

INDICATIONS FOR TREATMENT OF LATENT TB INFECTION

| Tuberculin reaction size | Action | High Risk Groups |
|--------------------------|--------------------|---|
| ≥ 5mm | Treat | <ul style="list-style-type: none"> • HIV infection or • Recent contact of infectious TB or • Presence of lung scar (compatible with old healed TB but not previously treated) |
| ≥ 10mm | Treat | <ul style="list-style-type: none"> • Converters (within 2 years) or • Immunosuppression: <ul style="list-style-type: none"> ▪ organ transplantation ▪ chronic renal failure ▪ prolonged corticosteroid or immune suppressive drug therapy ▪ hematological malignancies - leukemia, lymphoma ▪ silicosis ▪ diabetes mellitus ▪ < 90% ideal body weight |
| ≥ 10mm | Consider Treatment | <ul style="list-style-type: none"> • particularly those ≤ 35 years of age and from one of the following groups: <ul style="list-style-type: none"> ▪ staff and residents in long term care facilities, ▪ foreign-born from TB-endemic countries, ▪ individuals who have lived or traveled in a TB endemic country, ▪ individuals who have lived or traveled in a First Nation community with a high rate of TB |

***N.B.** Toxic effects and, in rare cases, death have been reported from INH-induced hepatitis. Hepatitis occurred mostly in adults, but it was reported in children as young as 2 years. Thus, the guidelines for preventative treatment were amended in the current Canadian Tuberculosis Standards to diminish the risk of hepatitis.*

TREATMENT OF LATENT TB INFECTION

| | | | |
|----------------------|---|--|---|
| Prophylaxis | Isoniazid (INH) - *Do not use alone for active TB disease. | Rifampin - Second alternative when there are INH contraindications, intolerance or resistance | Pyridoxin |
| Dose | <p>Children 10-15 mg/kg (maximum 300 mg/day)</p> <p>Adults 5 mg/kg (maximum 300 mg/day)</p> | <p>Children 10-20 mg/kg (maximum 600 mg/day)</p> <p>Adults 10 mg/kg (maximum 600mg/day)</p> | <p>25 mg. daily when prescribing INH there is poor nutrition, alcoholism, pregnancy, diabetes, uremia or other disorders that might predispose to neuropathy. It is also recommended in the neonatal period. When in doubt, should be prescribed.</p> |
| Duration | <p>HIV negative 9 months (6 months if 9 months duration not feasible)</p> <p>HIV positive 9 – 12 months (Note: an alternative to INH is PZA and rifampin x 2 months. This should <u>only</u> be started after consultation with an ID physician due to risks of side effects)</p> | <p>Children 6 months</p> <p>Adults 4 months</p> | |
| Effectiveness | <ul style="list-style-type: none"> ▪ 93% after 12 months of $\geq 80\%$ compliance ▪ 90% after 9 months of $\geq 80\%$ compliance ▪ 69% after 6 months of $\geq 80\%$ compliance | | |
| Side Effects | <p>Hepatitis risk is non-predictable but correlated with age:</p> <p>Rare: 0-19 years old 0.2%: 20-34 years old 1.5%: 35-49 years old 2.4%: 50+ years</p> | <p>Anorexia, GI upset, abdominal pain, diarrhea, fatigue, headache, dizziness, blurred vision, rash, joint pain, bruising (probably due to thrombocytopenia) and scleral icterus. Additional side effects were related to induction of hepatic enzymes that accelerate clearance of estrogens, cyclosporins, coumadin, glucocorticoids, and sulfonylureas. Consider dose adjustments of these drugs.</p> | |

CONTACT MANAGEMENT – (known contact with TB)

1. Public Health assesses for risk of exposure to TB

Public Health will assess and notify contacts of TB cases to receive follow up by a physician. If you are made aware of a possible contact, advise Public Health and review the **Criteria to Assess Risk of Exposure to TB**.

The risk of infection is determined by:

- infectiousness of the case
- length of exposure
- physical closeness of exposure (with respect to air space)

Criteria to Assess Risk of Exposure to TB

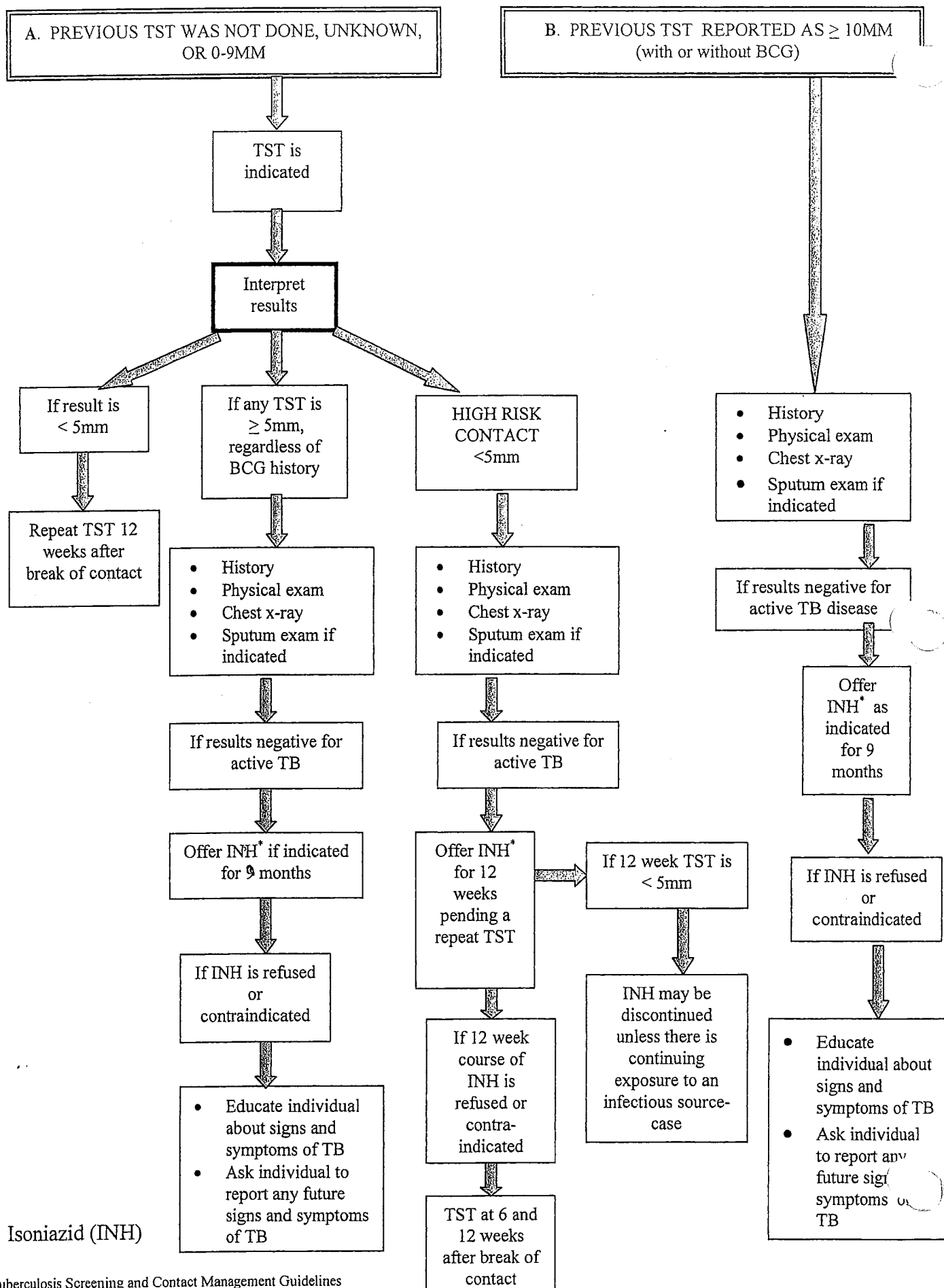
| Degree of Risk | Factors |
|-----------------------|---|
| High Risk | includes contacts who share living or sleeping quarters or an intimate relationship |
| Variable Risk | includes close non-household contacts and depends on degree and regularity of exposure, e.g. workplace, shelters, hospital room, correctional facility cell, classroom, recreational activities, relatives, car pools |
| Low Risk | includes casual non-household contacts, e.g. remote exposure in same building |

2. Public Health and physician determine if patient is a high risk contact

A **high risk contact** is a close contact of an infectious TB case and has:

- impaired immunities such as HIV infection **or**
- high probability of infection without skin test conversion yet **or**
- ≤ 5 years old

3. Contact Follow-up Flowchart



* Isoniazid (INH)

The results of the second test should be used as the baseline in determining treatment and follow-up. After a two-step TST has been documented, all future testing will require only one TST. Although it is not harmful to repeat a two-step TST, it is not necessary to do so.¹

Booster effect

- A single tuberculin test may elicit little response yet stimulate an anamnestic immune response, so that a second tuberculin test at any time from 1 week to 1 year later will elicit a much greater response. This phenomenon is important to detect as it could be confused with tuberculin conversion.
- Two-step testing boosts the reaction size in such infected persons but does not sensitize uninfected persons to tuberculin:

3. Interpret tuberculin skin test result

| Tuberculin reaction size, (induration) | Setting in which reaction considered <u>significant</u> (meaning probable TB infection) |
|--|--|
| 0-4 mm | HIV infection and expected risk of tuberculosis infection is high (e.g. patient has lived in an endemic area, is a household contact, or has an abnormal CXR). This reaction size is not normally considered significant, but in the presence of immune suppression may be important. |
| 5-9 mm | HIV infection Close contact of active contagious case Abnormal CXR with fibronodular disease |
| ≥ 10 mm | All others (including the second test result of a two-step test) |

Note:

Definition of Conversion: a tuberculin reaction of 10 mm or greater when an earlier test resulted in a reaction of less than 5mm. If an earlier result was between 5 and 9 mm, an increase of 6 mm is required. Tuberculin conversion is not to be confused with booster effect.

¹ Canada Communicable Disease Report, Supplement, *Guidelines for Preventing the Transmission of Tuberculosis in Canadian Health Care Facilities and Other Institutional Settings*, 1996

Causes of false-negative reactions to the tuberculin skin test

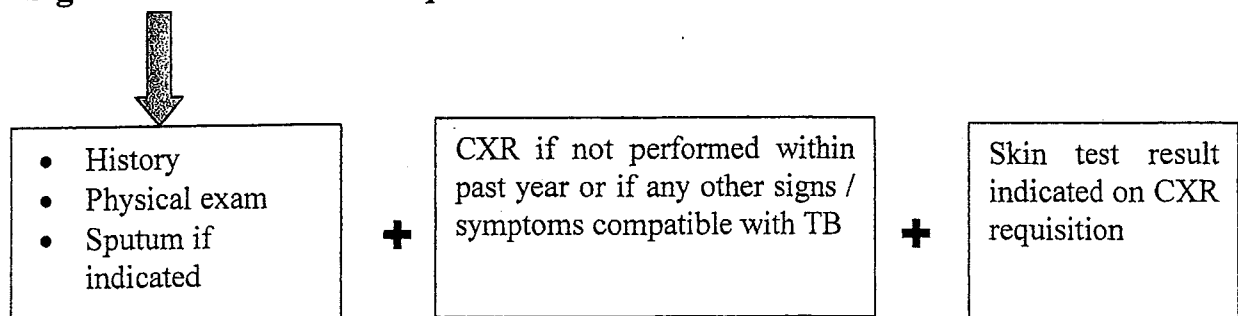
- Poor injection technique (e.g. wheal <5mm when test administered)
- Immune suppression due to advanced age, corticosteroids, cancer therapy agents, or HIV infection, especially if advanced (CD4 count < 500)
- Malnutrition, particularly when there has been recent weight loss
- Severe illness, which can include tuberculosis
- Viral illness or immunization with live vaccine (see Considerations pg. 1)

History of BCG Vaccination

BCG (Bacille Calmette-Guérin) is a live, attenuated vaccine derived from *M. bovis*.

- Previous BCG is not a contraindication to tuberculin skin testing.
- Ignore BCG history when interpreting TST result in:
 - close contacts of an active TB case
 - persons with HIV infection
 - persons with an abnormal CXR consistent with inactive TB
 - populations with a high prevalence of TB infection, such as immigrants from TB-endemic countries (call 724-4108 for current list), persons from First Nations communities with high rates of TB
 - persons with high risk of development of active disease if infected, such as immunocompromised individuals, those with renal failure and diabetes
 - persons given BCG in infancy (the first year of life) if the tuberculin reaction is ≥ 10 mm; virtually all children who receive BCG in infancy and who undergo a tuberculin skin test after the age of two years will have a reaction < 10 mm due to the BCG
- Consider BCG history in persons who received BCG after the first year of life and who have not lived in a country or a First Nations community with a high rate of TB as they are more likely to have a significant TST due to BCG vaccination than to true infection.

4. Significant TST result requires:



INH (Isoniazid)

Patient Teaching Information

INH is an anti-tubercular drug that will prevent TB infection in people that have been exposed to the active disease. INH interferes with the growth and development of the tuberculosis cell, eventually destroying it.

SIDE EFFECTS:

INH has several minor side effects that patients may experience. Please contact your CHR or Community Health Nurse if you experience any of the following for more than 3 days:

- nausea, vomiting, rash, fever

INH may also cause more serious side effects. Report any of the following to your CHR or Community Health Nurse immediately:

- psychosis (mental disturbances such as delusions or hallucinations)
- seizures
- visual changes
- peripheral neuropathy (painful sensation in the nerves of your arm, hands, legs and feet)

Vitamin B6 is taken with INH to help prevent this side effect

***Inform CHR or nurse that you are taking INH**

FOLLOW-UP:

INH is a strong medication that can cause damage to your liver and kidneys. It is important to have your bloodwork monitored regularly. Please consult your CHR if you have any questions about your follow-up schedule. The following signs and symptoms of liver damage should be reported immediately to your CHR or Community Health Nurse:

- nausea and vomiting that develops later in the course of INH therapy
- jaundice (yellow eyes or skin)
- excessive tiredness or weakness
- dark urine
- loss of appetite

DIET:

While on INH therapy there are several foods which must be avoided. These foods contain a chemical called Tyramine which can cause mild or serious reactions and can increase the risk of harm to the liver:

- cheese: processed, cheddar, mozzarella, brie, blue, brick, camembert, gruyere, parmesan, romano, swiss, stilton and roquefort
- fermented sausage such as: bologna, salami, pepperoni, summer sausage
- chocolate
- bananas
- smoked/pickled fish
- overripe fruit (includes raisins)
- sauerkraut
- liver
- yogurt
- avocado
- soy sauce
- shrimp paste

***All forms of alcohol must be avoided while on INH therapy**