South Australian Neonatal Medication Guidelines

Thiopental sodium

500mg injection

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

This is a High Risk Medication ⚠

Thiopental may cause hypotension, decreased cardiac output and respiratory depression. Only to be used when the airway is secure or where immediate respiratory support can be provided

Synonyms

Thiopentone, Thiopental

Dose and Indications

Thiopental is not considered first line for use as an anticonvulsant or for intubation in most neonates. Consider other more appropriate agents.

Treatment resistant seizures/prolonged status epilepticus

Intravenous

2.5mg/kg as a bolus injection

Intravenous infusion

Up to 8mg/kg/hour as a continuous intravenous infusion, adjusted according to response

Induction of anaesthesia

Intravenous

2.5mg/kg as a bolus injection

Further dose may be given to a maximum of 5mg/kg/course.

Government of South Australia

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Preparation and Administration

Extravasation can cause severe tissue necrosis

Intra-arterial injection contra-indicated as may cause arterial spasm, severe pain along the artery, thrombosis and potentially gangrene

Intravenous bolus

Omegapharm® Thiopental Sodium 500mg Injection (equivalent to thiopental sodium 470mg and sodium carbonate 30mg)

There are **TWO STEPS** to this process:

STEP ONE: Add 18.8mL of water for injection to the thiopental sodium 500mg vial (Omegapharm®). The resulting solution contains 25mg/mL thiopental sodium.

STEP TWO: Further dilute 5mL of the 25mg/mL thiopental sodium solution with 45mL compatible fluid (total volume of 50mL). The resulting solution contains 2.5mg/mL thiopental sodium.

Give as a slow push over 20-30 seconds

Dose	0.5mg	1mg	1.5mg	2mg	2.5mg	3mg	3.5mg	4mg
Volume	0.2mL	0.4mL	0.6mL	0.8mL	1mL	1.2mL	1.4mL	1.6mL

The dilution of thiopental sodium 2.5mg/mL provides a convenient solution for dose calculation. For above dose recommendations 1mL/kg is equivalent to 2.5mg/kg (using thiopental sodium 2.5mg/mL solution)

Continuous intravenous infusion

Omegapharm® Thiopental Sodium 500mg Injection (equivalent to thiopental sodium 470mg and sodium carbonate 30mg)

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STEP ONE: Add 18.8mL of water for injection to the thiopental sodium 500mg vial (Omegapharm®). The resulting solution contains 25mg/mL thiopental sodium.

STEP TWO: Further dilute 5mL of the 25mg/mL thiopental sodium solution with 45mL compatible fluid (total volume of 50mL). The resulting solution contains 2.5mg/mL thiopental sodium.

The standard strength for continuous infusion is:

- Thiopental sodium 2.5mg/mL

Diluted preparation is stable for 24 hours at room temperature

Formulae

To calculate infusion rate (mL/hr):

$$\text{Rate (mL/hr)} = \frac{\text{dose (milligram/kg/hour)} \times \text{weight(kg)}}{\text{Strength (milligram/mL)}}$$

To calculate the dose (milligram/kg/hour):

$$\text{Dose (milligram/kg/hour)} = \frac{\text{Rate (mL/hr)} \times \text{Strength (milligram/mL)}}{\text{Weight (kg)}}$$

Compatible Fluids

Glucose 5%, Sodium chloride 0.9%, Sodium Chloride 0.45%

Adverse Effects

Common

Arrhythmia, myocardial and respiratory depression, hypotension

Infrequent

Laryngospasm (during light anaesthesia), circulatory collapse, cough, electrolyte imbalance

Rare

Anaphylaxis, bronchospasm

Injection site reactions

Reconstituted solution is highly alkaline. Extravasation causes tissue necrosis.

Monitoring

- Blood pressure and respiratory function
- Therapeutic drug monitoring is not required
- Serum potassium should be monitored when high doses are used

Practice Points

- Use with caution in myotonic dystrophy and undiagnosed myopathies due to risk of respiratory depression and hypotension
- Thiopental sodium is physically incompatible with many medication and solutions, for example acidic solutions and those containing calcium and magnesium. Seek pharmacy advice
- Laryngospasm and hypotension may occur if administered too rapidly
- Laryngeal reflexes are not usually depressed until deep levels of anaesthesia are reached; during light anaesthesia minor stimuli can cause laryngospasm
- Contraindicated acute porphyria
- Use with caution in acute circulatory failure (shock), severe cardiovascular disease, hypotension, fixed cardiac output and hypovolaemia
- Thiopental sodium has a rapid onset and short duration of action
- Recovery from a single dose is rapid due to redistribution of thiopental; repeated doses have a cumulative effect with delayed recovery. Newborn infants, especially when preterm, may have delayed recovery due to low body fat and muscle content and therefore delayed redistribution. In addition, elimination may be delayed as hepatic metabolic pathways are less well developed
- Hypotension may be more likely when used in combination with fentanyl and/or midazolam
- Exercise caution when using in those with renal or hepatic impairment, due to reduced clearance
- Thiopental sodium does not provide analgesia

References

- Westrin P, Jonmarker C, Werner O, Thiopentone Requirements for Induction of Anaesthesia in Neonates and in Infants One to Six Months of Age, Anesthesiology, 1989, 71: p344-346

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