REGIONAL ADULT PARENTERAL DRUG MONOGRAPH

GENERIC NAME
phenytoin

Effective Date: Dec 2012 Revised Date: January 2025	CLASSIFICATION **Anticonvulsant**	OTHER NAMES **Dilantin**	PAGE 1 of 3

ADMINISTRATION POLICY:
IV Intermittent - May be administered by a nurse
IV Bolus - May be administered by a nurse
IM Injection *-Not recommended*
Subcutaneous *-Not recommended*

RECONSTITUTION/DILUTION/ADMINISTRATION:

Available as: 50 mg/mL – 2 mL, 5 mL vials.
Slight yellowish discoloration of the injection will not affect potency or efficacy.

NOTE: Inspect each vial of phenytoin injection for particulate matter during dose preparation and prior to administration of final product; do not administer any product where formation of particulate matter is suspected.

IV Bolus: For doses less than 170 mg. Administer into an infusing IV of NaCl 0.9% or NaCl 0.45%. Administer dose diluted to a maximum concentration of 10 mg/ml at a rate of 25 to 50 mg/minute, dependent on patient risk.
Use of an in-line 0.2 or 0.22 micron filter is optional.

Phenytoin 50 mg/mL	**Final Container**	**Diluent**	**Diluent Volume**	**Final Concentration**	**Final Volume**	**50 mg/minute For low risk patient**	**25 mg/minute For high risk patient**
2 mL (100 mg)	Syringe	NaCl 0.9%	8 mL	10 mg/mL	10 mL	2 minutes	4 minutes
2.5 mL (125 mg)	Syringe	NaCl 0.9%	10 mL	10 mg/mL	12.5 mL	2.5 minutes	5 minutes
3 mL (150 mg)	Syringe	NaCl 0.9%	12 mL	10 mg/mL	15 mL	3 minutes	6 minutes

IV Intermittent: IN-LINE 0.2 or 0.22 MICRON FILTER REQUIRED
Dilute as per table below:

Dose	Dose Preferred Diluent Volumes Bag size NaCl 0.9%
Less than 170 mg	Administer via IV Bolus: See above for dilution instructions. Filter optional
170 mg to 350 mg	25 mL
351 mg to 650 mg	50 mL
651 mg to 1500 mg	100 mL
1501 mg-2000 mg	250 mL

Administer as per table below:

Phenytoin Dose	Administer over at least:	
	50 mg/minute for low risk patients	25 mg/minute for high risk patients
170 to 250 mg	5 minutes	10 minutes
300 to 500 mg	10 minutes	20 minutes
550 to 750 mg	15 minutes	30 minutes
800 to 1000 mg	20 minutes	40 minutes
1050 to 1250 mg	25 minutes	50 minutes
1300 to 1500 mg	30 minutes	60 minutes
1550 to 1750 mg	35 minutes	70 minutes
1800 to 2000 mg	40 minutes	80 minutes

Maximum rate: **25 mg/minute** (e.g. 1,000 mg over 40 minutes), for high risk patients (elderly, concomitant cardiac or pulmonary disease, arrhythmias, or hypotension)
50 mg/minute (e.g.1,000 mg over 20 minutes), for low risk patients (not elderly, no cardiac or pulmonary disease)

Maximum concentration: 10 mg/mL

DOSAGE:

Loading dose: 15 to 20 mg/kg, usual 1000 mg to 1500 mg

Maintenance dose: 4 to 7 mg/kg/day in divided doses, usual 100 mg every 8 hours
Begin 6-12 hours after load.Titrate maintenance dose based on serum levels.

Maximum single dose: 2000 mg

STABILITY/COMPATIBILITY:

Stability of Final Admixture: 4 hours at room temperature

Compatibility: Compatible in ½ normal saline, normal saline, Lactated Ringer
Incompatible in dextrose solutions

PRECAUTIONS, POTENTIAL ADVERSE REACTIONS:

- Bradycardia, hypotension, arrhythmias, respiratory depression (usually occurs when rate exceeds 50 mg/minute or 25 mg/minute in high risk patients). (i.e. elderly, cardiac or pulmonary disease, hypotension)
- Localized tissue necrosis if extravasation should occur or if a small diameter vein is used. Use a large vein for administration.
- Signs of toxicity include: Drowsiness, confusion, nystagamus, ataxia, vertigo.

ADDITIONAL NOTES AND NURSING CONSIDERATIONS:

- Monitor blood pressure, respiratory rate and pulse during infusion
- Administration of phenytoin into a large vein and flushing tubing with 20 to 30 mL normal saline before and after infusion will help to reduce vein irritation, local reactions and precipitation
- The IV route of administration is preferred to attain rapid therapeutic serum levels
- The IV bolus route is restricted to patient care areas where close supervision and continuous cardiac monitoring are available.
- Should not be given IM due to erratic and delayed absorption
- Because of its low pH and limited solubility, it is VERY IMPORTANT to flush tubing with at least 10 to 30 mL normal saline, using a pulsing technique BEFORE and AFTER administration. When reasonable possible (weigh risks versus benefits), avoid using PICC lines for phenytoin administration, due to the risk of drug precipitation and line occlusion.
- An in-line 0.2 or 0.22 micron filter reduces the incidence of phlebitis
- Elderly patients: Increased risk of cardiovascular. Rate of administration should not exceed 25 mg/minute.
- To prevent local venous irritation and drug precipitation/catheter occlusions:
  - Avoid administration via peripherally inserted central catheters (PICC) or Implanted Vascular Access Devices (e.g. Port-a-Cath). May be administered via a tunneled central venous access device (CVAD).
  - Avoid administration via IV in hand, wrist or foot. If appropriate access unavailable, consider oral route, or another agent.
  - Use best access site possible (large bore vein).
  - Prepare solution just prior to administration due to stability issues.
  - Ensure all tubing is free of Dextrose solutions.
  - Administer intermittent infusions using an in-line 0.2 to 0.22-micron filter. For doses less than 170 mg given by IV push, an in-line 0.2 to 0.22 micron filter is optional.
  - Before and after administration, flush catheter with minimum 10 mL NaCl 0.9%, pulsating technique preferred.
  - Flush administration set after each dose. If this is not possible, use new administration set for each dose to prevent precipitation
  - Assessment of IV site is critical, particularly with the alkaline pH of phenytoin