Lumbar Puncture(s) for Children/Young People Standard Operating Procedure UHL Paediatric Intensive Care Unit (PICU) (LocSSIPs)

Change Description	Reason for Change
☐ Change in format	☒ Trust requirement

APPROVERS	POSITION	NAME
Person Responsible for Procedure:	PICU and ECMO Consultant	Claire Westrope
SOP Owner:	Senior Sister	Lauren Maughan
Sub-group Lead:	PICU and ECMO Consultant PICU Consultant	Jeremy Tong Julia Vujcikova

Appendices in this document:

Appendix 1 : UHL Safer Surgery Invasive Procedure Safety Checklist: Lumbar Puncture (Children's Critical Care)
Appendix 2 : Patient Information Leaflet for *Procedure* Available at: Home (leicestershospitals.nhs.uk)

Introduction and Background:

National Safety Standards for Invasive Procedures (NatSSIPs) have been developed by a multidisciplinary group of clinical practitioners, professional leaders, human factors experts and lay representatives brought together by NHS England. They set out the key steps necessary to deliver safe care for patients undergoing invasive procedures and will allow organisations delivering NHS-funded care to standardise the processes that underpin patient safety.

Organisations should develop Local Safety Standards for Invasive Procedures (LocSSIPs) that include the key steps outlined in the NatSSIPs and to harmonise practice across the organisation such that there is a consistent approach to the care of patients undergoing invasive procedures in any location. Put simply, NatSSIPs should be used as a basis for the development of LocSSIPs by organisations providing NHS-funded care.

The development of LocSSIPs in itself cannot guarantee the safety of patients. Procedural teams must

undergo regular, multidisciplinary training that promotes teamwork and includes clinical human factors considerations. Organisations must commit themselves to provide the time and resources to educate those who provide care for patients.

This LocSSIPs is designed for Lumbar Puncture on PICU. The SOP will help to familiarise staff with the LocSSIPs prior to its use.

Never Events:

No never events have been recorded for this procedure in the Paediatric Intensive care Units. These checklists are designed to ensure that patient safety during a procedure is paramount and that risk of never events is reduced.

List management and scheduling:

Scheduled procedures will be discussed and planned at PICU 'business round' meetings which, incorporates the Morbidity and Mortality data collection and the Safety Briefing. Emergent procedures will be performed as necessary under the direction of the consultant in charge of the Paediatric Intensive Care Unit.

Patient preparation:

The child or young person should be involved in their care planning when possible and the clinician who needs to perform the procedure should explain the procedure to the child after explaining why it is necessary. The play specialist or clinical psychologist may be useful in helping during the discussion and consenting process and during preparation for the procedure.

If a competent young person refuses to consent to a procedure, parents/guardians cannot override a decision for treatment that you consider to be in their best interests, but you can rely on parental consent when a child lacks the capacity to consent. Where possible, the child/young person should consent to their own treatment however, if the child cannot competently consent, then a parent/guardian can provide the consent on their behalf. This can be discussed at the bedside or in a treatment/quiet room for more privacy-it should be wherever is felt to be most comfortable.

The identity of the patient must be verified by the child/parent/carer. Name and date of birth will be checked against the ID band as per UHL policy. In infants under 1 year of age, ID bands must be attached to the lower limbs only. In children of all other ages, the ID band should be attached to the non-dominant hand/limb.

Consent should be documented in the notes and ticked as gained on the UHL Safer Surgery Invasive Procedure Safety Checklist: Lumbar Puncture (Children's Critical Care). Consent should include the possible difficulties that may be encountered. An explanation of how the procedure will be carried out should be given, detailing the strategies you utilise to ensure strict adherence to infection prevention guidance.

For all procedures, the decision whether to proceed with the procedure when coagulation abnormalities, anti-coagulant medication or physiological disturbances are present remains the responsibility of the ICU consultant in charge of the patient.

Precautions need to be considered when treating patients who are suspected of COVID-19 infection/PIMS-TS. Diagnosis of PIMS TS requires exclusion of any infectious cause, including bacterial sepsis, staphylococcal or streptococcal toxic shock syndrome, infections associated with myocarditis, and other diagnoses, e.g. malignancy or other defined inflammatory conditions.

Ensure child is cannulated prior to procedure and liaise with medical staff re- timing of procedure to allow application of local anaesthetic to the child's back.

Sedation may be required and should be administered by a competent practitioner while the patient is being fully monitored and prepared for the procedure as appropriate.

Ensure baseline observation are recorded and documented prior to procedure: Temperature, Pulse, Respirations, Blood Pressure, Neurological status and blood glucose. Attach oxygen saturation probe appropriate for size/age of child to ensure continuous monitoring during procedure if clinically indicated.

Explain procedure and holding technique to parents and child, including risk of marking. Support parents in making decision about whether to be present during the procedure and how they can support their child. Lumbar puncture may be performed with the child lying on their side or sitting up. Position child on their side in lateral recumbent position. Neck should be in flexed position, with chin on chest. Knees pulled up towards chest and buttocks held to keep back flexed. Back should be at edge of bed/couch to allow ease of access to lumbar space.

Once in position, medical staff will identify puncture site and clean with ChloraPrep (70% alcohol & 2% Chlorhexidine). Site -spinal cord terminates around the level of L1–L2 (L3 in neonates). Imaginary line between the top of the iliac crests intersects the spine at approximately the L3-4 interspace. Aim for the L3-4 or L4-5 interspace.

If pressure needs to be measured, this should be done before samples are obtained by attaching the manometer to the LP needle, record the height to which the fluid rises.

Allow skin to dry naturally without fanning, blotting or blowing the skin. Drying time is essential to avoid chemical toxicity to the meninges from chlorhexidine.

Ensure four white topped sterile bottles are prepared and labelled 1, 2, 3 and 4 to ensure the correct numbers of samples are taken and excessive sampling is avoided. Every bottle should have 4-5 drops of clear CSF fluid. Ensure blood glucose sample is also obtained in a yellow topped blood bottle to allow for comparison (CSF glucose reading should be 2/3 of blood level).

If the needle needs to be repositioned, ensure stylet has been reintroduced. Reintroduce stylet and then remove the needle.

Explain the need to lie flat for one hour post procedure to child and parents.

Observe puncture site for leakage. Apply Opsite spray to seal puncture site. Apply spot plaster. Clean area with plain water to remove residue of skin prep.

Give fluids & analgesia as required (child may have headache +/- soreness at puncture site).

Apply further dressing if needed and inform medical staff. Plaster can be removed after 4 hours if there is no leakage.

Ensure specimens are correctly labelled and sent promptly to the laboratory.

Document in child's notes. Lumbar puncture procedure stickers are available which should be used.

Workforce – staffing requirements:

One person must be assigned to complete the checklist in addition to the operator and assistant performing the procedure. Staffing requirements will be allocated in line with unit activity.

Ward checklist, and ward to procedure room handover:

The LocSSIPs will cover the pre-procedure checklist (UHL Safer Surgery Invasive Procedure Safety Checklist: Lumbar Puncture (Children's Critical Care)) and required handover to the bedside nurse in PICU. In the event that a child/young person comes from a ward area to PICU for a urinary catheter insertion, then the LocSSIP will be completed and the following documented in the patients notes:

- Procedure,
- Medications given,
- Observations/Stability,
- Problems/complications.

Procedural Verification of Site Marking:

This is not required for the procedures covered in this SOP.

Team Safety Briefing:

The team safety briefing is incorporated into each checklist. As a minimum, the operator and person completing the checklist (usually the bedside nurse) must be present. It is clear that at times of high activity the person completing the checklist may also need to perform the role of assistant.

Sign In/ Before the Procedure:

'Sign In' refers to the checklist completed at the patient's arrival into the procedure area.

- Sign in will take place at the patient's bedside
- The sign in must be carried out by two people. The people present should ideally be the operator and assistant.
- That the patient will be encouraged to participate where possible.
- Any omissions, discrepancies of uncertainties must be resolved before proceeding.

The 'Sign In' should include:

- Confirmation of the patient identity and consent for the procedure,
- Identification of all team members and their roles,
- Appropriate monitoring is attached and baseline neurological observations and blood glucose have been recorded,
- Adequate secure IV access is available,
- Appropriate sedation and analgesia have been planned,
- PPE precautions have been considered,
- Contraindications to the procedure have been considered,
- Anticoagulation considered/coagulopathy corrected and
- Any concerns about the procedure have been identified and mitigated.

Time Out:

'Time Out' is the final safety check that must be completed for all patients undergoing invasive procedures just before the start of the procedure. The WHO checklist is the Gold Standard and may be adapted for local use with the deletion or addition of elements to suit the procedural requirements. Some Royal Colleges or other national bodies have checklists for their specialties.

The 'Time Out' should include:

- That the patient will be encouraged to participate where possible,
- Who will lead it (any member can),
- That all team members must be present and engaged as it is happening,
- That is will occur immediately before the procedure start,
- That separate time out checklist will be completed if there is a separate or sequential procedure happening on the same patient,
- That any omissions, discrepancies or uncertainties must be resolved before staring the procedure.

Specifically, the verbal time out between team members confirms that:

- The reason for the lumbar puncture is confirmed,
- The patient is positioned appropriately and the LP site has been discussed with the team,
- All members of the team have been identified and assigned roles and
- Concerns about the procedure have been identified and mitigated.

If antimicrobial therapy/prophylaxis is required, please refer to the UHL Antimicrobial Prescribing Policy B39/2006.

Performing the procedure:

The procedure can only be performed by those with appropriate training – this will be in line with current PICU training. Direct supervision must occur for those learning the procedures by an appropriately trained individual. All operators must ensure familiarity with the equipment required prior to performing any invasive procedure.

Monitoring:

The patient should be monitored throughout the time in the procedural area. Consider:

- O2 Sats
- ECG
- Blood Pressure (NIVBP should cycle regularly)
- Pulse rate
- Respiratory rate
- GCS
- Temp
- (Capillary Blood Glucose) CBGs
- ETCO2 for ventilated patients

If the patient requires ongoing sedation, this must be covered by the Analgesia and Sedation Guideline for Paediatric Intensive Care Unit.

Prosthesis verification:

All equipment used must be checked that is within date. As appropriate there is recording of the device on the UHL Safer Surgery Invasive Procedure Safety Checklist: Lumbar Puncture (Children's Critical Care).

Prevention of retained Foreign Objects:

The responsibility for ensuring all sharps are disposed of correctly is with the procedure operator.

Radiography:

These procedures do not require radiography during the procedure. If post procedure X-rays are required this is clearly highlighted on each individual safety checklist.

Sign Out:

'Sign Out' must occur post procedure in line with each individual LocSSIPs. This covers, as appropriate, the following:

- Confirmation of procedure
- Confirmation that counts (guidewires, instruments, sharps and swabs) are complete if applicable,
- Confirmation that specimens have been labelled correctly and placed in appropriate transport medium,
- Discussion of post-procedural care and any outstanding investigations required to confirm safe completion of the procedure.
- Equipment problems to include in team debriefing

All the above points will be documented on the UHL Safer Surgery Invasive Procedure Safety Checklist: Lumbar Puncture (Children's Critical Care).

Handover:

Team Debrief:

A Team Debrief should occur as a discussion at the end of all procedure sessions, this should happen when the patient has been made comfortable, the procedural waste has been disposed of and documentation has been completed.
All team members should be present and the content of the debrief should include:

- Things that went well,
- Any problems with equipment or other issues,
- Areas for improvement,
- An action log,
- A named person for escalating issues.

For those who have been learning the procedure and have been supervised by an appropriately trained person, the appropriate documentation/learning pack must be completed.

Post-procedural aftercare:

Once the post procedure x-ray is completed (if applicable), the patient should be made comfortable and should be kept on their back for the first hour following the procedure, after which, the patient can be repositioned every 4-6 hours as tolerated and recorded on Best Shot. Monitoring probes should be moved frequently to prevent skin marking and burns. Where able, regular blood gases (Capillary/venous/arterial) should be monitored. When safe to do so, feeds should be recommenced. The family should be updated and specific plans for the patient's care pathway should be made if appropriate. Dispose of sharps safely and CHG wipe reusable equipment and return to original places.

Discharge:

Not applicable for children/young people who need to remain in PICU.

Governance and Audit:

Deviation from the LocSSIPs unless clinically justified in an emergency constitutes a safety incident. All safety incidents must be recorded on a DATIX.

Any Datix submitted will be fully investigated by a designated person and overseen by the Children's Patient Safety Coordinator. All findings will be fed back to the team involved and any learning will be cascaded throughout the Children's Hospital.

To submit monthly Safe Surgery Audit and WHOBARS assessment as per Safe Surgery Quality Assurance & Accreditation programme.

Training:

All staff performing or assisting with access procedure must receive appropriate training. Training opportunities and documented progress must be discussed every 6 - 12 months with a clinical supervisor. Training will address: Hand Hygiene, Aseptic non touch technique (ANTT), Intubation technique, equipment usage and documentation.

Documentation:

The UHL Safer Surgery Invasive Procedure Safety Checklist: Lumbar Puncture (Children's Critical Care) is the record of insertion and should be filed in the patients notes.

References to other standards, alerts and procedures:

National Safety Standards for Invasive Procedures, NHS England 2015: https://www.england.nhs.uk/patientsafety/wp-content/uploads/sites/32/2015/09/natssips-safety1standards.pdf

LRI Children's Hospital Lumbar Puncture C82/2007
Paediatric Inflammatory Multisystem Syndrome – Temporally Associated with SARS-CoV-2 (PIMS-TS) UHL Childrens Guideline D4/2020
UHL Children's Hospital Guideline B31/2016 UHL Paediatric Sepsis Guideline
Hand Hygiene UHL Policy B32/2003
UHL Patient Identification Band Policy B43/2007
UHL Antimicrobial Prescribing Policy B39/2006 Analgesia and Sedation Guideline for Paediatric Intensive Care Unit C10/2009 Sucrose Solution (Algopedol) for Painful Procedures UHL Childrens Nursing Guideline Procedural Pain management in Infants Under 3 Months C212/2016

UHL Safer Surgery Policy: B40/2010
UHL Consent to Treatment or Examination Policy A16/2002
Shared decision making for doctors: Decision making and consent (gmc-uk.org)
COVID and PPE: UHL PPE for Transmission Based Precautions - A Visual Guide
COVID and PPE: UHL PPE for Aerosol Generating Procedures (AGPs) - A Visual Guide

END

Appendix 1: UHL Safer Surgery Invasive Procedure Safety Checklist: Lumbar Puncture (Children's Critical Care

Patient ID Label *or write name and number*
Hospital No.:
Name:
D.O.B.:
Sex:

STOP THE LINE

Leicester Children's Hospital

Safer Surgery Checklist

Invasive Procedure Safety Checklist Lumbar Puncture (Children's Critical Care)

LocSSIPs

East Midlands Congenital Heart Centre

NHS University Hospitals of Leicester NHS Trust

Procedure date:	Operator:	Designation:	Level of Supervision:
Time:	Observer:	Designation:	Catheter Batch No.:
	Assistant:	Designation:	

BEFORE THE PROCEDURE/ SIGN IN

Patient identity checked as correct?	Yes ☐ No ☐
Appropriate consent taken and procedure explained to child and family?	Yes ☐ No ☐
Is monitoring attached? *(ECG, sats with pulse alarm on, BP on regular cycling, ETCO2 for ventilated patients, baseline neurological observations and blood glucose)*	Yes ☐ No ☐
Reliable IV access patent and secured?	Yes ☐ No ☐
Appropriate analgesia and sedation planned?	Yes ☐ No ☐
PPE precautions considered?	Yes ☐ No ☐
Are there any contraindications to the procedure? *(Raised ICP, coagulopathy)*	Yes ☐ No ☐
Anticoagulation considered? *(e.g. Heparin reviewed)*	Yes ☐ No ☐
Are there any concerns about this procedure for the patient?	Yes ☐ No ☐
Any known allergies:	Yes ☐ No ☐

TIME OUT

Verbal communication between team members before start of Procedure

Reason for Lumbar Puncture confirmed?	Yes ☐ No ☐
Patient positioned appropriately and procedure site discussed with team?	Yes ☐ No ☐
All team members identified and roles assigned?	Yes ☐ No ☐
Are there any concerns about this procedure for the patient?	Yes ☐ No ☐
If you had any concerns about the procedure, how were these mitigated?:	

SIGN OUT

Any equipment issues?	Yes ☐ No ☐
Sterility maintained?	Yes ☐ No ☐
Procedure successful?	Yes ☐ No ☐
CSF samples obtained in four white-top sterile bottles labelled 1, 2, 3 and 4 and sent for Microbiology, Virology, Protein, WCC and Glucose?	Yes ☐ No ☐
Appropriate blood sample obtained in yellow-top blood bottle for glucose comparison?	Yes ☐ No ☐
Plaster applied to site?	Yes ☐ No ☐
Post-procedure handover given to the bedside nurse and family including post-procedure care?	Yes ☐ No ☐
Signature of operator:	

Lumbar Punctures for Children/Young People Standard Operating Procedure UHL Paediatric Intensive Care Unit (PICU) LocSSIPs Approved by CMC 2023

Based on the WHO Surgical Safety Checklist, URL http://www.who.int/patientsafety/safesurgery/en/, © World Health Organization 2008 All rights reserved

0023 14 39-0XXX

Title: Lumbar Puncture(s) for Children/Young People Standard Operating Procedure UHL Paediatric Intensive Care Unit (PICU) (LocSSIPs)
Authors: Lauren Maughan - Senior Sister
Approved by: PICU/CICU Clinical Practise Group 2023
Review: 17/10/2026

Appendix 2: Patient Information Leaflet for *Procedure* Available at: Home (leicestershospitals.nhs.uk)

This page has been left blank intentionally.