### Isoniazid (Inh)

**DRUG CLASS:** ISONICOTINIC ACID HYDRAZIDE

<table>
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<th>Activity against TB, mechanism of action, and metabolism</th>
<th>Bactericidal; Especially for rapidly dividing cells. Affects mycolic acid (cell wall) synthesis. Inclusion of isoniazid in the regimen of patients with strain W MDR-TB was also associated with improved outcomes.</th>
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| Dose | **Adults:** 4–6 mg/kg/day (oral or IV); usual adult dose 300 mg daily; high dose isoniazid (600 to 1500 mg daily, see Annex 2 for weight-based dosing) used for patients with low-level isoniazid resistance or documented isoniazid resistance other than due to the Kat G gene mutation.  
**Children:** 10–15 mg/kg/day up to 300 mg (oral or IV);  
– Patient <30 kg: 7 to 15 mg/kg once daily  
– Patient ≥30 kg: 4 to 6 mg/kg once daily  
– Maximum dose: 300 mg daily  
**Renal failure/dialysis:** 300 mg once daily or 900 mg thrice weekly.  
**Pyridoxine (vitamin B6)** should be used when high-dose isoniazid is administered and in patients with diabetes, uraemia, HIV infection, seizure disorders, alcohol abuse, malnutrition or peripheral neuropathy. Additionally, pregnant and postpartum women and exclusively breastfed infants should receive vitamin B6 while taking isoniazid. (Normal dose of pyridoxine when used prophylactically for prevention of neuropathy in patients taking isoniazid is 10–25 mg/day.) |

| Route of administration | Oral, IV or IM. |

| Preparation | 50 mg, 100 mg or 300 mg scored or unscored tablets; 50 mg/5 ml oral suspension in sorbitol; solution for injection is 100 mg/ml. When given IV, dilute in 25 ml normal saline and infuse as a slow bolus over 5 minutes. Since compatibility information is not available, do not infuse “piggyback” with other drugs through a shared IV line. |

| Storage | Suspension must be kept at room temperature (15–25 °C). |

| Oral absorption | Well absorbed orally or intramuscularly; best absorbed on an empty stomach; up to 50% reduction in peak concentration with a fatty meal. |

| CSF penetration | Concentration equivalent to plasma in inflamed meninges. 20% of concentrations in plasma in noninflamed meninges. |
### Special circumstances

**Use in pregnancy/breastfeeding:** Safe during pregnancy; safe during breastfeeding (both baby and mother should receive pyridoxine supplementation). Up to 20% of the infant therapeutic dose will be passed on to the baby in the breast milk.

**Use in renal disease:** No dose adjustment for renal failure, but pyridoxine supplementation should be used.

**Use in hepatic disease:** May exacerbate liver failure. Use with caution.

**Drug Interactions:** Isoniazid is a CYP3A4 inhibitor. Isoniazid may increase the concentrations of certain cytochrome P450 enzyme substrates, including phenytoin and carbamazepine.

### Adverse reactions

- Hepatitis (age-related).
- Peripheral neuropathy.
- Hypersensitivity reactions.
- Other reactions, including optic neuritis, arthralgias, CNS changes, drug-induced lupus, diarrhoea, and cramping with liquid product.

### Contraindications

Patients with high-level isoniazid resistance who have failed an isoniazid-containing regimen should not receive isoniazid. History of allergic reaction to isoniazid.

### Drug Interactions

Monitor concentrations of phenytoin or carbamazepine in patients receiving those drugs (increases phenytoin concentrations and risk of hepatotoxicity with carbamazepine), especially when undergoing isoniazid monotherapy. Rifampin tends to lower concentrations of these drugs and balance the effect of isoniazid.

### Monitoring

Clinical monitoring of all patients on isoniazid is essential. Routine laboratory monitoring is not recommended for patients receiving isoniazid monotherapy for latent TB infection. For patients receiving multiple TB drugs or other hepatotoxic drugs, or with underlying liver disease (including viral hepatitis), baseline liver function testing is recommended. Follow-up liver function testing is determined by baseline concerns and symptoms of hepatotoxicity.

### Alerting symptoms

Instruct patients to inform their health care provider right away if any of the following occurs:

- Loss of appetite for a few days that does not go away
- Tiredness, weakness
- Moderate stomach pain, nausea or vomiting
- Numbness, pain or tingling of your fingers or toes
- Blurred vision, eye pain
- Yellow skin or eyes or dark-colored urine.