

# AAGBI Safety Guideline

## Management of Severe Local Anaesthetic Toxicity



<b>1</b> <b>Recognition</b>	<b>Signs of severe toxicity:</b> <ul style="list-style-type: none"><li>• Sudden alteration in mental status, severe agitation or loss of consciousness, with or without tonic-clonic convulsions</li><li>• Cardiovascular collapse: sinus bradycardia, conduction blocks, asystole and ventricular tachyarrhythmias may all occur</li><li>• Local anaesthetic (LA) toxicity may occur some time after an initial injection</li></ul>	
<b>2</b> <b>Immediate management</b>	<ul style="list-style-type: none"><li>• Stop injecting the LA</li><li>• Call for help</li><li>• Maintain the airway and, if necessary, secure it with a tracheal tube</li><li>• Give 100% oxygen and ensure adequate lung ventilation (hyperventilation may help by increasing plasma pH in the presence of metabolic acidosis)</li><li>• Confirm or establish intravenous access</li><li>• Control seizures: give a benzodiazepine, thiopental or propofol in small incremental doses</li><li>• Assess cardiovascular status throughout</li><li>• Consider drawing blood for analysis, but do not delay definitive treatment to do this</li></ul>	
<b>3</b> <b>Treatment</b>	<b>IN CIRCULATORY ARREST</b> <ul style="list-style-type: none"><li>• Start cardiopulmonary resuscitation (CPR) using standard protocols</li><li>• Manage arrhythmias using the same protocols, recognising that arrhythmias may be very refractory to treatment</li><li>• Consider the use of cardiopulmonary bypass if available</li></ul> <b>GIVE INTRAVENOUS LIPID EMULSION</b> (following the regimen overleaf) <ul style="list-style-type: none"><li>• Continue CPR throughout treatment with lipid emulsion</li><li>• Recovery from LA-induced cardiac arrest may take &gt;1 h</li><li>• Propofol is not a suitable substitute for lipid emulsion</li><li>• Lidocaine should not be used as an anti-arrhythmic therapy</li></ul>	<b>WITHOUT CIRCULATORY ARREST</b> Use conventional therapies to treat: <ul style="list-style-type: none"><li>• hypotension,</li><li>• bradycardia,</li><li>• tachyarrhythmia</li></ul> <b>CONSIDER INTRAVENOUS LIPID EMULSION</b> (following the regimen overleaf) <ul style="list-style-type: none"><li>• Propofol is not a suitable substitute for lipid emulsion</li><li>• Lidocaine should not be used as an anti-arrhythmic therapy</li></ul>
<b>4</b> <b>Follow-up</b>	<ul style="list-style-type: none"><li>• Arrange safe transfer to a clinical area with appropriate equipment and suitable staff until sustained recovery is achieved</li><li>• Exclude pancreatitis by regular clinical review, including daily amylase or lipase assays for two days</li><li>• Report cases as follows:<ul style="list-style-type: none"><li>in the United Kingdom to the National Patient Safety Agency (via <a href="http://www.npsa.nhs.uk">www.npsa.nhs.uk</a>)</li><li>in the Republic of Ireland to the Irish Medicines Board (via <a href="http://www.imb.ie">www.imb.ie</a>)</li></ul></li></ul> If Lipid has been given, please also report its use to the international registry at <a href="http://www.lipidregistry.org">www.lipidregistry.org</a> . Details may also be posted at <a href="http://www.lipidrescue.org">www.lipidrescue.org</a>	

Your nearest bag of Lipid Emulsion is kept.....

This guideline is not a standard of medical care. The ultimate judgement with regard to a particular clinical procedure or treatment plan must be made by the clinician in the light of the clinical data presented and the diagnostic and treatment options available.

### IMMEDIATELY

Give an initial intravenous bolus injection of 20% lipid emulsion  
 $1.5 \text{ ml.kg}^{-1}$  over 1 min

AND

Start an intravenous infusion of 20% lipid emulsion at  $15 \text{ ml.kg}^{-1}.\text{h}^{-1}$

### AFTER 5 MIN

Give a **maximum of two** repeat boluses (same dose) if:

- cardiovascular stability has not been restored or
- an adequate circulation deteriorates

Leave **5 min** between boluses

A maximum of **three** boluses can be given (including the initial bolus)

AND

Continue infusion at same rate, but: **Double** the rate to  $30 \text{ ml.kg}^{-1}.\text{h}^{-1}$  at any time after 5 min, if:

- cardiovascular stability has not been restored or
- an adequate circulation deteriorates

Continue infusion until stable and adequate circulation restored or maximum dose of lipid emulsion given

***Do not exceed a maximum cumulative dose of  $12 \text{ ml.kg}^{-1}$***

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

### IMMEDIATELY

Give an initial intravenous bolus injection of 20% lipid emulsion  
100 ml over 1 min

AND

Start an intravenous infusion of 20% lipid emulsion at  $1000 \text{ ml.h}^{-1}$

### AFTER 5 MIN

Give a **maximum of two** repeat boluses of 100 ml

AND

Continue infusion at same rate but **double** rate to  $2000 \text{ ml.h}^{-1}$  if indicated at any time

***Do not exceed a maximum cumulative dose of 840 ml***



This AAGBI Safety Guideline was produced by a Working Party that comprised:  
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**This Safety Guideline is endorsed by the Australian and New Zealand College of Anaesthetists (ANZCA).**

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