Sharing the Care: Working Together to Meet the Challenge of TB

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TB is Global

Latent TB Infection (LTBI)

- Latent TB Infection should be treated as a condition in itself which is a precursor to a serious and potentially fatal disease
- Much the same way we treat hypertension as a condition in itself because it significantly heightens risk of heart disease, renal failure, and stroke; or place infants in car seats because of the significant risk of injury without them, so should we approach latent TB infection
- While the condition in itself is asymptomatic, the risks assumed by ignoring it are substantial

Source: Carey Jackson, M.D. Internal Medicine, International Clinic, Harborview Medical Center, Seattle, Washington
Risk of Infection and Disease Progression

At risk for infection:

- Close contacts of a person with infectious TB
- Persons who have immigrated within the last 5 years from areas of the world with high rates of TB
- Frequent travelers to TB endemic countries
- Groups with high rates of *M. tuberculosis* transmission as defined locally, such as homeless persons, drug users, and persons with HIV infection

Risk of Infection and Disease Progression (cont.)

At risk for infection:

- Persons who work or reside with people who are at high risk for TB in facilities or institutions such as hospitals, homeless shelters, correctional facilities, nursing homes, and residential homes for those with HIV/AIDS
- Mycobacteriology laboratory workers
- Healthcare workers
- Children and adolescents < 18 years of age who have one or more positive responses to the risk assessment questionnaire
Sample TB Risk Assessment

1. Was your child born outside the United States?
   – If yes, this question would be followed by: Where was your child born? If the child was born in Africa, Asia, Latin America, or Eastern Europe, a TST should be placed

2. Has your child traveled outside the United States?
   – If yes, this question would be followed by: Where did the child travel, with whom did the child stay, and how long did the child travel? If the child stayed with friends or family members in Africa, Asia, Latin America, or Eastern Europe for a cumulative total of 1 week or more, a TST should be placed

3. Has your child been exposed to anyone with TB disease?
   – If yes, this question should be followed by questions to determine if the person had TB disease or LTBI, when the exposure occurred, and what the nature of the contact was. If confirmed that the child has been exposed to someone with suspected or known TB disease, a TST should be placed
   – If it is determined that a child had contact with a person with TB disease, notify the local health department per local reporting guidelines

4. Does your child have close contact with a person who has a positive TB skin test?
   – If yes, see question 3 (above) for follow-up questions

Sample TB Risk Assessment (cont.)

Risk-assessment questionnaires can include the following questions based on local epidemiology and priorities:

1. Does your child spend time with anyone who has been in jail (or prison) or a shelter, uses illegal drugs, or has HIV?
2. Has your child drunk raw milk or eaten unpasteurized cheese?
3. Does your child have a household member who was born outside the United States?
4. Does your child have a household member who has traveled outside the United States?

* Adolescents can be asked these questions directly.

Risk for Disease Progression

- HIV infection
- Injection drug use
- Radiographic evidence of prior healed TB
- Low body weight (10% below ideal)
- Other medical conditions, such as:
  - Silicosis
  - Diabetes mellitus
  - Chronic renal failure or on hemodialysis
  - Gastrectomy or intestinal bypass
Risk for Disease Progression (cont.)

- Head and neck cancer
- Conditions that require prolonged use of corticosteroids (e.g., > 15 mg prednisone QD > 3 weeks) or other immunosuppressive agents such as TNF-antagonists
- Recent TST converters (persons with baseline testing results who have increase of 10 mm or more in the size of the TST reaction within a 2 year period. The risk of progression is greatest in the first 1 or 2 years after infection)
- Tobacco users
- Treatment with TNF-antagonists (e.g., Humira, Enbrel)
- Cancer chemotherapy

Incidence of Active TB in Persons with a Positive TST by Selected Factors

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>TB Cases/1000 person-years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection &lt; 1 year duration</td>
<td>12.9</td>
</tr>
<tr>
<td>Infection 1-7 year duration</td>
<td>1.6</td>
</tr>
<tr>
<td>HIV infection</td>
<td>35.0 - 162.0</td>
</tr>
<tr>
<td>Injection Drug Use</td>
<td></td>
</tr>
<tr>
<td>* HIV seropositive</td>
<td>76.0</td>
</tr>
<tr>
<td>* HIV seronegative or unknown</td>
<td>10.0</td>
</tr>
<tr>
<td>Silicosis</td>
<td>6.6</td>
</tr>
<tr>
<td>Radiographic findings consistent with old TB</td>
<td>2.0 – 13.6</td>
</tr>
</tbody>
</table>


Case Study LTBI- Challenge Not Met

- 40 year old healthcare worker from TB endemic country
- Pre-employment TST 20mm
- CXR indicated no evidence of active disease
- Positive TST was attributed to history of BCG
- Healthcare worker was not offered treatment for LTBI
Case Study LTBI - Challenge Not Met
(cont.)

- Healthcare worker was a nurse on a pediatric unit
- One year later healthcare worker was started on Humira for a skin disorder
- C/O productive cough, 10 lbs weight loss during annual TB screening
- CXR showed RUL infiltrate
- TB work-up was initiated. Healthcare worker was smear and culture positive MTB
- Necessitated a large contact investigation

Contact Investigation Report

<table>
<thead>
<tr>
<th>Number Tested</th>
<th>Percentage</th>
<th>Chest X-Ray Results</th>
<th>INH Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>96</td>
<td>96%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Negative PPD</td>
<td>86</td>
<td>86%</td>
<td></td>
</tr>
<tr>
<td>Number of Positive PPD</td>
<td>10</td>
<td>10%</td>
<td>10 NEAD</td>
</tr>
<tr>
<td>Lost to follow-up</td>
<td>4</td>
<td>4%</td>
<td>7 = on INH 3 = declined INH</td>
</tr>
</tbody>
</table>

Sharing the Care: Evaluation of Contacts

- Identifying and evaluating individuals exposed to TB is an important TB control strategy
- High risk contacts:
  - The highest priority contacts are those with a highest risk of recent infection and or high risk for progression to TB disease, or increased morbidity or mortality from TB disease
  - Exposure to a confirmed or suspected case of pulmonary, laryngeal and or pleural TB with cavity lesion on chest radiograph, and/or positive acid-fast bacilli (AFB) sputum smear with one or more of the following contact characteristics
Sharing the Care: Evaluation of Contacts

[cont.]

• Medium risk contacts:
  – Exposure (duration and intensity as determined by the LHD) to a confirmed or suspected case of pulmonary, laryngeal, and or pleural TB with a cavitary lesion on chest radiograph, and or positive AFB sputum smear:
    • Any contact at risk of recent infection without the high-priority characteristic
    • Exposure to a confirmed or suspected case of pulmonary, laryngeal and or pleural TB with negative AFB sputum smears and abnormal chest radiograph consistent with TB disease but without a cavitary lesion

• Low priority contacts:
  – Any contact to a confirmed or suspected case of pulmonary, laryngeal or pleural TB not classified as high or medium priority, with limited exposure (e.g., bronchoscopy, sputum induction or autopsy)

• Management of contacts:
  – TST > 5mm is considered indicative of infection, CXR needed
  – Offer treatment for LTBI
  – If TST or IGRA is negative, evaluate for window prophylaxis
  – Window prophylaxis – providing treatment for LTBI to high risk contacts with initial negative TB test and x-ray pending the 8-10 week repeat test
Sharing the Care: Evaluation of Contacts

(continued)

- Management of contacts:
  - Window period – the interval between the date of an initial TB test; and the date of the follow-up TB test, that should take place 8 – 10 weeks after last day of exposure
  - If repeat TB test is negative, and there is no ongoing exposure, medication can be stopped
  - If repeat TB test is positive, treat as TB2, converter

Sharing the Care: Evaluation of Contacts

(continued)

- Health and Safety Code 121363- Examination of Household Contacts:
  - Each healthcare provider who treats a person for active tuberculosis disease shall examine, or cause to be examined household contacts or shall refer them to the local health officer for examination
  - Each healthcare provider shall notify the local health officer of the referral
  - When required by the local health officer, non-household contacts and household contacts not examined by a healthcare provider shall submit to examination by the local health officer or designee

Sharing the Care: Evaluation of Contacts

(continued)

- The local health department maintains oversight responsibility to ensure contacts are evaluated
- Challenges may occur when the family members of the index patient do not have medical insurance
- Collaboration between the private sector and public health is essential as a greater number of at risk individuals seek care through primary care physicians as a result of medical coverage through ACA
The Shifting Paradigm for TB Testing

- TB control protocols are being changed to be consistent with evidence-based practice
- CTCA Position Statement on Universal TB Testing of School Aged Children:
  - Best public health and medical evidence suggests that universal TB testing is neither necessary nor cost effective
  - Number of pediatric cases is low and universal testing results in a number of false positives

Pediatric Rates

TB Cases (5-17 years old) by Nativity, California, 2001-10
CTCA Recommendations

- Replacing universal TB testing of school age children with a TB risk assessment
- Conducting TB testing based on the results of the TB risk assessment
- Important to consult with the local TB Control Program

CTCA Recommendations on Mandatory Testing of School Employees and Volunteers

- Replace the mandated tuberculosis (TB) examination of school employees (California Education Code, Section 49406 and California Health and Safety Code, Sections 121525) on initial employment with a TB risk assessment, and TB testing based on the results of the TB risk assessment

CTCA Recommendations on Mandatory Testing of School Employees and Volunteers

- Replace mandated TB examination (within the last four years) of volunteers with “frequent or prolonged contact with pupils” in private or parochial elementary or secondary schools, or nursery schools (California Health and Safety Code, Section 121545) with a TB risk assessment questionnaire administered on initial volunteer assignment, and TB testing based on the results of the TB risk assessment
Pending Legislation AB 1667

- Changes specific sections of the Health and Safety and Education Codes to reflect CTCA/CCLHO recommendations
- The bill has passed the House and Senate and is currently on the Governor’s desk
- Important to follow the requirements of the local TB Control Program

Summary

- The number of reported TB cases represent only the tip of the iceberg
- Identifying and treating at risk individuals with LTBI is an important strategy to move us toward TB elimination
- Collaboration between the private and public sector is essential as we share the responsibility for TB care

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Curry International Tuberculosis Center
Thank You!

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