Presentation Outline

- TB Worldwide
- Definition of LTBI
- Risk Factors
- TB Disease
- TB Screening
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
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
<table>
<thead>
<tr>
<th><strong>TB INFECTION</strong></th>
<th>Vs.</th>
<th><strong>TB DISEASE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Usually positive TB skin test or TB blood test (IGRA)</td>
<td><strong>SKIN TEST</strong></td>
<td>Positive TB skin test (can be negative)</td>
</tr>
<tr>
<td>TB bacteria in the body but not multiplying (capsulated)</td>
<td><strong>STATUS</strong></td>
<td>TB bacteria in the body are multiplying</td>
</tr>
<tr>
<td>CAN’T spread TB bacteria to others</td>
<td><strong>INFECTIOUSNESS</strong></td>
<td>MAY spread TB bacteria to others</td>
</tr>
<tr>
<td>CXR does not indicate active TB &amp; negative culture</td>
<td><strong>DIAGNOSTICS</strong></td>
<td>Abnormal chest x-ray indicating active TB and/or positive PCR &amp; culture</td>
</tr>
<tr>
<td>No symptoms</td>
<td><strong>SYMPTOMS</strong></td>
<td>Symptoms become more severe over time</td>
</tr>
<tr>
<td>May be prescribed medication to treat LTBI</td>
<td><strong>TREATMENT</strong></td>
<td>Requires treatment with several medications</td>
</tr>
<tr>
<td>At risk to develop disease in the future if not treated</td>
<td><strong>RISKS</strong></td>
<td>Needs treatment for TB disease</td>
</tr>
</tbody>
</table>
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)
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
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
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
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
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
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
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)
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)
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
When to Defer TST

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

- Inject 0.1 ml of 5 TU tuberculin solution intradermally using a 27 gauge 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
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
Positive TST Reaction
<table>
<thead>
<tr>
<th>TST Reaction Size (mm)</th>
<th>Situation in Which Reaction is Considered Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4 mm</td>
<td>Generally considered negative; no tx required</td>
</tr>
<tr>
<td>5-9 mm</td>
<td>• HIV infection</td>
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<tr>
<td></td>
<td>• Contact with infectious case within past 2 yrs</td>
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<tr>
<td></td>
<td>• Presence of fibronodular disease on CXR</td>
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<tr>
<td></td>
<td>• Organ transplant (immune suppressant therapy)</td>
</tr>
<tr>
<td></td>
<td>• Other immunosuppressive drugs (≥15mg prednisone)</td>
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<td></td>
<td>• End stage renal failure</td>
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<tr>
<td>10 mm or more</td>
<td>All others, including the following situations:</td>
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<td></td>
<td>• TST conversion (within 2 years)</td>
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<td></td>
<td>• Diabetes, malnutrition, cigarette smoking, &gt;3 alcoholic drinks/day, silicosis, some cancer</td>
</tr>
</tbody>
</table>
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
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
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
• 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
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
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.
QUESTIONS?