# AAGBI Safety Guideline
## Management of Severe Local Anaesthetic Toxicity

### 1. Recognition

**Signs of severe toxicity:**
- Sudden alteration in mental status, severe agitation or loss of consciousness, with or without tonic-clonic convulsions
- Cardiovascular collapse: sinus bradycardia, conduction blocks, asystole and ventricular tachyarrhythmias may all occur
- Local anaesthetic (LA) toxicity may occur some time after an initial injection

### 2. Immediate management

- Stop injecting the LA
- Call for help
- 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 plasma pH in the presence of metabolic acidosis)
- Confirm or establish intravenous access
- Control seizures: give a benzodiazepine, thiopental or propofol in small incremental doses
- Assess cardiovascular status throughout
- Consider drawing blood for analysis, but do not delay definitive treatment to do this

### 3. Treatment

**In circulatory arrest**
- Start cardiopulmonary resuscitation (CPR) using standard protocols
- Manage arrhythmias using the same protocols, recognising that arrhythmias may be very refractory to treatment
- Consider the use of cardiopulmonary bypass if available

**Give intravenous lipid emulsion** (following the regimen overleaf)
- Continue CPR throughout treatment with lipid emulsion
- Recovery from LA-induced cardiac arrest may take >1 h
- Propofol is not a suitable substitute for lipid emulsion
- Lidocaine should not be used as an anti-arrhythmic therapy

**Without circulatory arrest**
- Use conventional therapies to treat:
  - hypotension,
  - bradycardia,
  - tachyarrhythmia

**Consider intravenous lipid emulsion** (following the regimen overleaf)
- Propofol is not a suitable substitute for lipid emulsion
- Lidocaine should not be used as an anti-arrhythmic therapy

### 4. Follow-up

- Arrange safe transfer to a clinical area with appropriate equipment and suitable staff until sustained recovery is achieved
- Exclude pancreatitis by regular clinical review, including daily amylase or lipase assays for two days
- Report cases as follows:
  - in the United Kingdom to the National Patient Safety Agency (via [www.npsa.nhs.uk](http://www.npsa.nhs.uk))
  - in the Republic of Ireland to the Irish Medicines Board (via [www.imb.ie](http://www.imb.ie))
If Lipid has been given, please also report its use to the international registry at [www.lipidregistry.org](http://www.lipidregistry.org). Details may also be posted at [www.lipidrescue.org](http://www.lipidrescue.org)

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*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.*

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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
- Start an intravenous infusion of 20% lipid emulsion at 1000 ml·h⁻¹

**AFTER 5 MIN**

- Give a maximum of two repeat boluses of 100 ml
- Continue infusion at same rate, but double rate to 2000 ml·h⁻¹ if indicated at any time

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

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This AAGBI Safety Guideline was produced by a Working Party that comprised: Grant Cave, Will Harrop-Griffiths (Chair), Martyn Harvey, Tim Meek, John Picard, Tim Short and Guy Weinberg. 

This Safety Guideline is endorsed by the Australian and New Zealand College of Anaesthetists (ANZCA).