### TUBERCULOSIS ADVERSE DRUG EVENTS

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>SIDE EFFECTS</th>
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<tbody>
<tr>
<td>• Serious reactions</td>
<td>• Unpleasant reactions</td>
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<tr>
<td>• May require treatment and/or hospitalization</td>
<td>• Not damaging to health</td>
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<tr>
<td>• Requires changes in dose or stopping drug</td>
<td>• Do not usually require changes in therapy</td>
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</tbody>
</table>

#### May be life threatening:
- Hepatitis
- Kidney Failure
- Serious allergic reactions
- Vision changes, eye pain
- Neurological problems
- Thrombocytopenia
- Anemia

### Consultation to healthcare providers at 1-800-TEX-LUNG
2303 S.E. Military Drive, San Antonio, TX 78223
www.HeartlandNTBC.org

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<table>
<thead>
<tr>
<th>HEPATITIS</th>
<th>NEUROLOGICAL</th>
<th>RENAL</th>
<th>OPHTHALMOLOGIC</th>
<th>HEMATOLOGICAL (rare)</th>
</tr>
</thead>
<tbody>
<tr>
<td>INH</td>
<td>Peripheral Neurotoxicity:</td>
<td></td>
<td>Vision Changes:</td>
<td>Rifampin Rifabutin</td>
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<tr>
<td>Rifampin</td>
<td>INH</td>
<td>Amikacin</td>
<td>Ethambutol</td>
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<tr>
<td>PZA</td>
<td>Ethionamide</td>
<td>Capreomycin</td>
<td>Rifabutin</td>
<td>INH</td>
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<tr>
<td>Ethionamide</td>
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<td>Linezolid</td>
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<td>PAS</td>
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<td></td>
<td>Ethambutol (rare)</td>
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<td>Ethionamide</td>
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<td>Fluroquinolones</td>
<td>Rifampin</td>
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<td>Levofoxacin (rare)</td>
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<td></td>
<td>Cycloserine</td>
<td>Moxifloxacin (rare)</td>
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<td></td>
<td>Streptomycin (rare)</td>
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<td></td>
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<td>Linezolid</td>
<td>PAS (rare)</td>
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</tbody>
</table>
HEMATOLOGICAL (all of these are rare)
Low platelet count which impairs ability to clot and may cause bleeding - stop drug. Rifampin, Rifabutin, rarely INH, Linezolid, EMB, Ethion, FQN, PAS, PZA, Capreoc, Streptomycin. Rifabutin especially in high doses, INH, Linezolid, Rifampin, PAS, EMB Anemia. Linezolid, rarely INH, rifampin, Ethion, FQN, PZA, Cycloserine.

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HEPATITIS
Early signs: fatigue, rash, poor appetite, nausea, bloating.
Later signs: vomiting, abdominal pain, jaundice, dark urine, light stools, neurological problems.
Laboratory evaluation: liver enzymes (AST/ALT) and bilirubin, clotting studies (evaluate extent of inflammation and liver function). Medication must be stopped while LFTs done if signs of hepatitis present.

GENERAL APPROACH
1.) Hold TB meds if LFT’s > 3x normal and symptomatic.  2.) Hold TB meds if LFT’s >5 normal even if no symptoms.  3.) Hold TB meds if T.bili is increased >2x normal and no other explanation

IMMUNE REACTIONS
Rash: may be mild and medications continued with or without benedryl. Hives: medication should be stopped and restarted only after desensitization, preferably in hospital.

NEUROLOGICAL TOXICITY
Peripheral neuropathy: tingling, pain and/or numbness of hands or feet. More common in those with diabetes, alcoholics, HIV infected. Usually can be treated with change in dose or addition of Vitamin B6. INH, Ethionamide, Linezolid, rarely fluoroquinolones, EMB.

ADVERSE DRUG EVENTS - SYMPTOMS
Central neuropathy: headaches, sleep difficulty, loss of concentration, seizures, personality changes, memory loss. INH, Ethionamide, Cycloserine, Levofloxin, Linezolid.

SEROTONIN SYNDROME
Linezolid is a monoamine oxidase inhibitor (MAO) and interacts with other drugs that promote release of serotonin or block its re-uptake. Causes excessive CNS and peripheral serotonergic activity. May be fatal. Manifests as altered mental status, neuromuscular activity and autonomic dysfunction.

OPTHALMOLOGIC

MUSCULOSKELETAL

RENALE
Kidney failure: patient will feel ill and may have decreased urine output or swelling. Streptomycin, Amikacin, Capreomycin, Rifampin, Rifabutin.

Central neuropathy: headaches, sleep difficulty, loss of concentration, seizures, personality changes, memory loss. INH, Ethionamide, Cycloserine, Levofloxin, Linezolid.

Consultation to healthcare providers at 1-800-TEX-LUNG, www.HeartlandNTBC.org
Produced by Heartland National TB Center with funds awarded by the Centers for Disease Control and Prevention (CDC).

Adverse effect of treating LTBI serious enough to entail hospital admission or death also should be reported to the CDC through local public health authorities or by calling (404) 639-8401.