

Abdominal Wound Catheter Local Anaesthetic Top up protocol including Paediatrics guideline

TARGET AUDIENCE	Anaesthetics, Surgical, Paediatrics, Secondary Care. All staff looking after surgical adult and paediatric in patients including nursing and medical paediatric ward staff, anaesthetic, theatre and surgical teams.
PATIENT GROUP	All adult and paediatric in patients (only paediatric inpatient beds are in University Hospital Wishaw then only applies there)

These guidelines are for care & management of local anaesthetic catheters for post operative analgesia in adult and paediatric in patients at University Hospital Wishaw (UHW), with the aim of improving post operative pain control along with minimising opioid consumption and related side effects to promote functional recovery. All anaesthetic, surgical, nursing and medical staff involved in care of paediatric patients who have local anaesthetic catheters in place should be familiar with and refer to these guidelines.

These patients will also need systemic multimodal analgesia for related post operative visceral pain. If they are unable to take oral analgesia they will require a PCA (Patient Controlled Analgesia) along with regular simple analgesia (paracetamol and a Non Steroidal Anti Inflammatory Drug if not contraindicated. See associated adult PCA guidelines and Paediatric Acute Pain, PCA, analgesia and antiemetic guideline.

These are guidelines only and these recommendations may not be appropriate for use in all circumstances. If in doubt discuss with the acute pain service, anaesthetist or the responsible senior clinician.

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Indications for abdominal Local Anaesthetic catheters

Anticipated severe post operative pain after abdominal surgery, in particular after emergency laparotomy as part of a multimodal analgesia plan to include simple analgesia and opioid, most often via PCA initially.

Exclusion criteria

Patient allergy to levobupivacaine or bupivacaine.

Insertion & prescription.

Local anaesthetic catheters will be inserted in theatre, either under direct vision by the operating surgeon, or by the anaesthetist under ultrasound guidance, using existing NR Fit rectus sheath catheter kits. If unavailable NR Fit epidural kits can be used. Catheters will be placed within the posterior Rectus sheath or posterior to this in the preperitoneal space.

The first bolus dose of local anaesthetic will be delivered in theatre and recorded in the operation note or anaesthetic chart. The number and location of catheters must be recorded and they must be clearly labelled. Filters should be used.

Adult patients should be nursed on ACCU or level 1 Ward 18 whilst catheters in situ.
Paediatric patients will be nursed on ward 20 with ECG monitoring during and for 20minutes after each top up.

If further boluses are to be given post operatively they must be prescribed on Hepma/Cardex by the anaesthetist before the patient leaves recovery as Levobupivacaine 0.25% as required as chart and on the [Local Anaesthetic Manual top-up Prescription and Administration chart](#)

Maximum doses must be observed.

e.g. Levobupivacaine (Chirocaine) maximum dose 2mg/Kg, 4 to 6 hourly with maximum 4 x daily and maximum single dose 150mg (maximum daily dose 400mg).

Suggested prescription is: 40ml of 0.25% levobupivacaine via the single connector to each catheter (i.e. total 100mg in 40ml), 6 hourly, for up to five days. If a splitter device to each side is not fitted then dose should be split between each side, i.e. 20ml each side.

- If next charted dose within 4 hours then score through box on chart.
- If patient weight less than 50Kg reduce dose by decreasing bolus volume.

Paediatric prescription dosing is based on weight. If obese calculate based on ideal body weight.
Dose 2mg/Kg/4-6 hourly(2, 3, 4) with maximum 4 x daily to maximum single dose of 100mg (40ml).
1ml of 0.25% Levobupivacaine contains 2.5mg.

e.g. Calculation for child weight 30Kg will be 2mg x 30Kg = 60mg per dose.
So dose volume of 0.25% levobupivacaine of (60 /2.5) = 24ml per dose.

Paediatric top ups must only be administered by an Anaesthetic/ICU Dr, or undergoing training in, anaesthesia/ICU

Adult Wound catheters can also be topped up by Advanced Nurse Practitioners in Critical Care (ANPCCs) or doctors with ALS provider status who have completed competency based training in the topping up of Rectus sheath catheters and are familiar with the treatment of local anaesthetic toxicity.

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Bolus Top up procedure for injecting a bolus of local anaesthetic via the Rectus sheath catheter

- Prepare drug for administration according to prescription, following NHSL infection control guidelines.
- Check patient’s wrist band against drug chart. Check for allergies.
- Ensure the patient has patent IV access and ECG monitoring applied.
- Check the site for signs of migration, leakage and infection. Do not inject if there are concerns re: migration or infection contact the patient’s surgical team, Pain specialist nurse or anaesthetist.
- Non sterile gloves must be worn and the injection carried out using an aseptic no touch technique as per infection control guidelines.
- Ensure a filter is insitu.
- Attach the syringe to the catheter filter and aspirate for blood using a low force for 30 seconds.
- If blood is present, do not administer the bolus. Inform the on call anaesthetist on page 003.
- If no blood is aspirated, inject 5ml of 0.25% levobupivacaine slowly.
- Ask the patient to inform you of symptoms of local anaesthetic toxicity e.g. double vision, tinnitus, numb mouth or metallic taste. Observe for any signs of local anaesthetic toxicity as listed below. If the patient exhibits no signs or symptoms of local anaesthetic toxicity then inject the rest of the 0.25% levobupivacaine over 5 minutes aspirating after each 5ml increment.
- Remove the syringe and replace sterile cap.
- Repeat for the second catheter
- Sign prescription chart.
- Monitor the patient for a further 5 minutes for signs of local anaesthetic toxicity

Recognition & Management of Local Anaesthetic Toxicity (LAST)

Local anaesthetic toxicity can occur, especially if there is rapid absorption into the blood stream, or if local anaesthetic is inadvertently administered intravenously. This is very rare but it is important that the signs are recognised and prompt treatment administered to minimise risk of death or permanent harm to patients.

Refer to Association of Anaesthetists LAST guideline at

https://www.ra-uk.org/images/Documents/QRH_3-10_Local_anaesthetic_toxicity_v2_June_2023.pdf

Mild/moderate toxicity may be manifest by symptoms of: light- headedness, numbness of tongue and lips (lip smacking), tinnitus, double vision, blurred vision (may be difficult to ascertain in paediatric patients) with signs which may include may delirium, restlessness or lip smacking

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.

If Mild/Moderate symptoms or signs:

- Stop local anaesthetic top up/infusion and inform on call anaesthetist immediately on page 003.
- Maintain oxygenation and BP.
- Consult with Acute Pain Team or on call anaesthetist and surgical team.
- Continue to observe closely

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If Severe toxicity:

- Stop local anaesthetic top up
- Phone for help immediately ICM Dr / on call anaesthetist DECT 8657 or use cardiac arrest call 2222
- Maintain airway and give high flow oxygen.
- Hypotension can be treated with IV fluids, vasopressors
- Convulsions can be treated with diazepam or increments of propofol or thiopentone
- Commence CPR as per paediatric ALS protocol if in cardiac arrest.
- Collect Lipid Rescue from Theatre Recovery area or Theatre 11 anaesthetic room

If patient is in local anaesthetic induced cardiac arrest, treatment will include in addition to standard ALS protocol requirement for intravenous lipid emulsion "Intralipid" 20%. The initial dose is 1.5ml/kg over 1 minute, followed by an intravenous infusion at 15ml/kg over 1 hour.

Example: For a 30kg child this means 45mls over 1 minute followed by 450mls over 1 hour.

If peri-arrest give supportive care, ensure senior help (Anaesthetic/ICU and Paediatrics) and consider treatment with lipid consulting senior member of ICU/Anaesthetic staff.

Care and troubleshooting minor issues

Delays to dosing

If a top up dose is delayed then the next dose should not be administered within 4 hours.

As top ups for paediatric patients with local anaesthetic catheters are only given by Anaesthetic/ICU Drs, for clinical governance/safety reasons of training and familiarity, then there will be inevitably be delays or missed doses. Local anaesthetic abdominal wall catheters can only provide some abdominal wall analgesia so regular paracetamol & NSAID, if not contraindicated, must be given regularly and an opioid analgesic prescribed by most appropriate route – PCA if oral route unavailable or orally regularly and as required.

Difficulty injecting through the catheter or leakage at the site

Stop topping up and ask the anaesthetist/ICU Dr or Acute Pain Nurse to review.

Local infection at the catheter site

If suspicion of infection at insertion site of catheter – do not top up. Ask surgical team to review as it is a foreign body in proximity of their wound (not anaesthetics or ICU). It is likely that the catheter will have to be removed.

Removal of catheter

The catheters must be removed on day 5 or sooner if infection or leakage occurs. The catheters can be removed by a member of nursing or medical staff.

Use an aseptic non-touch technique remove the dressing. Apply gentle traction to the catheter. This should be enough to remove it. If there is any resistance inform the surgical team. Ensure the tip is intact on the end of the catheter & document in patient's notes. Only send the tip for MC&S if infection is suspected (not routinely required). Cover with a non occlusive dressing. Remove the dressing after 24 hours. Send swab from the site if signs of infection.

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For advice

Between the hours of 9am to 5pm contact Acute Pain Nurse via DECT 6224.

Out of hours or if no answer/unavailable contact the on call ICU/anaesthetist on DECT 8657

Reference

(1) *Rectus sheath catheter analgesia for patients undergoing laparotomy* Rucklidge, M. et al. *BJA Education*, Volume 18, Issue 6, 166 – 172

(2) Levobupivacaine total max dose 2mg/Kg per 4 hour period for children age over 4 months stated under Epidural analgesia section. <https://clinicalguidelines.scot.nhs.uk/ggc-paediatric-guidelines/ggc-paediatric-guidelines/anaesthetics/acute-pain-relief-services-protocol-aprs-paediatrics-1119/>

(3) SMPC Levobupivacaine <https://www.medicines.org.uk/emc/product/13644/smpc> Checked 07/10/2025 states the maximum recommended dose for analgesia (ilioinguinal/iliohypogastric block) is 1.25 mg/kg/each side. (ie 2.5mg/Kg)

(4) RHSC Edinburgh guide on Scotstar (Scottish Specialist Transport and Retrieval Service) website checked 07/10/2025. States Local Anaesthetics max dose Bupivacaine 2.5mg/kg/6hrs (1ml/kg of 0.25% or 0.5ml/kg of 0.5%)
<https://www.snprs.scot.nhs.uk/wp-content/uploads/files/Paediatric%20Anaesthesia%20Guide.pdf>

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Abdominal Wound Catheter Local Anaesthetic Top up protocol including Paediatrics Appendix 1

Competency based Training for Clinician bolus top ups.

Clinician Name: Dr. _____ Grade _____

1. I have attended training presentation on bolus top ups on ____ / ____ /20__
2. I have read and understood the above top up protocol including the recognition and treatment of local anesthetic toxicity and know the locations of intralipid for emergency use in University Hospital Wishaw.
3. A Consultant Anaesthetist/ST4+ Anaesthetist/ANPCC has supervised me administering a bolus top up of abdominal wall wound catheter in the manner of a summative DOPS assessment to the standard specified in the above protocol on date ____ / ____ /20__

Anaesthetist/ANPCC sign and print here _____

Given the completion of all 3 above I declare myself competent to bolus top up abdominal wall local anaesthetic catheters within the above protocol.

Signed _____ dated ____ / ____ /20__

Please return scanned pdf copy of completed form by email to Dr Colum Slorach at Colum.Slorach@lanarkshire.scot.nhs.uk prior to unsupervised practice.

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1. Governance information for Guidance document

Lead Author(s):	Dr Colum Slorach, Acute Pain Lead Clinician, Consultant Anaesthetist University Hospital Wishaw
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Responsible Person (if different from lead author)	

CONSULTATION AND DISTRIBUTION RECORD

Contributing Author / Authors	Dr Colum Slorach, Acute Pain Lead Clinician, Consultant Anaesthetist, University Hospital Wishaw Sharon Anderson, Acute Pain Nurse Specialist, University Hospital Wishaw
Consultation Process / Stakeholders:	UHW Anaesthetic Dept all Consultants. AMD Kenneth Dagg Senior Pharmacist Paediatrics - Lynsay McAulay Approved by UHW all below: Anaesthetics Dept Clinical Director – Dr Miriam Stephens. Surgical Clinical Director – Mr Gavin Bryce Paediatric Clinical Director- Dr Adrienne O’Sullivan Paediatric SCN Ward 20 – JaneThomson Paediatric SCN Ward 19 – Annie Campbell
Distribution	

CHANGE RECORD			
Date	Lead Author	Change	Version No.
October 2025	Colum Slorach Consultant Anaesthetist, Acute Pain Lead, UHW	To enable submission to ADTC content transferred onto this Clinical Guidelines template with addition of summary, contents page & governance information. Page numbers replaced with DECT numbers. On advice of Senior Pharmacist Paediatrics, Lynsay McAulay, references added for paediatric dosing of Levobupivacaine (dosing unchanged from Jan 2024 version). Tracking history reviewed and updated	6
January 2024	Colum Slorach	Reviewed to add paediatric patients to the bring into line with standard post operative laparotomy analgesia care at RHC Glasgow after discussion at NHSL Paediatric Laparotomies SLWG January 2024 to improve care after an SAER. Advice sought from Dr Alana O'Dwyer, Consultant Paediatric Anaesthetist, Acute Pain Service Lead, Royal Hospital for Children, Glasgow.	5
2021	Colum Slorach	Removed from Clinical Guidelines Firstport site on transition to app as past review date. Not reviewed as development of a replacement bolus pump guideline however pump unavailable due to manufacturer discontinuing.	4
March 2018	Colum Slorach	Reviewed	3
December 2016	Colum Slorach	Submitted to Clinical Guidelines.	2
2014	Colum Slorach	Drafted in response to demands from UHW Surgical Consultants to introduce LA wound catheters at UHW to improve patient care with pain control and as opioid sparing measure. Input from Pharmacist Jennifer Murphy. Agreed by Anaesthetic Dept incl then CD Stephan Dalchow.	1

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