

## Policy for the Management of Adult Patients with a Continuous Local Anaesthetic Infusion

### Incorporating Administration and Monitoring of who are to receive Local Anaesthetic Bolus's into a wound catheter

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### **Review dates and Details of Changes made during the review**

Change s in local anaesthetic devices and drug strength

Only using Dosifuser devices

0.125% Levobupivacaine (multi-rate) 600ml

0.25% bupivacaine 5.2ml fixed rate 250ml

NRFit

Local anaesthetic Toxicity guideline

### **KEY WORDS**

Local anaesthetic Infusion, Wound Catheter,

## 1 INTRODUCTION and Overview

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- 1.1 This document sets out the University Hospitals of Leicester (UHL) NHS Trust policy for the management of a patient with a continuous local anaesthetic infusion, other than via the epidural route. The policy gives directives to ensure the safe administration of a local anaesthetic infusion to adult patients on all clinical areas within UHL by staff that have undergone training in how to monitor a patient with a continuous local anaesthetic infusion.
- 1.2 Local anaesthetics provide excellent pain relief, however their effect is short lasting and best results are achieved via a continuous infusion
- 1.3 Local anaesthetic infusions are a good modality for managing certain types of postoperative, chronic or trauma induced pain. A catheter is inserted adjacent to a nerve trunk or in a plexus sheath by a surgeon or an anaesthetist under strict aseptic conditions, ideally in theatre, an anaesthetic room or theatre recovery area. A continuous infusion of local anaesthetic can then be delivered via a locked infusion device, and the patient nursed on a general ward (Serpell 2003)
- 1.4 Examples of where a continuous local anaesthetic can be used:
  - Sciatic nerve infusion following amputation / surgery
  - Brachial plexus
  - Cervical plexus
  - Lumbar plexus
  - Paravertebral infusion
  - Rectus sheath infusion
  - Erector spinae plane infusion
  - For some chronic pain conditions to aid physiotherapy i.e. Complex Regional Pain Syndrome. (CRPS)
- 1.5 The advantages of a continuous local anaesthetic infusion
  - a) The potential to achieve excellent analgesia with minimal side effects
  - b) Can be opioid sparing when used in conjunction with IV PCA Morphine
  - c) Can be used as part of an enhanced recovery package to enable earlier mobilisation
  - d) Unlikely to cause sedation, respiratory depression or nausea

## 2 POLICY SCOPE

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- 2.1 This policy applies to all adult inpatients appropriate for a continuous local anaesthetic infusion (Serpell 2003)
- 2.2 This policy applies to all registered professionals including registered nursing associates working in a clinical area where they will be expected to have dealings with the local anaesthetic equipment and provide monitoring for a patient with a continuous local anaesthetic infusion. This policy is supported by the Leicestershire Medicine Code
- 2.3 This policy includes trainee assistant practitioners and assistant practitioners who work in areas where local anaesthetic infusions are used and have undergone the appropriate training and assessment process.

### 3 DEFINITIONS

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- 3.1 A continuous local anaesthetic infusion is a technique, which allows a continuous infusion of local anaesthetic either bupivacaine or levobupivacaine to be infused via a catheter into a patient. This can be used with or without the use of intra venous Patient Controlled Analgesia (PCA)

### 4 ROLES AND RESPONSIBILITIES

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**The executive Lead for this Policy is the Board Director**

- 4.1 **The Board Director and CMG Management Team (Lead Nurse, Head of Service, and Matrons) are responsible for**

- a) Ensure their CMG Staff are made aware of and comply with this policy
- b) Address any concerns raised regarding practice through their CMG incident reporting systems.

- 4.2 **Registered nurses prescribing a continuous local anaesthetic infusion (this includes Anaesthetists, Surgical Doctors, Acute Pain Nurse Specialists who are Non-Medical Prescribers) are responsible for**

- a) Assessing the patients suitability for receiving a continuous local anaesthetic infusion
- b) Prescribing the continuous local anaesthetic infusion on the patients medication chart or e-meds in line with this policy
- c) Ensuring that the ward caring for or receiving a patient has suitably trained staff to monitor a patient with a continuous local anaesthetic infusion

- 4.3 **Department Managers and Ward Sisters are responsible for**

- a) Ensuring all their registered nursing staff are competent to monitor a patient with a continuous local anaesthetic infusion

- 4.4 **Registered Nurses including registered nursing associates excluding medical staff who monitor a patient with a continuous local anaesthetic infusion are responsible for:**

Successfully completing the relevant training and being assessed as competent to monitor a patient with a continuous local anaesthetic infusion (see section 6 Education and Training)

- 4.5 **The Acute Pain Team are responsible for:**

- a) Providing education and training for all healthcare professionals on all aspects of local anaesthetic infusions and input information into HELM
- b) Ensuring all local anaesthetic equipment is available for use
- c) Having oversight of the monitoring of all patients with a continuous local anaesthetic infusion for side effects and patient satisfaction
- d) Monitoring compliance with this policy through audit

- e) Managing audit data and provide reports as necessary
- f) Providing information to the UHL Inpatient Pain Operational Group as required.
- g) Supporting CMG'S with incident investigation and complaint management

## **5 Policy Implementation and Associated Documents**

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5.1 Verbal Patient Consent must be obtained prior to the insertion of a local anaesthetic catheter

### **5.2 Indications for a local anaesthetic infusion**

- a) Patients having elective or emergency surgery where acute pain is expected to be moderate or severe should be considered for a local anaesthetic infusion in conjunction with IV PCA if appropriate. Examples include laparotomy, laparoscopic colorectal surgery, gynaecology and orthopaedic surgery
- b) A local anaesthetic infusion should also be considered when epidural analgesia is contra-indicated or not possible in conjunction with IV PCA
- c) A local anaesthetic infusion can be used for some chronic pain conditions but must be done in conjunction with the acute pain team.
- d) A local anaesthetic infusion can be used for patients following fractured neck of femur where significant other co morbidities prevent immediate surgery.
- e) A local anaesthetic infusion can be used as an additional modality of pain relief in palliative situations.

### **5.3 Contraindications for using a continuous local anaesthetic infusion.**

- a) Patients who are unable to give informed consent.
- b) Any patient that is known to be allergic to local anaesthetic.
- c) Any patient that has any infection at the proposed site of the infusion
- d) Any patient who has significant hypotension

### **5.4 Side Effects of a continuous local anaesthetic infusion**

Systemic toxicity is related to the amount of drug absorbed by the systemic circulation. Principal systems affected are the Central Nervous System (CNS) and the Cardiovascular System (CVS) (Appendix 5)

a) Side effects include

- Hypotension
- Arrhythmia
- Increased risk of pressure sore development due to sensory loss
- Risk of motor dysfunction (Appendix 5)

b) Signs of overdose

- Increased CNS stimulation – tingling around the hands, feet and mouth.
- Loss of consciousness, convulsions and death (Appendix 4,5)

### 5.5 Problems with inadequate analgesia

If a patient experiences pain and has a local anaesthetic infusion running, go through the following check list

- Check the entry site for signs of leakage
- Check to see that no clamps have been left on
- Check to see that the infusion is running at the prescribed rate.
- Can the infusion rate be increased?
- Has supplementary analgesia been given
- Can you reposition the patient?

When all the above has been checked and confirmed that the patient is still experiencing pain then contact the acute pain team or out of hours contact the on call anaesthetist.

**This policy is supported by the following procedures which must be used in conjunction**

Procedure	Appendix
The Procedure for insertion of an infusion catheter	1
Drug solutions available and infusion rates	2
Nursing observations and ward management	3
Who to call if you have a problem with a continuous local anaesthetic infusion	4
Guidelines for the management of severe local anaesthetic toxicity	5

## 6 EDUCATION AND TRAINING REQUIREMENTS

6.1 Registered Nurses including Registered Nursing Associates undertaking the preparation and monitoring of a patient with a continuous local anaesthetic infusion must:

Successfully complete the Trust approved competency based training and assessment programme in the form of Pain Management Inpatients in Pain Module one (elearning) and Pain Management Module 2 Pain After Surgery in conjunction with the Acute Pain Service accessed via the booking service on HELM

6.2 Registered Nurses including Registered Nursing Associates new to the Trust or employed through an agency must provide evidence of training and summative practical assessment to practice within this Trust. These registered professionals must then complete an equipment competency to ensure they are able to use the infusion device. This can be undertaken by a ward /unit LCAT assessor or by a member of the acute pain team.

6.3 Verification of a professional's competence must be kept by the Acute Pain Service and within the CMG and transferred accordingly. It will also be recorded on the Clinical Skills Passport on HELM

6.4 Assistant Practitioners can carry out observations and monitor patients with a local anaesthetic infusion under the direct supervision of a Registered Nurse providing they work in an adult clinical area that use local anaesthetic infusions on a regular basis and successfully complete the Trust approved competency based training and assessment in the form of Pain Management Inpatients in Pain Module one (elearning) and Pain Management Module 2 Pain After Surgery in conjunction with the Acute Pain Service

## 7 PROCESS FOR MONITORING COMPLIANCE

### 7.1

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
Key performance indicators / audit standards on the local anaesthetic infusion chart are: Patient Satisfaction Analgesic Effectiveness Patient Observations Amount used over the period of time Length of time Used Side effects	Senior Acute Pain Nurse Specialist to liaise with relevant Clinical Area Managers if issues raised around compliance	Senior Acute pain leads	<b>Daily</b>	Lead Clinician for Acute Pain Team and the Acute Pain Team will raise concerns, issues and share best practice with the CMG Management teams for their action.
Audit is incorporated into the charts to check compliance	Lead Clinician for Acute Pain Team and the Acute Pain Team will raise concerns, issues and share best practice with the CMG Management teams for their action.	Senior Acute pain leads	Charts are monitored on ward rounds. Incidents reported on datix. Reports shared at Acute Pain Operational Groups Audit of a continuous local anaesthetic infusion is completed at the patients' bedside after use by the ward nurse using the local anaesthetic Infusion chart. This information is then recorded on a database held by the Acute Pain Team.	Acute Pain Operational Group (meet every 2-3 months)
Audit is incorporated into HELM to check for compliance after the acute pain study day	Senior Acute Pain Nurse Specialists raise issues with Clinical Area Managers and share best practice with the CMG Management teams for their action.	Senior Acute pain leads	The registers from the Acute Pain Study Day to be monitored against HELM every six months to monitor compliance	Senior Acute Pain Nurse Specialist to liaise with relevant Clinical Area Managers if issues raised around compliance

- 7.2 Lead for this Section:  
Acute Pain Team – collect and report on the data to the UHL In Patient Pain Operational Group chaired by Lead Clinician for Acute Pain.  
Acute Pain Nursing Team to monitor nursing competency through HELM

## 8 EQUALITY IMPACT ASSESSMENT

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- 8.1 The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs
- 8.2 As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

## 9 Supporting Reference, EVIDENCE BASE AND RELATED POLICIES

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British Medical Association (2021) **British National Formulary 82**

Dougherty L & Mallett J (2000) (eds) **Manual of Clinical Nursing Procedures. The Royal Marsden Hospital — 5<sup>th</sup> Edition** Blackwell Science – London

Hunter D (1993) **Acute Pain** in Carroll D & Bowsher D (1993) (eds) **Pain – Management & Care** Butterworth Heinemann – Oxford

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Murphy D. (2003) Nerve Blocks for Acute Pain : Principles. **In Clinical Pain Management Acute Pain**. Rowbotham D. Macintyre P. (eds) Arnold London.

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Niraj G, Kelkar A, Hart E, Kaushik V, Fleet D, Jameson J. **Four quadrant transversus abdominis plane block and continuous transversus abdominis plane analgesia: a 3-year prospective audit in 124 patients**. J Clin Anesth 2015; 27(7): 579-84

Niraj G, Kelkar A, Hart E, Malik D, Yeow D, Chaudhri S, Singh B. **Comparison of analgesic efficacy of four quadrant transversus abdominis plane (TAP) block and continuous posterior TAP analgesia with epidural analgesia in patients undergoing laparoscopic colorectal surgery: An Open-Label, Randomized, Non-inferiority trial**. Anaesthesia 2014; 69(4): 348-55

NMC **The Code of Professional Practice**. HMSO

NMC **Standards for Medicines Management** HMSO



Serpell M. (2003) Clinical pharmacology – Local anaesthetics. **In Clinical Pain Management Acute Pain**. Rowbotham D. Macintyre P. (eds) Arnold London.

## **10 PROCESS FOR VERSION CONTROL, DOCUMENT ARCHIVING AND REVIEW**

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- 10.1 This document will be uploaded onto SharePoint and available for access by Staff through INsite and on the Pain management Web site via INsite. It will be stored and archived through this system.
- 10.2 The Acute Pain Operational Group is responsible for the review of this document every three years.

The technique with risks and benefits must be explained to the patient and verbal consent obtained

The procedure for the insertion of an infusion catheter	
No	Action
1	The catheter must be sited in an appropriate environment where asepsis can be maintained and where monitoring and skilled assistance are available – in accordance with the Association of Anaesthetists of Great Britain and Ireland (AAGBI) who also recommend using <b>full aseptic technique</b> .
2	The equipment used must be sterile and kept so on a sterile field on a trolley which has been cleaned with chlorclean and allowed to dry.
3	Full surgical hand wash with chlorhexidine 4%, povidone iodine 7.5% or Triclosan 2% for 2 minutes, ensuring that all areas of the hands and wrists are scrubbed paying attention to finger tips, thumbs and wrists. After rinsing thoroughly, dry thoroughly with a sterile towel.
4	Gloves, gown, hat and mask must be used
5	Preparation of the patient's skin using 0.5% chlorhexidine in 70% alcohol, cleaning in a circular motion from the centre of the site outwards. The skin prep must be allowed to dry for 2 minutes, to allow the alcohol to evaporate and the chlorhexidine to penetrate deeper skin layers. A large surgical drape must be used
6	The catheter is inserted under direct vision if it is being placed at the end of a surgical procedure or by using real - time ultra sound guidance.
7	The Medical Practitioner who inserts the catheter is responsible for documenting the technique of insertion, the site, number and length of catheter or catheters inserted in the patients medical notes as part of the operation note. The anaesthetist is responsible for documenting on the local anaesthetic observation green sheet the number of catheters and the site of each catheter. The Medical Practitioner/Anaesthetist is responsible for ensuring the infusion device is fitted to the catheter(s) prior to the patient leaving theatre Any bolus of local anaesthetic given at insertion must be documented on the patient's drug chart or recorded on nervecentre e-medication
8	Good catheter care is essential to <b>minimise the risks of infection</b> . The catheter should be attached to a sterile filter to prevent entry of micro-organisms. A sterile clear occlusive dressing should cover the catheter insertion site. Sterile 'Steristrips can be used to anchor the catheter, but care should be taken to ensure that the catheter entry site through the skin remains visible under the clear dressing allowing ward nurse to inspect the site. A Y connector should be used to join 2 catheters to a device

Local anaesthetic infusions are available in pre prepared NRFit elastomeric devices/Dosifusers. These devices are single use and therefore disposable.

We have 2 types available for use with routinely only one dosifuser per patient. Two catheters can be joined to one device with a “y connector”

- Bupivacaine 0.25% 250mls and runs at 5mls an hour.
- Levobupivacaine 0.125% 600ml Multi-Rate Dosifuser (2-14mls in increments of 2mls)

The infusion should be prescribed on the Inpatient Pain Anaesthetic Drug chart within critical care or nerve centre prescribing with the infusion range clearly stated.

All staff who set up these infusions should only do so with a prescription and a completed local anaesthetic observation chart (appendix 3) that clearly states the number of catheters and the exact location of each catheter.

It is recommended that pre filled devices are used with a maximum infusion rate of 0.2mls/kg/hr (BNF 2013) It is the prescribers responsibility not to exceed this dose.

### The Dosifuser



Balanced analgesic regimes are recommended. Paracetamol, codeine, tramadol and NSAIDS can be used in conjunction with a local anaesthetic infusion if required and not contra indicated for the patient.

Correct and careful observation of these patients is necessary to ensure they have adequate pain relief but do not experience any side effects from the local anaesthetic. These might include tingling around the mouth, light headedness or palpitations (Murphy 2003)

If signs of overdose occur the infusion is stopped immediately and medical help sought. The patient must have a patent intravenous cannula at all times.

<b>Procedure for monitoring a patient with a local anaesthetic infusion</b>	
No	Action
1	<p>Monitor and observe hourly for four hours and four hourly thereafter. This is to ensure the infusion catheter has not become dislodged, the catheter site does not show any signs of infection, and to monitor for side effects or overdose of the local anaesthetic</p> <p>Monitor and observe</p> <ul style="list-style-type: none"> <li>• Pain Score</li> <li>• Respiration rate</li> <li>• Pulse and Blood pressure</li> <li>• Emesis (PONV) score</li> <li>• Bromage Score</li> <li>• Record of supplementary analgesia</li> <li>• Infusion rate</li> <li>• Total amount infused</li> <li>• Programme pump check</li> </ul> <p>These observations are recorded on a designated chart for monitoring patients with a local anaesthetic infusion</p>
2	Check the insertion site for leakage and signs of infection
3	<p>The patient can be given additional analgesia if prescribed</p> <p>Paracetamol NSAID if not contraindicated Codeine Tramadol Oramorph IV PCA Morphine</p>
4	There is no need to wean the infusion prior to discontinuation
5	<p>The infusion is stopped when the device is complete/empty. The time the device is in the patient will depend on the volume and the rate at which the device is running but usually around 48 hours after insertion.</p> <p>The catheter should be removed using an aseptic technique The catheter tip is only sent for culture and sensitivity if there are any signs of infection. Each catheter that is removed should be signed for individually on the local anaesthetic observation chart.</p>
6	Patient satisfaction should be recorded on the observation chart



**Who to call if you have a problem with a patient that has a continuous local anaesthetic infusion**

Routinely patients with a local anaesthetic infusion will be visited by a member of the inpatient pain team Monday to Friday.

For advice about patients with a local anaesthetic infusion during working hours contact the nurse specialist for inpatient pain at that site.

Out of hours the on call anaesthetist should be contacted – see table below

	Leicester General	Glenfield Hospital	Leicester Royal Infirmary
Mon – Fri 8-4pm	Ext 14157  Bleep 3388 / 3110	Ext 13662  Bleep 2671	Ext 16640  Bleep 5539 / 3002
Out of hours	Anaesthetist on call  Bleep 3226	Anaesthetist on call  Bleep 2695	Anaesthetist on call  Bleep 4459

**All unexpected and severe problems need immediate action and should be referred to the medical team.**

All problems and action taken should be documented on the observation chart and also in the patients medical notes.

## **1. Introduction and Who Guideline applies to**

- 1.1 These guidelines give directives for the safe and effective monitoring of adult patients receiving a bolus of local anaesthetic into a wound catheter by a Ward Nurse
- 1.2 Local anaesthetics have the ability to provide excellent pain relief, however their effect is short lasting and best results are achieved via a continuous infusion (Horlocker 1998)
- 1.3 Local anaesthetic infusions are a good modality for managing certain types of postoperative, chronic or trauma induced pain. A catheter is inserted into the wound by the Surgeon before closing the wound
- 1.4 The use of a bolus particularly after shoulder surgery is to allow extra analgesia just before physiotherapy and to not impede their mobility around the ward while doing physiotherapy, which would be more difficult if there were tubes to watch out for and infusion devices to carry.
- 1.5 This guideline applies to all staff that administer and monitor patients who receive a Bolus of local Anaesthetic into a Wound. This covers the following staff groups:
  - Registered Adult Nurse
  - Registered Midwife.

### **This guideline does not cover any Registered Practitioner to give a Bolus of local anaesthetic via the epidural route.**

- 1.6 All staff must be competent in medicines administration and adhere to the Leicestershire Medicines Code for the administration of medicines. Nursing and Midwifery staff should also be competent in the administration of Intravenous Drugs. The training and assessment programme for Intravenous drug administration ensures clean safe practice with regard to administration of drugs,
- 1.7 Patients with wound catheters will only be sent to clinical areas where the staff have been given the appropriate knowledge, training and competency to care for them.

## **2. Guideline Standards and Procedures**

### **Procedure for the administration of a Local Anaesthetic Bolus into a wound catheter**

#### **Equipment**

- ◆ Antiseptic cleaning agent
- ◆ 10ml Syringe and drawing up needle
- ◆ Medication as prescribed
- ◆ 0.9% Sodium chloride flush
- ◆ Sterile hub/bung
- ◆ Sterile Gloves

#### **Procedure**

**This procedure requires two nurses to be working together to administer the treatment**

	<b>Action</b>	<b>Rationale</b>
1	Prior to administration, check that the first dose has been given and documented in theatre by An Anaesthetist	To ensure that local anaesthetic is being administered into the wound and not any other vessels and the patient has had no adverse event.
2	Record patients vital signs prior to administration	To ensure baseline is recorded to monitor any
3	Wash hands with bactericidal soap and water. Apply bactericidal alcohol handrub and allow to dry. Apply sterile gloves.	To reduce risk of cross-infection
4	Check the medication to be administered and diluents, according to the Leicestershire Medicines Code	To ensure the correct medication, amount and concentration is administered to the correct patient.
5	Draw up the medication and label syringes	To ensure correct medication administered
6	Check patient's name band against prescription. Clarify the correct route of administration	To ensure correct patient receives correct drug.
7	Clean the access portal of the bacterial filter.	To prevent the introduction of contaminants and micro-organisms into the shoulder cavity.
8	Inject medication into the wound catheter as prescribed. Inject 5mls over a minute and wait for two minutes observing for any reaction. No resistance should be offered, if so stop and report. Then administer a further 5mls as necessary up to the prescribed dose. No more than 10 mls per wound catheter per administration/dose	To ensure safe administration of the medication, resistance will indicate the catheter may have moved and therefore should not be used
9	Document time of administration of medication and any complications / issues	To ensure accurate recording of administration
10	Monitor vital signs, blood pressure and respirations at least every 15 minutes for 60 minutes,	To monitor signs of hypotension and local anaesthetic toxicity



### **3. Education and Training**

3.1 All staff who take on this role should be competent with the administration of IV medications and be able to use the same aseptic technique and safety checks to perform this procedure as with IV drug administration. a basic requirement for the administration of this technique

They should also have a good working knowledge of the use of local anaesthetics and complete a competency-based assessment

3.2 The Ward Sister / Charge Nurse for clinical areas where patients will have a wound catheter for the administration of local anaesthetic will then identify a named cascade trainer who meets criteria 3.1 who will be trained by one of the nurse specialists for acute pain.

3.3 The named cascade trainer will under guidance from an acute pain nurse have responsibility to ensure all registered nurses working within that ward or department are conversant with the correct procedure for administration and monitoring patients following a bolus of local anaesthetic via a wound catheter

3.4 Records of registered staff that have been shown the correct procedure and are competent will be kept by individual ward sisters, the nurse specialist for pain and the Education and Practice Development Team. Each member of staff will have their own record of training and competency certificate which will also be recorded on HELM

3.5 In clinical areas where this is used all staff will be trained and assessed competent with the policy for administration and monitoring of local anaesthetic via a wound catheter as an extension to their IV training and competency assessment. Staff should only be trained in this technique once they have completed IV drug administration.

### **4. Monitoring Compliance**

<b>What will be measured to monitor compliance</b>	<b>How will compliance be monitored</b>	<b>Monitoring Lead</b>	<b>Frequency</b>	<b>Reporting arrangements</b>
Drug Charts or e-meds for relevant patients	Drug charts/e-meds will be monitored to check compliance as the Pharmacy department check for correct prescription and administration	Acute Pain Nurse Specialist/ Ward Pharmacist	Procedure monitored on ward rounds. Incidents reported on datix. Reports shared at Acute Pain Operational Groups	Inpatient Pain Operational Group (meet every 2-3 months)
Competency Assessments for all users	Audit is incorporated into HELM to check for compliance after the acute pain study day	Acute Pain Nurse Specialist /Relevant Clinical Area Managers	The registers from the Acute Pain Study Day to be monitored against HELM every six months to monitor compliance	Lead Acute Pain Nurse Specialist to liaise with relevant Clinical Area Managers if issues raised around compliance

	Trust Ref No. C4/2019
STANDARD OPERATING PROCEDURE (SOP)	Issue date: 28/3/19
University Hospitals of Leicester NHS Trust	Revision date: 1/3/22
GH, LGH, LRI	Page 1 of 6   Version: 1

## UHL Insertion of catheter(s) for a continuous local anaesthetic infusion. Standard Operating Procedure (LocSSIPs)

Change Description	Reason for Change
<input type="checkbox"/> Change in format	<input type="checkbox"/> Trust requirement

APPROVERS	POSITION	NAME
Person Responsible for Procedure:	Surgeons /Anaesthetists	Various depending on speciality
SOP Owner:	In Patient Operational Group	Dr Libby Jonck
Sub-group Lead:	Nurse Specialist	Angela Roberts

**Introduction and Background:**

This LocSSIP covers operating theatres and anaesthetic rooms where a catheter is inserted for the purpose of running a continuous infusion of local anaesthetic. The catheter is usually inserted under direct vision at the end of the operating procedure by the surgeon in theatre. Procedure types are: colorectal surgery, any abdominal surgery, following limb amputation, thoracic or upper GI surgery when epidural placement has failed or is contraindicated, occasionally following orthopaedic surgery. The placement of a catheter is also used by specially trained anaesthetists using ultra sound to place a catheter along the femoral nerve for the management of pain following fracture to the neck of femur when surgery is delayed due to comorbidities. Examples of where a continuous local anaesthetic can be used:

- o Sciatic nerve infusion following amputation / surgery
- o Brachial plexus
- o Cervical plexus
- o Lumbar plexus
- o Paravertebral infusion
- o Rectus sheath infusion
- o Erector spinae plane infusion
- o For some chronic pain conditions to aid physiotherapy i.e. Complex Regional Pain Syndrome (CRPS)

The advantages of a continuous local anaesthetic infusion

- a) The potential to achieve excellent analgesia with minimal side effects
- b) Can be opioid sparing when used in conjunction with IV PCA Morphine

Title: UHL Insertion of catheter(s) for a continuous local anaesthetic infusion. Standard Operating Procedure Authors:  
 Approved by: In Patient Operational Group Date 18/2/19 Review date: 1/3/22

### 3-10 Local anaesthetic toxicity v.2

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 toxicity may occur some time after an initial injection.

#### START

- 1 Stop injecting the local anaesthetic (remember infusion pumps).
- 2 Call for help and inform immediate clinical team of problem.
- 3 Call for cardiac arrest trolley and lipid rescue pack.
- 4 Give 100% oxygen and ensure adequate lung ventilation:
  - Maintain the airway and if necessary secure it with a tracheal tube.
  - Avoid hypercarbia – consider mild hyperventilation.
- 5 Confirm or establish intravenous access.
- 6 **If circulatory arrest:**
  - Start continuous CPR using standard protocols (→ 2-1) **but:**
  - **Give** intravenous lipid emulsion (Box A).
  - **Use smaller adrenaline dose** ( $\leq 1\mu\text{g.kg}^{-1}$  instead of 1 mg)
  - Avoid vasopressin.
  - Recovery may take >1 hour.
  - Consider the use of cardiopulmonary bypass if available.

**If no circulatory arrest:**

  - Conventional therapies to treat hypotension, brady- and tachyarrhythmia.
  - **Consider** intravenous lipid emulsion (Box A).
- 7 **Control seizures:**
  - Small incremental dose of benzodiazepine is **drug** of choice.
  - Thiopental or propofol can be used, but beware negative inotropic effect.
  - Consider neuromuscular blockade if seizures cannot be controlled.

#### Box A: LIPID EMULSION REGIME

##### USE 20% Intralipid® (propofol is not a suitable substitute)

##### Immediately

- Give an initial i.v. bolus of lipid emulsion  $1.5\text{ ml.kg}^{-1}$  over 2-3 min (~100 ml for a 70 kg adult)
- Start an i.v. infusion of lipid emulsion at  $15\text{ ml.kg}^{-1}.\text{h}^{-1}$  ( $17.5\text{ ml.min}^{-1}$  for a 70 kg adult)

##### At 5 and 10 minutes:

- Give a repeat bolus (same dose) if:
  - cardiovascular stability has not been restored or
  - an adequate circulation deteriorates

##### At any time after 5 minutes:

- Double the rate to  $30\text{ ml.kg}^{-1}.\text{h}^{-1}$  if:
  - cardiovascular stability has not been restored or
  - an adequate circulation deteriorates

**Do not exceed maximum cumulative dose  $12\text{ ml.kg}^{-1}$  (70 kg: 840 ml)**

#### Box B: CRITICAL CHANGES

Cardiac arrest → Check already done 1 to 5, then → 6

#### Box C: AFTER THE EVENT

Arrange safe transfer to appropriate clinical area  
Exclude pancreatitis: regular clinical review, daily amylase or lipase  
Report case on your local critical incident system and to the relevant national system (these vary between each devolved nation and in Ireland)

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