Ethambutol (Emb)

DRUG CLASS: UNSPECIFIED

Activity against TB, mechanism of action, and metabolism	**Bacteriostatic;** inhibitor of cell wall synthesis; bactericidal only at the high end of the dosing range. At doses used over long periods of time, ethambutol protects against further development of resistance.
Dose	**Adults:** 15–25 mg/kg/day. Higher doses should be used only during the initial months of therapy. For prolonged therapy, the dose should be closer to 15 mg/kg/day to avoid toxicity. **Children:** 15–25 mg/kg/day; doses closer to 15 mg/kg/day should be used if the drug is used for more than 2 months. **Renal failure/dialysis:** 15–25 mg/kg/dose, 3 times weekly (not daily). **Obesity:** For obese patients, base dosing on adjusted weight as follows: Ideal body weight + 40% of excess weight Ideal body weight (men): 50 kg plus 2.3 kg/inch over 5 ft Ideal body weight (women): 45 kg plus 2.3 kg/inch over 5 ft
Route of administration	Oral; not available parenterally in the US
Preparation	100 mg tablets; scored 400 mg tablets; coated 100 mg tablets; coated, scored 400 mg tablets.
Storage	Room temperature (15–25 °C).
Pharmacokinetics	**Peak oral absorption** occurs 2–4 hours after the dose. Draw a peak serum concentration 2–3 hours after the dose; a second sample 6 hours post-dose could be obtained if there is concern about late absorption and in order to estimate the serum half-life. **Peak concentrations** of 2–6 mcg/ml are expected with daily dosing. Intermittent doses of 50 mg/kg can be expected to produce peaks of 4–12 mcg/ml.
Oral absorption	80% bioavailability independent of food.
CSF penetration	Ethambutol penetrates meninges poorly
Special circumstances	**Use in pregnancy/breastfeeding:** Safe in pregnancy; can be used while breastfeeding. **Use in renal disease:** Use with caution – cleared by the kidneys; dose adjustment required for renal failure. Increased risk of toxicity with renal failure. If needed for use in the regimen, consider therapeutic drug monitoring. **Use in hepatic disease:** Safe in liver disease.
Adverse reactions	Retrobulbar neuritis (dose-related – exacerbated during renal failure).
Contraindications	**Pre-existing optic neuritis; visual changes on ethambutol.**

Monitoring	Patients should be counselled to report any changes in vision. Baseline and monthly visual acuity and colour discrimination monitoring should be performed (particular attention should be given to individuals on higher doses or with renal impairment).
Patient instructions and alerting symptoms	Can be taken with food or on an empty stomach. **Instruct patients to inform their health care provider right away if any of the following occurs:** • Any problems with your eyes: vision changes, blurring, colour blindness, trouble seeing or eye pain • Swelling of face • Rash, hives or trouble breathing • Numbness, pain or tingling in hands or feet • Joint pain • Fever or chills • Nausea, vomiting, poor appetite or abdominal pain • Headache or dizziness.