Caring for New American children
Screening and treatment of TB infections in arriving children

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Two pediatric cases #1

- 12 y.o from DRC
  - Arrival in June with Positive IGRA and negative CXR from pre-departure
    - No symptoms
  - Unable to obtain US IGRA and three months trying to get CXR
  - Transportation limited
• 4 y.o from Nepal
  • Positive IGRA, Neg CXR
  • Began daily INH regimen
  • Fevers nearly daily
World TB-a little overwhelming

- 10 million sick with active TB
- 1.5 million deaths each year
- 1/4 of the world’s population infected with TB

Who.int
TB in the US

- 2020 7,174 TB cases total
- Estimate up to 13.2 million with LTBI
- Dramatic decline into 2020
  - Reporting?

CDC.gov
TB Incidence in Non-US Born Individuals

cdc.gov
Pediatric TB

- Less than 15 years old
- 317 active TB cases in 2020
  - 1-4 38% total cases
  - 10-14 28% cases
- Most cases less than 5 or older than 10

[cdc.gov](https://www.cdc.gov)
Taking a world view while here in VT

- Afghanistan: 75K 2020
  - 21% children ages 0-14
- DRC: 286K
  - 11% children ages 0-14

who.int
Testing for TB

• IGRA/Quantiferon
  • Short time frame for testing
  • No false positive due to prior BCG
  • Expensive
• TST
  • Does anyone really know how to accurately place and read a TB test?
  • Cheap

IGRA:
- Can not be done on someone with previous positive TB test or tx for disease
- Down to age 2

TST:
- X reactivity with Bcg vaccine, although wanes with time

Interp of TST:
  5 or more-most at risk
  10 or more-TB common areas, drug users, congregate living settings
  medi conditions, children younger than 5
  15 or more-the rest of us

Do not use both
## Interpretation of the TST

<table>
<thead>
<tr>
<th>TST Reaction size</th>
<th>Clinical scenario when positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5 mm</td>
<td>HIV infection and contact with contagious individual</td>
</tr>
<tr>
<td>&gt; or 5 mm</td>
<td>HIV</td>
</tr>
<tr>
<td></td>
<td>Close contact</td>
</tr>
<tr>
<td></td>
<td>Abnormal prior X-ray</td>
</tr>
<tr>
<td>&gt; or 10 mm</td>
<td>Underlying medical condition</td>
</tr>
<tr>
<td></td>
<td>Children under 4 years</td>
</tr>
<tr>
<td></td>
<td>Foreign born with elevated incidence</td>
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<tr>
<td></td>
<td>Resident or works in high risk</td>
</tr>
<tr>
<td>&gt; or 15 mm</td>
<td>Everyone else who is over 4 years old</td>
</tr>
</tbody>
</table>
Treatment LTBI

Latent Tuberculosis Infection Treatment Regimens

Treatment regimens for latent TB infection (L TBI) use isoniazid (INH), rifapentine (RPT), or rifampin (RIF).

The CDC and the National Tuberculosis Controllers Association preferentially recommend short-course, rifamycin-based, 3- or 4-month latent TB infection treatment regimens over 6- or 9-month isoniazid monotherapy.

Clinicians should choose the appropriate treatment regimen based on drug susceptibility results of the presumed source case (if known), coexisting medical conditions (e.g., HIV*), and potential for drug–drug interactions.

https://www.cdc.gov/mmwr/volumes/69/rr/rr6901a1.htm?s_cid=rr6901a1_w

<table>
<thead>
<tr>
<th>DRUG</th>
<th>DURATION</th>
<th>FREQUENCY</th>
<th>TOTAL DOSES</th>
<th>DOSE AND AGE GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>INH + Rifapentine</td>
<td>3 months</td>
<td>Once weekly</td>
<td>12</td>
<td>Adults and children aged ≥12 yrs&lt;br&gt;INH: 15 mg/kg rounded up to the nearest 50 or 100 mg; 900 mg maximum&lt;br&gt;RPT: 10–14.0 kg; 300 mg&lt;br&gt;14.1–25.0 kg; 450 mg&lt;br&gt;25.1–32.0 kg; 600 mg&lt;br&gt;32.1–49.9 kg; 750 mg&lt;br&gt;≥50.0 kg; 900 mg maximum&lt;br&gt;Children aged 2–11 yrs&lt;br&gt;INH: 25 mg/kg; 900 mg maximum&lt;br&gt;RPT: See above</td>
</tr>
<tr>
<td>Rifampin</td>
<td>4 months</td>
<td>Daily</td>
<td>120</td>
<td>Adults: 10 mg/kg; 600 mg maximum&lt;br&gt;Children: 15–20 mg/kg; 600 mg maximum</td>
</tr>
<tr>
<td>INH + Rifampin</td>
<td>3 months</td>
<td>Daily</td>
<td>90</td>
<td>Adults&lt;br&gt;INH: 5 mg/kg; 300 mg maximum&lt;br&gt;RIF: 10 mg/kg; 600 mg maximum&lt;br&gt;Children&lt;br&gt;INH: 10-20 mg/kg; 300 mg maximum&lt;br&gt;RIF: 15-20 mg/kg; 600 mg maximum</td>
</tr>
<tr>
<td>Isoniazid</td>
<td>6 months</td>
<td>Daily</td>
<td>180</td>
<td>Adults&lt;br&gt;INH: 5 mg/kg; 300 mg maximum&lt;br&gt;Twice weekly: 15 mg/kg; 900 mg maximum&lt;br&gt;Twice weekly: 52</td>
</tr>
<tr>
<td>Isoniazid</td>
<td>9 months</td>
<td>Daily</td>
<td>270</td>
<td>Children&lt;br&gt;Daily: 10-20 mg/kg&lt;br&gt;Twice weekly: 20–40 mg/kg</td>
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</tbody>
</table>


†Isoniazid is formulated as 100-mg and 300-mg tablets.

††Rifapentine is formulated as 150-mg tablets in blister packs that should be kept sealed until use.

¶Intermittent regimens must be provided via directly observed therapy (i.e., a health care worker observes the ingestion of medication).

§Rifampin (rifampicin) is formulated as 150-mg and 300-mg capsules.


#The American Academy of Pediatrics recommends an INH dosage of 10–15 mg/kg for the daily regimen and 20–30 mg/kg for the twice weekly regimen.

1) INH + Rifapentine 3 months: “3HP” DOT or SAT, older than 2 years and NOT for women who are pregnant or expecting to become pregnant

2) 4 month Rifampin: Can be used by all children

3) 3 months of daily INH and Rifampin: all children

4) 6 or 9 months of daily INH
### Monitoring 3 HP

<table>
<thead>
<tr>
<th></th>
<th>INH</th>
<th>RIF</th>
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<tbody>
<tr>
<td>LFT's</td>
<td></td>
<td>Hepatotoxic</td>
</tr>
<tr>
<td>Hepatitis</td>
<td></td>
<td>Itching/hypersensitivity</td>
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<tr>
<td>Peripheral neuropathy</td>
<td></td>
<td>GI</td>
</tr>
<tr>
<td>GI</td>
<td>Orange pee</td>
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</table>

1) Lower hepatotoxic for RIF based therapies than long course INH

2) Weekly by nurse (school or public health) and monthly by HCP
   - Adherence
   - Include side effects as well as fever, fatigue, cough, chest pain

3) No baseline labs needed unless underlying condition
The blue card
Completing therapy
-Do not retest
-Monitor for symptoms
World TB Day
March 24
What questions do you have or problems do you see?
Back to Patient #2

What questions do you have or problems do you see?
• World Health Organization who.int Global TB Report 2021

• Centers for Disease Control cdc.gov TB Center of Excellence for Training, Education, and Medical Consultation

• Centers for Disease Control cdc.gov LTBI A Guide for Primary Health Care Providers 2020