phenytoin

Warnings	Classification	Alternate Names
hazardous drug group 2 **vesicant**	anticonvulsant	phenytoin sodium DILANTIN; diphenylhydantoin

Indications

- treatment of status epilepticus and control/prevention of seizures

Reconstitution and Stability

- see safe work procedures to prepare doses, unless dose provided by pharmacy
- vial is stable at room temperature; a faint yellow colour has no effect on potency
- administer the infusion **immediately** following preparation and monitor for precipitation

Compatibility

- compatible with NS or sodium chloride 0.45%

Preparation and Administration

- **VCH** – Refer to Hazardous Drugs – Education and Safety Requirements
- **PHC** – Refer to Hazardous Drugs for handling and waste disposal

Administration Route	Approved	Preparation and Administration Instructions	Required Monitoring
Subcutaneous	NO		
Intramuscular	NO		
IV direct	YES	give undiluted; in large vein in forearm; if possible avoid hand, wrist or antecubital fossa maximum rate: 50 mg/minute 25 mg/minute (if cardiac disease or older adult)	Full Monitoring

IV intermittent	YES	• phenytoin will precipitate in the tubing of a clamped IV line if it is not flushed or if it is left to stand
		  ○ flush IV tubing with a minimum of 25 mL NS after administration to avoid precipitation
		• use tubing with 0.2 micron in-line filter
		• give peripherally through a large vein in forearm; if possible avoid hand, wrist or antecubital fossa
		
		• **phenytoin can precipitate and block PICC, IVAD (eg. Port-a-Cath) or tunneled CVC (eg. Hickman)**
		  ○ consult infusion programme or IV nurse educator prior to using in the lines above
		• may use a short term non-tunneled catheter
		
		standard dilutions:
		• doses up to 500 mg in NS 50 mL
		• 501 to 1000 mg in NS 100 mL
		• doses over 1000 mg in NS 250 mL
		
		infuse doses over 30 to 60 minutes
		maximum rate: 50 mg/minute
		25 mg/minute (if cardiac disease or older adult)
		
		rate must be controlled with an IV infusion pump
			Basic Monitoring

Continuous IV infusion	NO		

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phenytoin

Dosage

Status epilepticus

- Loading dose: 15 to 20 mg/kg IV; may give 5 mg/kg IV 30 minutes later if required
- Maintenance: 5 to 7 mg/kg IV daily; divided doses are recommended

Potential Hazards of Parenteral Administration

- phenytoin **precipitation will block centrally inserted IV access lines** including PICC, IVAD (Port-a-Cath) or tunneled CVC (Hickman).
- cardiovascular collapse, CNS and respiratory depression, severe hypotension may occur with too rapid IV administration
- depression of cardiac conduction, ventricular fibrillation, heart block have been reported
- extravasation risk: vesicant; thrombophlebitis, pain, skin necrosis
    - **refer to** : Extravasation Management (Non-Antineoplastic Vesicant/ Irritant Medications) – Adults

Important Implications

Contraindications/Cautions
- dose should not be increased at greater than 50 to 100 mg increments
- discontinue if skin rash occurs

- Pregnancy/Lactation: refer to Lexicomp or Micromedex

Side Effects
- signs of toxicity include drowsiness, nystagmus, ataxia, vertigo

Monitoring
- monitor solution for precipitate
- serum levels recommended: 2 to 4 hours after IV loading dose; steady state trough levels (time to reach steady state varies from 8 to 60 days)
- therapeutic total phenytoin levels: 40 to 80 micromol/L
    - pregnant patient: obtain total and free phenytoin level (free therapeutic range is 4 to 8 micromol/L)
- liver enzymes

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