (1:1000) and other appropriate agents should routinely be available for immediate use in case an anaphylactic or other acute hypersensitivity reaction occurs.
- Health care providers should be familiar with the current recommendations of the National Advisory Committee on Immunization for monitoring the patient for immediate reactions for a period of at least 15 minutes after inoculation and for the initial management of anaphylaxis in non-hospital settings.

For more information call 1-877-721-7520, ext. 8809 and ask to speak to a TB nurse.

Tel: 721-7520
Toll free: 1-877-721-7520
www.simcoemuskokahealth.org
Your Health Connection

Useful links:

Canadian TB Standards 2007 http://www.phac-aspc.gc.ca/tbpc-latb/pubs/pdf/tbstand07_e.pdf

Lung Association http://www.lung.ca/diseases-maladies/tuberculosis-tuberculose_e.php

Canadian TB Publications http://www.phac-aspc.gc.ca/publicat/tbfs-fitb/index.html