South Australian Perinatal Practice Guideline

Intravenous Phenytoin

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Note:

This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this statewide guideline is current at the time of publication.

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Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient's medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

Explanation of the aboriginal artwork:
The aboriginal artwork used symbolises the connection to country and the circle shape shows the strong relationships amongst families and the aboriginal culture. The horse shoe shape design shown in front of the generic statement symbolises a woman and those enclosing a smaller horse shoe shape depicts a pregnant women. The smaller horse shoe shape in this instance represents the unborn child. The artwork shown before the specific statements within the document symbolises a footprint and demonstrates the need to move forward together in unison.

Australian Aboriginal Culture is the oldest living culture in the world yet Aboriginal people continue to experience the poorest health outcomes when compared to non-Aboriginal Australians. In South Australia, Aboriginal women are 2-5 times more likely to die in childbirth and their babies are 2-3 times more likely to be of low birth weight. The accumulative effects of stress, low socio economic status, exposure to violence, historical trauma, culturally unsafe and discriminatory health services and health systems are all major contributors to the disparities in Aboriginal maternal and birthing outcomes. Despite these unacceptable statistics the birth of an Aboriginal baby is a celebration of life and an important cultural event bringing family together in celebration, obligation and responsibility. The diversity between Aboriginal cultures, language and practices differ greatly and so it is imperative that perinatal services prepare to respectively manage Aboriginal protocol and provide a culturally positive health care experience for Aboriginal people to ensure the best maternal, neonatal and child health outcomes.

Purpose and Scope of PPG

This guideline provides clinicians with information for the use of intravenous phenytoin to treat convulsive-status epilepticus. It includes indications, precautions, adverse effects, preparation, administration and monitoring.

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Summary of Practice Recommendations

- IV phenytoin is used for emergency treatment for convulsive-status epilepticus
- Phenytoin should be used with caution in patients with hypotension, severe myocardial insufficiency or hepatic impairment
- The woman requires close observation during infusion

Abbreviations

CNS	Central nervous system
e.g.	For example
g	Gram(s)
IV	Intravenous
kg	Kilogram(s)
L	Litre(s)
mg	Milligram(s)
mL	Millilitre(s)
min	minute
%	Percentage

Introduction

- Phenytoin is available in ampoules containing 50 mg / mL phenytoin sodium (100 mg / 2 mL and 250 mg / 5 mL ampoules)
- Administer undiluted
- Do not administer with any other medications or fluids
- Note: phenytoin should only be administered following consultation with a physician

Indications

- Emergency treatment for convulsive-status epilepticus
- Women in labour who have missed their anticonvulsant dose for more than 12 hours or are vomiting and unable to take their usual oral anticonvulsant medication (see *Epilepsy and Pregnancy Management* PPG available at www.sahealth.sa.gov.au/perinatal). Consult with physician or neurologist
- Magnesium sulphate is the drug of choice for treating eclampsia and pre-eclampsia (see *Magnesium Sulphate Infusion Regimen* PPG available at www.sahealth.sa.gov.au/perinatal)

Precautions

- Phenytoin should be used with caution in patients with hypotension and severe myocardial insufficiency
- Dose reduction may be required in hepatic impairment
- Contraindications include:
    - Hypersensitivity syndrome with phenytoin, carbamazepine or phenobarbitone
    - Porphyria
    - Sinus bradycardia, sinoatrial block, second and third degree atrioventricular block, Stokes-Adams Syndrome

Adverse effects

- The most common adverse reactions to phenytoin include:
    - Cardiovascular symptoms, e.g. hypotension and bradycardia
    - CNS depression, e.g. nystagmus, ataxia, slurred speech, decreased coordination and mental confusion
    - Gastrointestinal, e.g. nausea and vomiting
    - Local e.g. pain on infusion and severe phlebitis. Therefore administer via a large vein. The line is always flushed with 10 mL of sodium chloride 0.9 % immediately after the dose, to prevent phlebitis
- These adverse reactions may result from excessive dose and / or excessive speed of administration

Single dose administration

- **Women not currently taking phenytoin can be given a single high bolus dose ("loading" dose)**
    - The single high bolus dose for women not already on phenytoin is 15 – 20 mg / kg[1]
- In patients already taking phenytoin orally, their total daily dose can be given intravenously (instead of oral) according to the following administration regimen **(usually around 5 – 10 mg / kg)**

Preparation and administration of intravenous phenytoin

- Draw up specified quantity of phenytoin in a 50 mL syringe
- Administer single bolus dose via infusion pump
- Phenytoin should be administered via a dedicated line
- Do not give any other drugs via this line
- Commence single bolus dose of phenytoin at rate ordered by medical officer. Most commonly commence at 25 mg / min. **Maximal administration rate of 50 mg / min**
    - For example: A 70 kg woman (70 x 20 mg / kg) would have a prescribed single bolus dose of up to 1.4 g
    - To give this dose at a rate of 25 mg / minute = 1.5 g per hour, set the infusion pump at 30 mL / hour (1.4 g would take approximately 56 minutes to infuse)
- If in status epilepticus administer at maximal rate of 50 mg /min
- After required dose of IV phenytoin given, flush intravenous (IV) line with 10 mL of sodium chloride 0.9 %, to prevent phlebitis

Observations / monitoring

- Monitor respiratory rate
- Monitor ECG and pulse oximeter continuously during infusion (note potential problem of sedation)
- Monitor blood pressure every 15 minutes during infusion
- If hypotension (< 110 / 70) or bradycardia (< 60 beats / min) develop:
    - Cease infusion and notify medical officer
    - The infusion can usually be recommenced after 15 minutes at a slower rate. Flush the line with 0.9 % sodium chloride during this time
- If the woman complains of dizziness, visual disturbance or nausea:
    - Cease infusion and notify medical officer
    - Usually the infusion can be recommenced after 15 minutes at a lower rate
- Reduce the rate of administration if seizures stop before full dose is given, or if arrhythmia or venous irritation occurs
- Blood levels should be taken:
    - Six hours after the loading dose
    - Daily to check trough levels. Preferably before morning dose
    - Therapeutic range:
        - Total phenytoin 10 – 20 mg / L (40 – 80 micromol / L)
- Serum albumin concentration is taken into account when calculating free phenytoin levels. Seek specialist advice if free phenytoin levels are required

Maintenance dose

- Anticonvulsant treatment may need to be continued in consultation with the physician

References

1. Australian Medicines Handbook. Available at URL: https://amhonline.amh.net.au/
2. MIMS Online. MIMS Pharmaceutical Product Information. [online database] Available: https://www.mimsonline.com.au

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