Hamilton

LTBI A Quick Review
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Presentation Outline

- TB Worldwide
- Definition of LTBI
- Risk Factors
- TB Disease
- TB Screening

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Tuberculosis Worldwide

TB remains prevalent in the world

In 2015,

- An estimated 10.4 million new cases of TB
- Six countries accounted for 60% of these new cases
- Worldwide the rate of decline of TB incidence was only 1.5% from 2014-2015
- 480,000 new cases of MDR-TB
- 1.8 million TB deaths & of these 0.4 million deaths are co-infected with HIV

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LATENT TB INFECTION

- TB bacteria is inhaled, enters the lungs - immune system able to contain it safely in a capsule called granuloma
- Initial infection goes unnoticed – don't feel ill, no symptoms, not contagious
- Bacteria may enter the blood stream and travel to other areas e.g. lymph, bone (non-pulmonary)
- Likely have a positive TB skin test 8 – 10 weeks after becoming infected

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TB *INFECTION*	Vs.	TB *DISEASE*
Usually positive TB skin test or TB blood test (IGRA)	SKIN TEST	Positive TB skin test (can be negative)
TB bacteria in the body but not multiplying (capsulated)	STATUS	TB bacteria in the body are multiplying
CAN'T spread TB bacteria to others	INFECTIOUSNESS	MAY spread TB bacteria to others
CXR does not indicate active TB & negative culture	DIAGNOSTICS	Abnormal chest x-ray indicating active TB and/or positive PCR & culture
No symptoms	SYMPTOMS	Symptoms become more severe over time
May be prescribed medication to treat LTBI	TREATMENT	Requires treatment with several medications
At risk to develop disease in the future if not treated	RISKS	Needs treatment for TB disease

Increased Likelihood of Exposure to Persons with TB Disease

- Close contacts of an infectious TB case
- Foreign born from endemic areas
- Aboriginal communities with high rates of TB disease
- Occupational exposure
- Staff and residents of high-risk congregate settings (e.g., correctional facilities, homeless shelters, long-term care facilities)

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Progression to TB Disease

- Immune system can no longer maintain the granuloma/capsule
- Capsule breaks apart, TB bacteria escape and start to multiply
- Person may develop symptoms
- Progression can happen soon after infection, many years later or not at all

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Risk Factors for Developing TB Disease If Infected

- HIV/Aids
- Recent TB infection (≤ 2 years)
- Babies, young children (< 5 years of age)
- Conditions/medications that reduce or suppress immune response
- If fibronodular disease shows up on CXR
- Elderly

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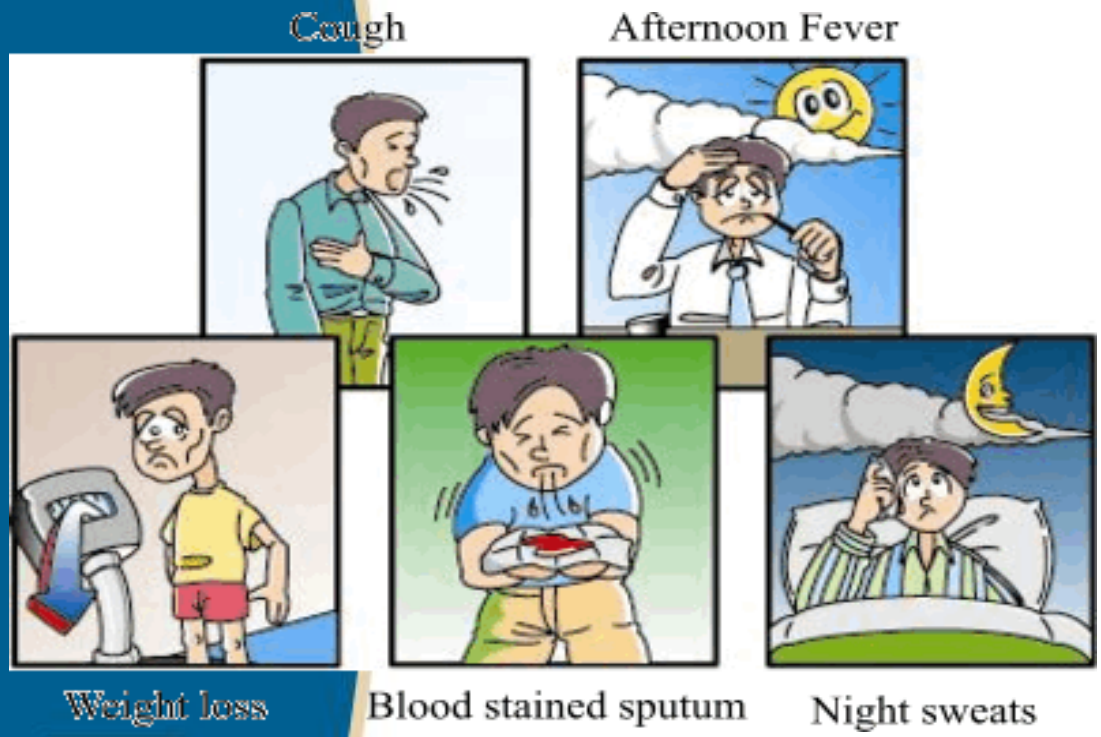
Common Symptoms of TB Disease



- Fever / Chills
- Night sweats
- Loss of appetite
- Weight loss
- Fatigue
- Cough (>2- 3 weeks) – gets progressively worse; may become bloody

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TB Screening

- Goal of testing is to identify those at increased risk of developing disease and therefore would benefit from LTBI tx

- Work/School/Volunteer:
- IF person has a Hamilton Family Doctor they can access the HFHT TB Screening Clinic – at 123 James St. N., Suite 200 Tuesday 5-7 plant, Thursday 5-7 read, $30 debit, can book apt. 905-667-4848 x0 or walk-in
- MEDICAL ADVISORY Feb 17, 2017

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Testing for LTBI

- There are two testing methods available for the detection of *M. tuberculosis* infection:
  - -Mantoux tuberculin skin test (TST)
  - -Interferon-gamma release assays (IGRA)

- The results are interpreted along with other factors like symptoms, medical hx etc

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65 years of age and under

- Assess for TB symptoms
- No previous TST – two-step TST
- Documented negative two-step – 1 TST
- 1 TST in last 12 months – 1 TST
- Previous documented + TST – assessment to r/o active TB disease

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May Receive TST…

- Persons with a common cold
- Pregnant or breast-feeding
- Immunized with any vaccine on same day
- Anyone with a history of BCG vaccination
- History of positive TST but no documentation & no severe reaction
- Those taking daily low dose corticosteroids (< 15mg prednisone/day)

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Do Not Skin Test Those…

- Documented previous positive TST
- Documented treatment of active TB or LTBI
- Persons with a previous severe TST reaction such as blistering and ulceration
- Extensive burns or eczema at testing sites (greater likelihood of adverse reaction)

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Why are TSTs No Longer Recommended for those >65yrs?

- Difficult to plant and interpret
- Result less reliable; may not mount a response even after a significant exposure
- Greater risk of adverse events from tx

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When to Defer TST

- Major viral/bacterial infections; may temporarily depress reactivity to TST
- Received live virus vaccine within past 4 weeks (varicella, MMR)

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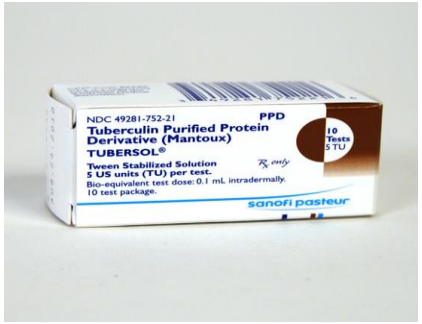
Handling of Tubersol

- Date the vial when opened; discard after opened x 1 month
- Light sensitive; store in the dark
- Store at 2°C - 8°C
- Do not preload syringe – draw up just before injection
- Failure to store and handle as recommended may result in loss of potency, inaccurate tests results or false negative results.



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Administering TB Skin Test

- Inject 0.1 ml of 5 TU tuberculin solution intradermally using a 27 guage needle with tuberculin syringe
- Position the bevel of the needle up
- Produce a wheal 6-10 mm in diameter
- Do not massage/cover site with a bandage

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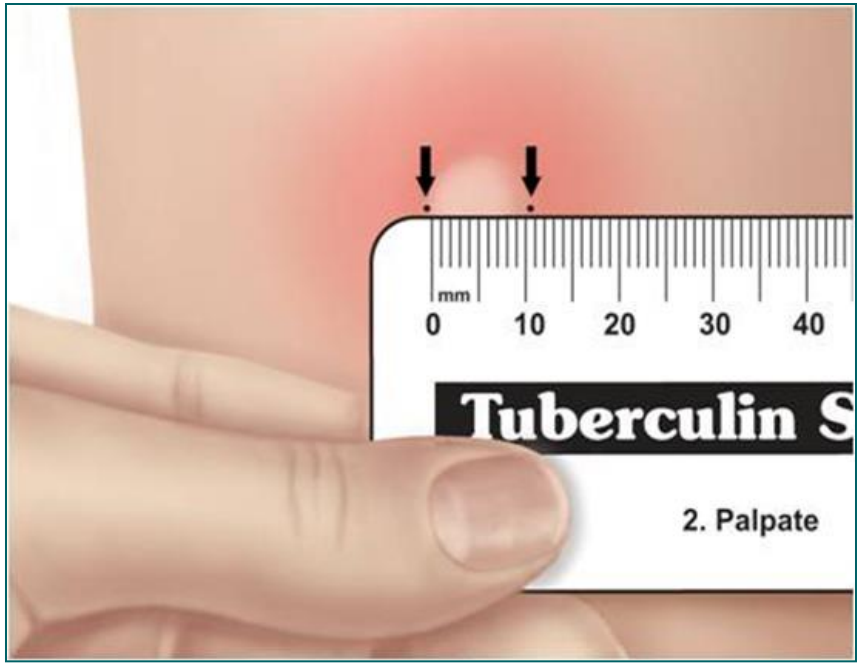
Reading TB Skin Test

- Read 48-72 hours after planting
- Measure induration, not erythema
- Record reaction in mm, not "negative" or "positive"
- Ensure trained HCP measures



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Positive TST Reaction

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Interpretation of TST size

TST Reaction Size (mm)	Situation in Which Reaction is Considered Positive
0-4 mm	Generally considered negative; no tx required
5-9 mm	• HIV infection • Contact with infectious case within past 2 yrs • Presence of fibronodular disease on CXR • Organ transplant (immune suppressant therapy) • Other immunosuppressive drugs (≥15mg prednisone) • End stage renal failure
10 mm or more	All others, including the following situations: • TST conversion (within 2 years) • Diabetes, malnutrition, cigarette smoking, >3 alcoholic drinks/day, silicosis, some cancer

Causes of False Positive Reactions

- Non-tuberculosis mycobacteria (atypical)
- BCG-Reactivity in BCG vaccine recipients generally wanes over time; positive TST result is likely due to TB infection if risk factors are present

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Causes of False-Negative Reactions

- Poor injection technique
- Tuberculin improperly stored or outdated
- Immunosuppression conditions
- Age (< 6 months, elderly)
- Severe illness (including active TB)
- Viral/bacterial illness
- Vaccination with live virus vaccine
- Inexperienced reader, error in recording

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Management of Positive TSTs

- Medical evaluation (symptoms & risk factors)
- CXR
- Client education
- Report positive TST with CXR to PHS
- Refer as needed to TB Clinic or specialist

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IGRA

- IGRA stands for Interferon Gamma Release Assays
- 2 types available: T-SPOT & QuantiFERON-TB Gold
- Has a specificity > 95% in the diagnosis of LTBI
- Specificity is NOT affected by BCG vaccination

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LTBI Treatment

- Patients referred for treatment at the discretion of the physician.
- Treatment is free of charge. Risk/benefit analysis.
- Before treatment is started, active disease must be ruled out
- The decision to treat LTBI should be individualised

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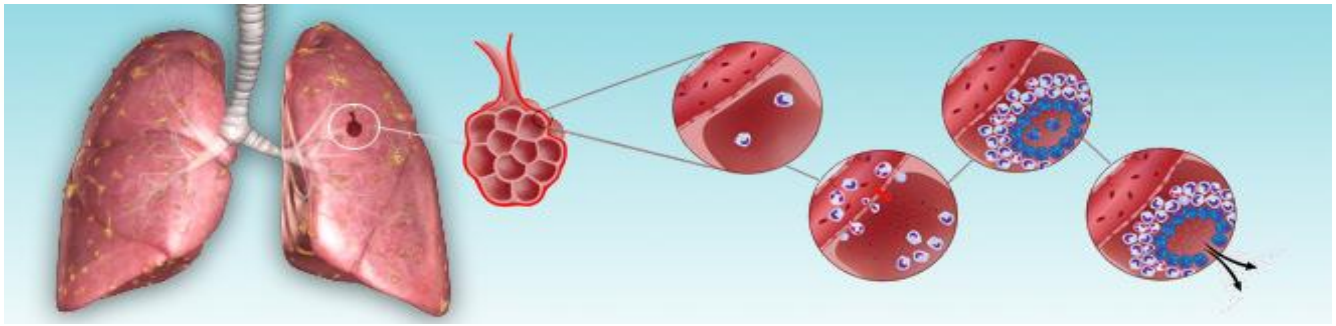
In Summary

- *Health Protection and Promotion Act*, TB is considered a virulent, communicable and reportable disease
- If unsure of TST process/results etc. please call Infectious Disease & TB Control Team at 905-540-6636
- Report all positive TSTs with CXR via fax at 905-546-4078
- Please phone in suspect/confirmed TB cases



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Reference

Public Health Agency of Canada. (2014). *Canadian Tuberculosis Standards 7th Edition*. Ottawa, ON: Government of Canada.

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QUESTIONS?

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