**thiamine** (thye-a-min)

- **Generic name:**
- **Classification:**
  - Therapeutic: vitamins
  - Pharmacologic: water soluble vitamin

### Indications
- Treatment of thiamine deficiencies (Beriberi).
- Prevention of Wernicke’s encephalopathy.
- Dietary supplement in patients with GI disease, alcoholism, or cirrhosis.

### Action
- Required for carbohydrate metabolism.
- Therapeutic Effects: Replacement in deficiency states.

### Pharmacokinetics
- **Absorption:** Well absorbed from the GI tract by an active process. Excessive amounts are not absorbed completely. Also well absorbed from IM sites.
- **Distribution:** Widely distributed. Enters breast milk.
- **Metabolism and Excretion:** Metabolized by the liver. Excess amounts are excreted unchanged by the kidneys.
- **Half-life:** Unknown.

### Contraindications/Precautions
- **Contraindicated in:**
  - Hypersensitivity; Known alcohol intolerance or bisulfite hypersensitivity (elixir only).

### Adverse Reactions/Side Effects
- CNS:
  - Restlessness, weakness.
- EENT:
  - Tightness of the throat.
- Resp:
  - Pulmonary edema, respiratory distress.
- CV:
  - Vascular collapse, hypotension, vasodilation.
- GI:
  - GI bleeding, nausea.
- Derm:
  - Cyanosis, pruritus, sweating, tingling, urticaria, warmth.
- Misc:
  - Angioedema.

### Interactions
- **Drug-Drug:** None significant.

### Route/Dosage

#### Thiamine Deficiency (Beriberi)
- **PO (Adults):** 5–10 mg 3 times daily.
- **PO (Children):** 10–50 mg/day in divided doses.
- **IM, IV (Adults):** 5–100 mg 3 times daily.
- **IM, IV (Children):** 10–25 mg/day.

#### Dietary Supplement
- **PO (Adults):** 1–1.6 mg/day.
- **PO (Children 6–10 yr):** 0.9–1 mg/day.
- **PO (Children birth–3 yr):** 0.5–0.7 mg/day.

### Nursing Implications

#### Assessment
- Monitor patients receiving IV thiamine for anaphylaxis (wheezing, urticaria, edema).
- **Lab Test Considerations:** May interfere with certain methods of testing serum theophylline, uric acid, and urobilinogen concentrations.

### Potential Nursing Diagnoses
- Imbalanced nutrition: less than body requirements (indications)
Implementation

- Do not confuse thiamine with Thalomid (thalidomide).
- Because of infrequency of single B-vitamin deficiencies, combinations are commonly administered.
- IM, IV: Parenteral administration is reserved for patients in whom oral administration is not feasible.
- IM: Administration may cause tenderness and induration at injection site. Cool compresses may decrease discomfort.

IV Administration

- pH: 2.5–4.0
- IV: Sensitivity reactions and death have occurred from IV administration. An intradermal test dose is recommended in patients with suspected sensitivity. Monitor site for erythema and induration.
- Direct IV: Concentration: Administer undiluted at 100 mg/mL. Rate: Administer at a rate of 100 mg over 5 min.

Continuous Infusion: Concentration: May be diluted in dextrose/Ringer's or LR combinations, dextrose/saline combinations, D5W, D10W, Ringer's injection, 0.9% NaCl, or 0.45% NaCl. Usually administered with other vitamins.

Y-Site Compatibility: Allantoin, amphotericin B, aspirin, aztreonam, benzylpenicillin, benzylpenicillin G, cephalosporins, cefazolin, cefotaxime, ceftriaxone, cefuroxime, chloramphenicol, clindamycin, cytoxan, disopyramide, dobutamine, dopamine, doxycycline, enalaprilat, ephedrine, epinephrine, erythromycin, esmolol, famotidine, fentanyl, gentamicin, glycopyrrolate, heparin, insulin, isoproterenol, labetalol, lidocaine, magnesium sulfate, mannitol, meperidine, metaraminol, methyldopate, metoclopramide, metoprolol, morphine, multivitamins, nafcillin, nalbuphine, naloxone, nitroglycerin, nitroprusside, norepinephrine, oxacillin, oxytocin, papaverine, penicillin G, pentamidine, pentazocine, phenolamine, phenylephrine, phytonadione, potassium chloride, procainamide, promethazine, propranolol, protamine, pyrimethamine, ranitidine, thiopental, ticarcillin/clavulanate, tobramycin, tolazoline, trimetaphan, vancomycin, vasopressin, verapamil.

Y-Site Incompatibility: Aminoglycosides, amphotericin B colloidal, aztreonam, cefoperazone, cefotaxime, ceftriaxone, chloramphenicol, clindamycin, cimetidine, doxycycline, enalaprilat, ephedrine, epinephrine, erythromycin, esmolol, famotidine, fentanyl, gentamicin, glycopyrrolate, heparin, insulin, isoproterenol, labetalol, lidocaine, magnesium sulfate, mannitol, meperidine, metaraminol, methyldopate, metoclopramide, metoprolol, morphine, multivitamins, nafcillin, nalbuphine, naloxone, nitroglycerin, nitroprusside, norepinephrine, oxacillin, oxytocin, papaverine, penicillin G, pentamidine, pentazocine, phenolamine, phenylephrine, phytonadione, potassium chloride, procainamide, promethazine, propranolol, protamine, pyrimethamine, ranitidine, thiopental, ticarcillin/clavulanate, tobramycin, tolazoline, trimetaphan, vancomycin, vasopressin, verapamil.

Additive Incompatibility: Solutions with neutral or alkaline pH, such as carbonates, bicarbonates, citrates, and acetates.

Patient/Family Teaching

- Encourage patient to comply with dietary recommendations of health care professional. Explain that the best source of vitamins is a well-balanced diet with foods from the four basic food groups.

- Teach patient that foods high in thiamine include cereals (whole grain and enriched), meats (especially pork), and fresh vegetables; loss is variable during cooking.

- Caution patients self-medicating with vitamin supplements not to exceed RDA. The effectiveness of megadoses of vitamins for treatment of various medical conditions is improved and may cause side effects.

Evaluation/Desired Outcomes

- Prevention or decrease in the signs and symptoms of vitamin B deficiency.

- Decrease in the symptoms of neuritis, ocular signs, ataxia, edema, and heart failure may be seen within hours of administration and may disappear within a few days.

- Confusion and psychosis may take longer to respond and may persist even if damage has occurred.

Why was this drug prescribed for your patient?