Latent Tuberculosis Best Practices

- LTBI Demographics in the US
  - 13million people in the US with LTBI (estimate)
  - In 2014, approximately 66% of TB cases in the United States occurred in foreign-born individuals.
  - The majority of U.S. cases among foreign-born individuals are in people from 7 countries (Mexico, Philippines, Vietnam, India, China, Haiti, and Guatemala).
  - For a list of high burden countries and profiles of these countries, see the Stop TB Partnership website: http://www.stoptb.org/countries/ tbdata.asp . Note that the ranking of countries changes yearly.
- Latent TB versus Active TB
  - Latent TB Infection (LTBI)
    - No symptoms or physical findings suggestive of TB disease.
    - TST or IGRA result usually positive.
    - Chest radiograph is typically normal.
    - If done, respiratory specimens are smear and culture negative.
    - Cannot spread TB bacteria to others.
    - Should consider treatment for LTBI to prevent TB disease.
  - Active Tuberculosis
    - Symptoms may include one or more of the following: fever, cough, chest pain, weight loss, night sweats, hemoptysis, fatigue, and decreased appetite.
    - TST or IGRA result usually positive.
    - Chest radiograph is usually abnormal. However, may be normal in persons with advanced immunosuppression or extrapulmonary disease.
    - Respiratory specimens are usually smear or culture positive. However, may be negative in persons with extrapulmonary disease or minimal or early pulmonary disease.
    - May spread TB bacteria to others.
    - Needs treatment for TB disease.
- Risk for progression from LTBI to active TB
  - LTBI patients *without HIV* have a **10% *lifetime*** risk of progression to active TB. LTBI patients *with untreated HIV* have a **10% *yearly*** risk of progression to active TB.
  - The risk of progression from LTBI to active TB is highest in the first 2 years after initial infection
  - Treatment of latent TB decreases the risk of conversion to active TB by 90% (assuming adherence to rx)
- LTBI screening methods [see appendix #2 for guidelines on choosing which test]
  - TST (tuberculin skin testing, aka PPD)
    [see appendix #1 for classification of TST reactions]
  - IGRA (interferon gamma release assays)
    - T-SPOT
    - Quantiferon Gold
  - Routine testing with both TST & IGRA is not recommended

- Whom to screen for LTBI?
  - Persons with increased likelihood of exposure to persons with active TB
    - Close contact with someone w/active TB
    - Recent immigrant (<5years) from a high prevalence country
    - Work/reside in a facility with high prevalence TB (i.e. hospital, homeless shelter, correctional facility, nursing home, residential HIV treatment facilities)

- Persons with increased risk of progression (if infected) from LTBI to Active TB
    - HIV infection
    - Injection drug use
    - Low body weight (10% below ideal)
    - Other medical conditions, such as: - silicosis - diabetes mellitus - chronic renal failure or on hemodialysis - gastrectomy - jejunoileal bypass - solid organ transplant - head and neck cancer - conditions that require prolonged use of corticosteroids or other immunosuppressive agents such as TNFα antagonists

- LTBI Treatment
    - Treatment of latent TB decreases the risk of conversion to active TB by 90% (assuming adherence to rx)
    - First, active TB must be excluded (with CXR and sometimes sputum) ***before*** treatment is initiated
        - CXR for **all** IGRA or TST positive patients
        - Sputum sample for AFB smear and culture for IGRA or TST positive patients that have ***either*** an abnormal CXR ***or*** the presence of respiratory symptoms
    - Baseline hepatic function panel is not required; however, it should be considered for patients with liver disease, regular alcohol use, HIV, pregnancy, or patients <3months postpartum
    - Pregnant patients usually will have LTBI treatment deferred until >3months post-partum
    - Monthly visit with healthcare provider
        - Adherence to meds
        - Evaluate for signs of adverse drug reactions/interaction (i.e. hepatitis)
        - Monthly monitoring of liver enzymes is no longer recommended unless there was baseline liver enzyme elevation or there is an increased risk for hepatic side effects
    - Isoniazid
        - 9-month regimen preferred (6 month minimum)
            - Adult dosing options
                - 5mg/kg (maximum 300mg) per day
                - 15mg/kg (maximum 900mg) twice weekly
            - Children dosing options
                - 10-20mg/kg (maximum 300mg) per day
                - 20-40mg/kn (maximum 900mg) twice weekly
        - 12 weeks of weekly Isoniazid-Rifapentine sometimes used
        - Liver enzyme elevation
            - Asymptomatic, insignificant 10-20%
            - Clinical Hepatitis 0.1%
                - More common if: 1) INH taken with other hepatotoxic drugs, alcohol, or other drugs metabolized in the liver; 2) underlying liver disease
        - Peripheral neuropathy
            - 0.2% incidence
            - More common in patients with alcoholism, CKD, HIV, diabetes. Take vitamin b6 25-100mg in these situations, and also if patient is pregnant or breastfeeding
    - Rifampin
        - Only use for those intolerant of isoniazid
        - 4 months treatment duration
        - Refer to health department or treat in conjunction with ID, pharmd resident at CrossOver
- Contacts (recent exposure to a patient with known or suspected active TB)
    - Refer to health department for management

Appendix 1 - CLASSIFICATION OF TUBERCULIN SKIN TEST REACTIONS

Interpretation of TST results is based on the measurement of the reaction in millimeters, the person's risk of acquiring TB infection, or the risk of progression to disease if infected. See the risk stratification below.

A TST reaction of ≥5 mm of induration is considered positive in:

• HIV-infected persons • Recent contacts of a person with infectious TB disease • Persons with fibrotic changes on chest radiograph consistent with prior TB • Patients with organ transplants and other immunosuppressed patients (including patients taking the equivalent of ≥15 mg/day of prednisone for 1 month or more or those taking TNF-α antagonists) 10

A TST reaction of ≥10 mm of induration is considered positive in the following individuals:

• Recent arrivals to the United States (within last 5 years) from highprevalence areas • Injection drug users • Residents or employees of high-risk congregate settings (e.g., correctional facilities, long-term care facilities, hospitals and other health care facilities, residential facilities for patients with HIV infection/AIDS, and homeless shelters) • Mycobacteriology laboratory personnel • Persons with clinical conditions that increase the risk for progression to TB disease (see p.7) • Children younger than 5 years of age • Infants, children, and adolescents exposed to adults in high risk categories (see p. 7)

A TST reaction of ≥15 mm of induration is considered positive in the following individuals:

• Persons with no known risk factors for TB Although skin testing activities should be conducted only among at-risk groups, certain individuals may be required to have testing for employment or school attendance independent of risk.

Appendix 2- LTBI screening tool algorithm

TST or IGRA should be used without preference for most patients suspected for LTBI. Exceptions are as follows:

IGRA screening method is preferential for:

- Adults who received Bacille Calmette-Guerin (BCG) vaccination after 1 year of age**
- Adults who received multiple booster BCG vaccinations during childhood**
- Children 5 years or older who have received BCG vaccine, even during infancy***
- Patients with poor likelihood of return for TST reading after 48-72 hours

TST screening method is preferential for:

- Patients whom have had recent contact with active TB case after 8 week period to assess for conversion to active TB
- Children younger than 5 years of age***

Prepared for CrossOver Healthcare Ministry by NP student Anna Weichel, March 11, 2016

Appendix 3. Documentation form for recording treatment completion

RECORD OF TREATMENT COMPLETION

To Whom It May Concern:

The following is a record of evaluation and treatment for M. tuberculosis infection:
Name:_____ Date of birth:_____

TST: Date:_____ Results (in millimeters of induration):_____

IGRA: Date:_____ Type of test:_____ Result:_____

Chest radiograph: Date:_____ Results:_____

Date medication started:_____ Date completed:_____

Medication(s):_____
_____

This person is not infectious. He/she may always have a positive TB skin test, so there is no reason to repeat the test. If you need any further information, please contact this office. Signature of

Provider_____

Date _____

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