South Australian Perinatal Practice Guideline

Local Anaesthetic Toxicity (severe)

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

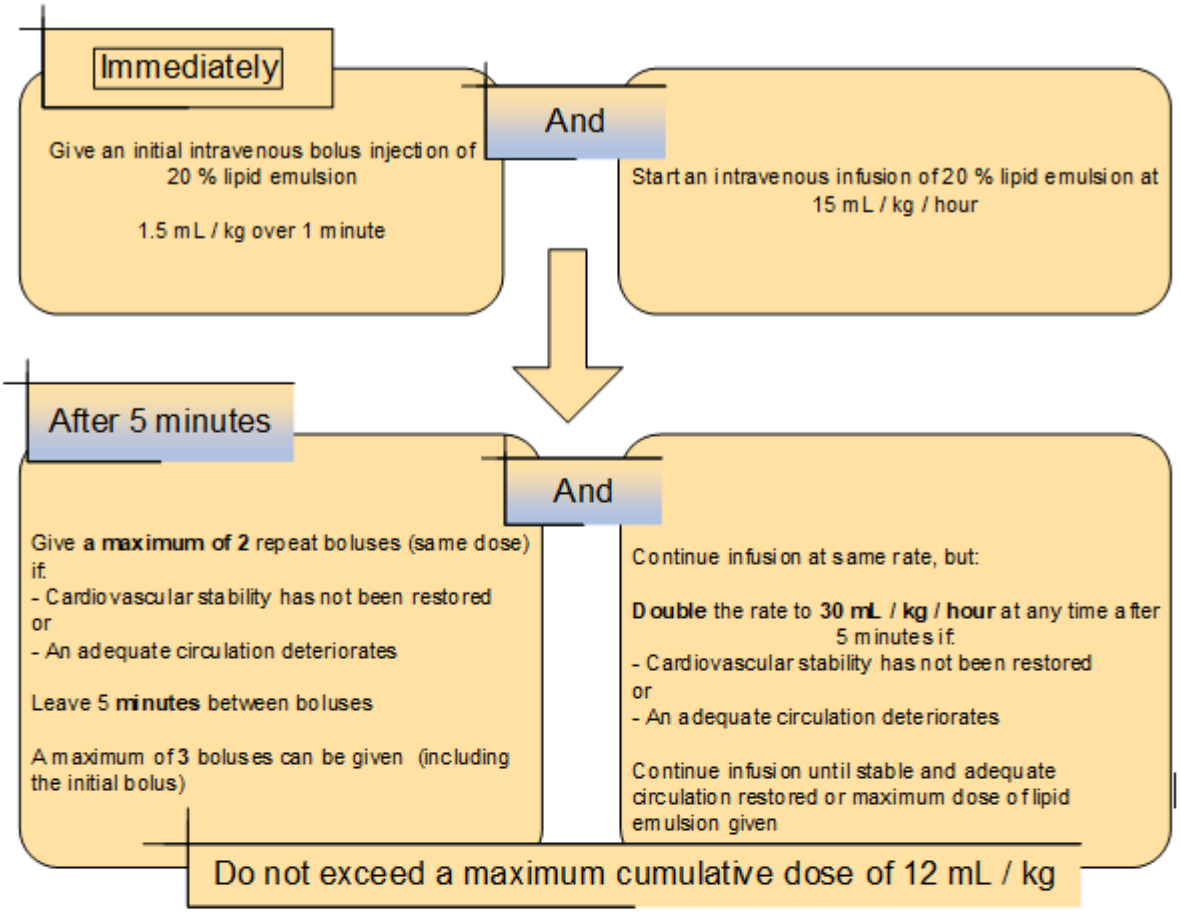
Explanation of the aboriginal artwork:
The Aboriginal artwork used symbolises the connection to country and the circle shape shows the strong relationships amongst families and the Aboriginal culture. The horse shoe shape design shown in front of the generic statement symbolises a woman and those enclosing a smaller horse shoe shape depicts a pregnant woman. 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.

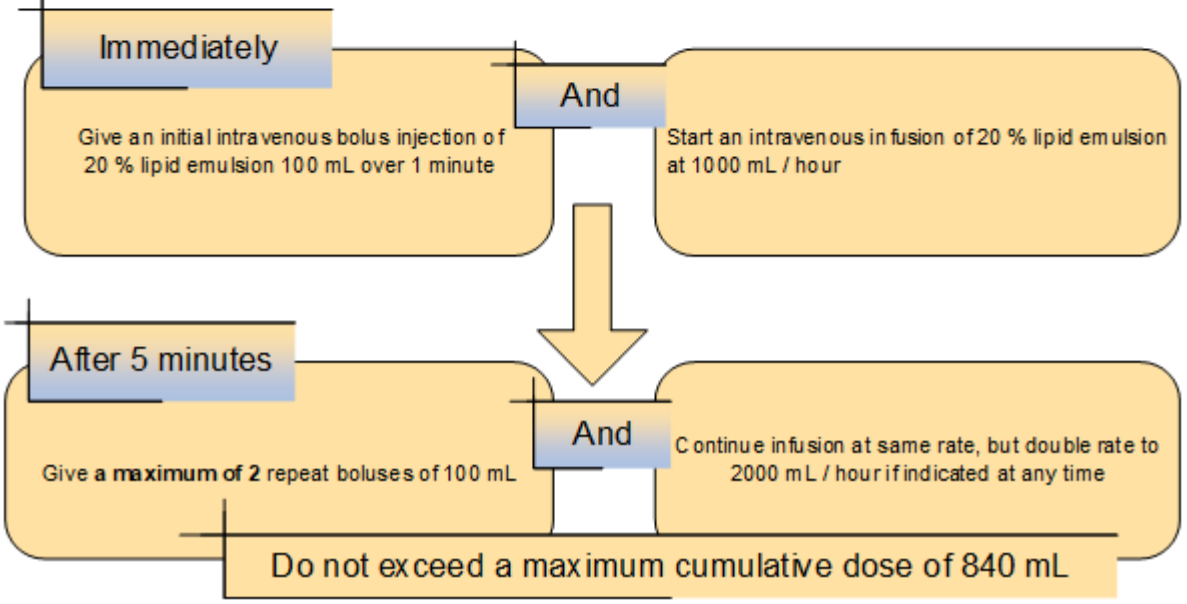
Purpose and Scope of Perinatal Practice Guideline (PPG)

The purpose of this guideline is to give clinicians information on the signs of severe local anaesthetic toxicity with subsequent management and follow up care.

Flowchart: Regimen for intravenous lipid emulsion



An approximate dose regimen for a 70 kg patient would be as follows



Association of Anaesthetists of Great Britain and Ireland. Guidelines for the Management of Severe Local Anaesthetic Toxicity. 2010. Available from URL: http://www.aagbi.org/publications/guidelines/docs/la_toxicity_2010.pdf

Local Anaesthetic Toxicity (severe)

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Summary of Practice Recommendations

- Follow Basic Life Support (BLS) and Advanced Life Support (ALS) algorithms
- As recovery from local anaesthetic-induced cardiac arrest may take >1 hour, continue resuscitation efforts for this time
- Give intravenous 20% lipid emulsion

Abbreviations

%	percent
>	greater than
mg	milligram
IV	intravenous
kg	kilogram
%	percent
>	greater than

Definitions

Local anaesthetic toxicity	A potentially fatal complication of regional anaesthesia. It can also occur in other situations with local anaesthetic injections

Local Anaesthetic Toxicity (severe)

Signs of severe toxicity

Local anaesthetic toxicity may occur some time after the initial injection

- **Central nervous system:** sudden alteration in mental status, severe agitation or sudden loss of consciousness with or without tonic-clonic convulsions
- **Cardiovascular system:** cardiovascular collapse: sinus bradycardia, conduction blocks, asystole and ventricular tachyarrhythmias may all occur

Immediate management

- Stop injecting the local anaesthetic
- Follow Basic Life Support algorithm as per *Maternal Collapse* PPG (see A-Z listing at www.sahealth.sa.gov.au/perinatal)
- Seek immediate help following local hospital / health facility procedures for Emergency Response Team
- If not already present, page / contact senior anaesthetist and request additional anaesthetic assistance
- Maintain the airway and, if necessary, secure it with a tracheal tube
- Give 100 % oxygen and ensure adequate lung ventilation (hyperventilation may help by increasing pH in the presence of metabolic acidosis)
- Confirm or establish intravenous access
- Control seizures:
    - First line – Midazolam IV 0.1–0.2 mg / kg as a slow bolus;
    - If seizures do not terminate, give
        - Thiopentone IV 125-250 mg in incremental doses of 25 mg over 10 minutes OR
        - Propofol IV 1-1.5 mg / kg

  Please note: Care must be taken that someone with airway skills is available if thiopentone or propofol are given in the event of respiratory depression.
- Assess cardiovascular status throughout
- Consider drawing blood for analysis but do not delay definitive treatment to do this

Management in cardiac arrest

- Commence cardiopulmonary resuscitation (CPR). Follow *Maternal Collapse* PPG (see A-Z listing at www.sahealth.sa.gov.au/perinatal)
- Manage arrhythmias, recognising that the arrhythmias may be very refractory to treatment
- Consider the use of cardiopulmonary bypass if available
- **GIVE INTRAVENOUS 20% LIPID EMULSION** (follow the regimen above)
- Continue CPR throughout treatment with lipid emulsion
- Recovery from local anaesthetic-induced cardiac arrest may take >1 hour
- Propofol is not a suitable substitute for lipid emulsion
- Lidocaine (lignocaine) should not be used as an anti-arrhythmic therapy
- Consider immediate birth via perimortem caesarean section in pregnant women beyond 24 weeks gestation

Management without cardiac arrest

Use conventional therapies to treat

- Hypotension
- Bradycardia
- Tachyarrhythmia

STRONGLY CONSIDER INTRAVENOUS LIPID EMULSION (It is difficult to predict which patients will progress to cardiovascular collapse and lipid emulsion can prevent this deterioration. It is a low risk intervention with potentially significant benefit).

Follow-up

- Arrange safe transfer to a clinical area with appropriate equipment and suitable staff until sustained recovery is achieved.
- Pancreatitis is a potential complication of intravenous lipid emulsion, although assays for amylase and lipase are unreliable. Clinical diagnosis and consideration of radiological diagnosis is required
- Notify hospital management in accordance with local Clinical Governance guidelines and complete a Safety Learning System (SLS) notification
- Documentation and debriefing as per *Maternal Collapse* PPG (see A-Z listing at www.sahealth.sa.gov.au/perinatal)

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