PHENYTOIN:

Class: Anticonvulsant, Hydantoin.
Indications: Management of generalized tonic-clonic (grand mal), complex partial seizures; prevention of seizures following neurosurgery,Prevention of early (within 1 week) post-traumatic seizures (PTS) following traumatic brain injury

Available dosage form in the hospital: 100MG TAB, INJ (250MG/5ML, 30MG/5M)

Dosage: **Note:** Phenytoin base (eg, oral suspension, chewable tablets) contains ~8% more drug than phenytoin sodium (~92 mg base is equivalent to 100 mg phenytoin sodium). Dosage adjustments and closer serum monitoring may be necessary when switching dosage forms.

Status epilepticus: I.V.: Loading dose: Manufacturer recommends 10-15 mg/kg, however, 15-20 mg/kg at a maximum rate of 50 mg/minute is generally recommended (Kalvianines, 2007; Lowenstein, 2005); initial maintenance dose: I.V. or Oral: 100 mg every 6-8 hours

Anticonvulsant: Oral: Loading dose: 15-20 mg/kg; consider prior phenytoin serum concentrations and/or recent dosing history if available; administer oral loading dose in 3 divided doses given every 2-4 hours to decrease GI adverse effects and to ensure complete oral absorption; *initial maintenance dose:* 300 mg daily in 3 divided doses; may also administer in 1-2 divided doses using extended release formulation; adjust dosage based on individual requirements; usual maintenance dose range: 300-600 mg daily.

Obesity :
-Adults: Loading dose: Use adjusted body weight (AdjBW) correction based on a pharmacokinetic study of phenytoin loading doses in obese patients (Abernethy, 1985). The larger correction factor (ie, 1.33) is due to a doubling of V_d estimated in these obese patients.
AdjBW = [(Actual body weight – IBW) x 1.33] + IBW
-Maintenance doses should be based on ideal body weight, conventional daily doses with adjustments based upon therapeutic drug monitoring and clinical effectiveness. (Abernethy, 1985; Erstad, 2002; Erstad, 2004)

Renal Impairment:
Phenytoin level in serum may be difficult to interpret in renal failure. Monitoring of free (unbound) concentrations or adjustment to allow interpretation is recommended.

Hepatic Impairment:
Safe in usual doses in mild liver disease; clearance may be substantially reduced in cirrhosis and plasma level monitoring with dose adjustment advisable. Free phenytoin levels should be monitored closely.

Common side effect:

I.V. effects: Hypotension, bradycardia, cardiac arrhythmia, cardiovascular collapse (especially with rapid I.V. use), venous irritation and pain, thrombophlebitis
Effects not related to plasma phenytoin concentrations: Hypertrichosis, gingival hypertrophy, thickening of facial features, carbohydrate intolerance, folic acid deficiency, peripheral neuropathy, vitamin D deficiency, osteomalacia, systemic lupus erythematosus
Concentration-related effects: Nystagmus, blurred vision, diplopia, ataxia, slurred speech, dizziness, drowsiness, lethargy, coma, rash, fever, nausea, vomiting, gum tenderness, confusion, mood changes, folic acid depletion, osteomalacia, hyperglycemia
Related to elevated concentrations:
>20 mcg/mL: Far lateral nystagmus
>30 mcg/mL: 45° lateral gaze nystagmus and ataxia
>40 mcg/mL: Decreased mentation
>100 mcg/mL: Death

Cardiovascular: Bradycardia, cardiac arrhythmia, cardiovascular collapse, hypotension

Central nervous system: Dizziness, drowsiness, headache, insomnia, psychiatric changes, slurred speech

Dermatologic: Rash

Gastrointestinal: Constipation, gingival hyperplasia, enlargement of lips, nausea, taste disturbance, vomiting

Genitourinary: Peyronie's disease

Hematologic: Agranulocytosis, granulocytopenia, leukopenia, pancytopenia, thrombocytopenia

Hepatic: Hepatitis

Local: I.V. administration: Inflammation, irritation, necrosis, sloughing, tenderness, thrombophlebitis

Neuromuscular & skeletal: Paresthesia, peripheral neuropathy, tremor

Ocular: Blurred vision, diplopia, nystagmus

Pregnancy Risk Factor: D