Guideline for the Severe Local Anaesthetic Toxicity

on the Birthing Centre

Author/Owner	Lead obstetric anaesthetic consultant	
Equality Impact Assessment	N/A if clinical guideline or procedure	
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In this guideline we use the term 'woman' throughout. This should be taken to include people who do not identify as women but are pregnant.

1.0 Introduction

Local Anaesthetic systemic toxicity (LAST) is a potentially fatal complication caused by a high circulating plasma concentration of local anaesthetic generally occurring as a result of accidental intravenous injection or delayed absorption from the anaesthetic depot at the injection site.

Pregnancy increases the risk of LAST due to the hormonal and circulatory physiological changes which occur.

LAST has been recognised as an important potential cause of maternal mortality which is compounded by the increase in complex cases due to increased maternal age, obesity, and co-morbidities.

Pregnant women in cardiac arrest may have a poorer survival rate and resuscitation is complicated by the physiological changes of pregnancy. Therefore, it is important that perimortem LSCS is considered in a pregnant woman who arrests as a result of LAST.

2.0 Objective

To ensure the timely recognition and management of severe local anaesthetic toxicity following regional anaesthesia.

3.0 Scope

This guideline applies to all medical and midwifery staff working on the maternity unit.

4.0 Main body of the document

Local anaesthetic systemic toxicity (LAST) must be considered when women who are receiving epidural analgesia or have had local anaesthetic infiltration for any reason, show any of the signs of toxicity listed below. Remember local anaesthetic (LA) toxicity may occur sometime after the initial injection especially if an infusion is running.

4.1 Signs of severe toxicity:

- Peri-oral tingling may be an early sign of LA toxicity
- Sudden alteration of mental state
- Severe agitation
- Sudden loss of consciousness, with or without tonic-clonic convulsions
- Cardiovascular collapse:
    - sinus bradycardia
    - conduction blocks
    - hypotension
    - ventricular tachyarrhythmias
    - asystole

4.2 Immediate management:

- Stop injecting the LA / switch off epidural infusion
- **Call for help:**
  - **Inform shift leader and put out a Code Blue call**
  - The cardiac arrest team will also be required if the woman has or is in danger of having a cardiac arrest.
  - The Neonatal resuscitation team will be required if a peri-mortem caesarean section is required
- Fetch the cardiac arrest trolley and the intralipid – intralipid is stored in the obstetric theatre in the emergency drug drawer and also in the cupboard used to store the epidural infusion bags
- Give 100% oxygen and ensure adequate lung ventilation – maintain the airway and ensure early intubation in event of cardiac arrest (hyperventilation may help by increasing pH in the presence of metabolic acidosis)
- Confirm or establish intravenous access

4.3 If circulatory arrest:

- Start continuous CPR according to ALS protocol
- **Give** intralipid – see below for regime
  - **PREPARE FOR PERI-MORTEM CAESAREAN SECTION AFTER 4 MINUTES OF CPR – BABY SHOULD BE DELIVERED BY 5 MINS**

4.4 If no circulatory arrest

- Use conventional therapies to treat hypotension, bradycardia or tachyarrhythmias.
- **Consider** intralipid therapy – as regime below

- Monitor the baby for signs of fetal distress associated with the maternal compromise.

- Control seizures with small incremental dose of benzodiazepine, thiopentone or propofol.

4.5 Intralipid treatment regime

Intralipid treatment regime

- Give an intravenous bolus injection of Intralipid® 20% 1.5 ml.kg^{-1} over 1 min (approx. 100ml of lipid emulsion in 70kg adult)
- Continue CPR
- Start an intravenous infusion of Intralipid® 20% at 15 ml.kg^{-1}hr^{-1}(17.5ml/min in 70kg adult)
- **If no cardiac output at 5 mins perimortem Caesarean section must be performed**
- Repeat the bolus injection twice at 5 min intervals if an adequate circulation has not been restored or an adequate circulation deteriorates
- After the infusion has been running for 5 mins, increase the rate to 30ml.kg^{-1}hr^{-1} if an adequate circulation has not been restored
- Continue infusion until a stable and adequate circulation has been restored or maximum dose of lipid emulsion has been given.
- A maximum of three boluses can be given (including the initial bolus)
- Do not exceed a maximum cumulative dose of 12 ml.kg^{-1} (840ml in 70kg adult)

4.6 Drug doses for seizure activity

Benzodiazepines:

„ Lorazepam IV 0.1 mg/kg (max 4mg) -or- if IV access not available

„ Diazepam PR 0.5 mg/kg (max 10mg)

Repeat benzodiazepine dose after 5 minutes, if seizures persist

Clinicians experienced in their use can add propofol or thiopentone if seizures persist; beware negative ionotropic effect.

Consider neuromuscular blockade if seizure cannot be controlled.

Contact anaesthetics / ICU if not already present

Remember:

- Continue CPR throughout treatment with lipid emulsion
- Prolonged resuscitation may be necessary
- Recovery from LA-induced cardiac arrest may take >1 hour
- The woman will need monitoring on the Critical Care Unit (CCU) post recovery

- Arrange safe transfer with appropriate equipment and suitable staff following liaison with staff on CCU

5.0 Roles and responsibilities

5.1 Midwives

To monitor women with regional anaesthesia for adverse effects.
To work as part of a multi-disciplinary team to manage the potentially life threatening occurrence of local anaesthetic toxicity.

5.2 Obstetricians

To work as part of a multi-disciplinary team to manage the potentially life threatening occurrence of local anaesthetic toxicity.

5.3 Anaesthetists

To co-ordinate and manage the potentially life threatening occurrence of local anaesthetic toxicity.

6.0 Associated documents and references

Quick reference handbook for obstetric emergencies (2024) The Obstetric Anaesthetists Association

https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.oaa-anaes.ac.uk%2Fdownloads%2Ffinal-obs-qrh-feb-9th-24-19---local-anaesthetic-toxicity.doc&wdOrigin=BROWSELINK

The Association of Anaesthetists of Great Britain & Ireland AAGBI safety Guideline, Management of Severe Local Anaesthetic Toxicity (2010)

Sarah Bern, Guy Weinberg (2011). Local anaesthetic toxicity and lipid resuscitation in pregnancy [online]http://www.ncbi.nlm.nih.gov/pubmed/2149132 accessed 17/04/2013

7.0 Training and resources

Training will be delivered as outlines in the Maternity Training Needs Analysis. This is updated on an annual basis.

8.0 Monitoring and audit

Any adverse incidents relating to the guideline for the management of severe local anaesthetic toxicity on the birthing centre will be monitored via the incident reporting system. Any problems will be actioned via the case review and root cause analysis action plans. The action plans are monitored by the risk midwife to ensure that improvements in care are made.

The trends and any root cause analysis are discussed at the monthly risk meetings to ensure that appropriate action has been taken to maintain safety.

The guideline for the management of severe local anaesthetic toxicity on the birthing centre will be audited in line with the annual audit programme, as agreed by the CBU. The audit action plan will be reviewed at the monthly risk management meetings on a quarterly basis and monitored by the risk midwife to ensure that improvements in care are made.

9.0 Equality and Diversity

The Trust is committed to an environment that promotes equality and embraces diversity in its performance as an employer and service provider. It will adhere to legal and performance requirements and will mainstream equality, diversity and inclusion principles through its policies, procedures and processes. This guideline should be implemented with due regard to this commitment.

To ensure that the implementation of this guideline does not have an adverse impact in response to the requirements of the Equality Act 2010 this policy has been screened for relevance during the policy development process and a full equality impact assessment is conducted where necessary prior to consultation. The Trust will take remedial action when necessary to address any unexpected or unwarranted disparities and monitor practice to ensure that this policy is fairly implemented.

This guideline can be made available in alternative formats on request including large print, Braille, moon, audio, and different languages. To arrange this please refer to the Trust translation and interpretation policy in the first instance.

The Trust will endeavour to make reasonable adjustments to accommodate any employee/patient with particular equality, diversity and inclusion requirements in implementing this guideline. This may include accessibility of meeting/appointment venues, providing translation, arranging an interpreter to attend appointments/meetings, extending policy timeframes to enable translation to be undertaken, or assistance with formulating any written statements.

9.1 Recording and Monitoring of Equality & Diversity

The Trust understands the business case for equality, diversity and inclusion and will make sure that this is translated into practice. Accordingly, all guidelines will be monitored to ensure their effectiveness.

Monitoring information will be collated, analysed and published on an annual basis as part of Equality Delivery System. The monitoring will cover the nine protected characteristics and will meet statutory employment duties under the Equality Act 2010. Where adverse impact is identified through the monitoring process the Trust will investigate and take corrective action to mitigate and prevent any negative impact.

Appendix 1 Glossary of terms

ALS – Advanced life support
CCU – Critical Care Unit
CPR – Cardiopulmonary resuscitation
LA – Local Anaesthetic
LAST – Local Anaesthetic Systemic Toxicity
NRLS – National reporting and learning system
SHO – Senior house officer

Appendix 2

Maintain a record of the document history, reviews and key changes made (including versions and dates)

Version	Date	Comments	Author
1	06/07/2010		
2	06/03/2013		
3			

Review Process Prior to Ratification:

Name of Group/Department/Committee	Date
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Reviewed at Women's Business and Governance meeting	22/01/2021
Approved by CBU 3 Overarching Governance Meeting	24/03/2021
Approved at Trust Clinical Guidelines Group	13/05/2021
Approved at Medicines Management Committee (if document relates to medicines)	N/A

Trust Approved Documents (policies, clinical guidelines and procedures)

Approval Form

Please complete the following information and attach to your document when submitting a policy, clinical guideline or procedure for approval.

Document type (policy, clinical guideline or procedure)	Guideline
Document title	Management of severe local anaesthetic toxicity on the birthing centre
Document author (Job title and team)	Dr Ellwood/G Dunning
New or reviewed document	Reviewed
List staff groups/departments consulted with during document development	Senior midwives, obstetric consultants, lead obstetric anaesthetist
Approval recommended by (meeting and dates):	Reviewed at Women's Business and Governance meeting Date: 17.05.2024 Approved by CBU 3 Governance Meeting Date: 28/06/2024
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Key words for search criteria on intranet (max 10 words)	Local anaesthetic toxicity
Key messages for staff (consider changes from previous versions and any impact on patient safety)	
I confirm that this is the <u>FINAL</u> version of this document	**Name: Juliette Thompson** **Designation: Practice Educator Midwife**

FOR COMPLETION BY THE CLINICAL GOVERNANCE TEAM

Approved by (group/committee): CBU 3 Overarching Governance & Trust Clinical Guidelines Group
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