

CVC/PICC/Midline/Central Arterial Line(s) Insertion Standard Operating Procedure UHL Paediatric Intensive Care Unit (PICU) (LocSSIPs)

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APPROVERS	POSITION	NAME
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Appendices in this document:

Appendix 1 : UHL Safer Surgery CVC / PICC /Midline/Central Arterial Line(s) Insertion Checklist (Children's)

Appendix 2 : Patient Information Leaflet for Procedure Available at: [Home \(leicestershospitals.nhs.uk\)](http://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

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considerations. Organisations must commit themselves to provide the time and resources to educate those who provide care for patients.

This LocSSIPs is designed for CVC/PICC/Midline/Central Arterial Line(s) Insertion. The SOP will help to familiarise staff with the LocSSIPs and safety checklist prior to its use.

Never Events:

No never events have been recorded for this procedure in the Paediatric Intensive Care Units. These safety 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 (DOB) 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/digitally and ticked as gained on the [UHL Safer Surgery CVC / PICC /Midline/Central Arterial Line\(s\) Insertion Checklist \(Children's\)](#). 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.

Strict adherence to UHL guidelines for hand hygiene must be maintained. The insertion site should not be palpated after the skin has been cleaned, unless aseptic technique is maintained. Prepare clean skin with Chloraprep© (2% CHG and 70% isopropyl alcohol) and allow to dry for 30 seconds. If there is a

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contraindication to chlorhexidine, use 5-7.5% povidone iodine (betadine). Topical antibiotic ointment or creams should not be used on insertion sites due to risk of antimicrobial resistance and fungal infections. A pre-packed central line insertion trolley will always be available for use on PICU. 1st and 2nd Operators should wear a cap, mask, sterile gown, sterile gloves (and eye/face protection if there is a risk of splashing with body fluids), other staff/observers should wear a cap, apron and mask. The patient should be covered by a full body drape, curtains should be closed and a protective sleeve over ultrasound probe 'sterile zone' (connecting patient, clinician and equipment trolley). 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. 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.

Workforce – staffing requirements:

One person must be assigned to complete the safety 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 CVC / PICC /Midline/Central Arterial Line\(s\) Insertion Checklist \(Children's\)](#)) 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 line insertion, then the LocSSIPs will be completed and document the following in the patients notes:

- Procedure,
- Medications given,
- Observations/Stability,
- X-ray confirmation that the line is suitable for use (if applicable),
- Problems/complications.

Verbal handover will be given to the receiving nurse when the patient is fit to return to the ward area.

Procedural Verification of Site Marking:

This is not required for the procedures covered in this SOP. Location of the inserted line will be documented on the [UHL Safer Surgery CVC / PICC /Midline/Central Arterial Line\(s\) Insertion Checklist \(Children's\)](#) and accompanying RAID assessment.

Team Safety Briefing:

The team safety briefing is incorporated into each safety checklist. As a minimum, the operator and person completing the safety 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 safety checks completed before the procedure.

- 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.
- The patient will be encouraged to participate where possible.
- Any omissions, discrepancies of uncertainties must be resolved before proceeding.

The Sign In should include:

- Consent and allergy status checked,
- Is supervision required for the operator,
- Hands washed by supervisor and assistant,
- Is all equipment available,
- Is ultrasound used (recommended),
- If an arterial line is being inserted, has the operator considered avoiding the brachial artery,
- If the line is for Parenteral Nutrition, has the correct length of line been selected.

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 it 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 starting the procedure.

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

- Is the patient position optimal to avoid air embolism,
- Have all team members been identified and roles assigned,
- The operator agrees to call for help after three unsuccessful attempts to access the vein,
- Any concerns about the procedure have been identified and mitigated.

As per [UHL Safer Surgery CVC / PICC /Midline/Central Arterial Line\(s\) Insertion Checklist \(Children's\) \(Appendix 1\)](#).

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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 of the procedural area. Consider:

- O2 Sats
- ECG
- Blood Pressure
- Pulse rate
- Respiratory rate
- GCS
- Temp
- (Capillary Blood Glucose) CBGs
- ETCO2 if the patient is ventilated

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 CVC / PICC /Midline/Central Arterial Line\(s\) Insertion Checklist \(Children's\)](#).

Prevention of retained Foreign Objects:

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

Post procedure on the [UHL Safer Surgery CVC / PICC /Midline/Central Arterial Line\(s\) Insertion Checklist \(Children's\)](#) ensures that all guidewires have been removed and the length and integrity have been checked.

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 LocSSIP. This covers, as appropriate, the following:

- Confirmation of procedure,
- Confirmation that counts (guidewires, sharps) 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 CVC / PICC /Midline/Central Arterial Line\(s\) Insertion Checklist \(Children's\)](#).

Handover:

Handover to the nursing and medical team post procedure should include:

- A brief description of the case, details of the anaesthetic/conscious sedation and review of the CXR (if one was required) and whether this line is safe to use,
- Explanation of samples taken so that the results can be followed up in a timely manner,
- Care instructions of the line (for example, a PICC line requires a 1ml/hour 0.9% sodium chloride infusion to maintain line lumen patency, if it is not in regular use),
- Inform the staff how the line has been secured: non-silk sutures/glue/adhesive device,
- Inform staff of any post procedure complications.

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.

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:

Dispose of sharps safely and check the length and integrity of the guidewire to ensure it is intact.
X-ray to check line position (unless femoral line).
Inform the team if the line is suitable for use and document this.
CHG wipe reusable equipment and return to original places.

Discharge:

Not applicable for children/young people who need to remain in PICU.
For those who have come to PICU from a ward area for line insertion: the child/young person can be discharged to the ward area once they have been deemed medically fit.
Documentation needs to be completed prior to discharge and the patient should be verbally handed over to the receiving nurse.

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 Childrens Patient Safety Coordinator. All findings will be fed back to the team involved and any learning will be cascaded throughout the Childrens 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),
- RAID and VIP (Phlebitis score) assessment,
- How to access, flush and lock central lines safely,
- Appropriate use of dressings, Bionector© and tubing,
- Daily Ward Round Discussion and documentation.

Documentation:

The [UHL Safer Surgery CVC / PICC /Midline/Central Arterial Line\(s\) Insertion Checklist \(Children's\)](#) is the record of insertion and should be filed in the patients notes. The care bundle should be followed at all times

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to prevent infection. For PICU/CICU, this is on the ITU chart: RAID assessments need to be completed twice daily along with the hourly VIP scoring. The line site must be cleaned with Chloraprep (2% CHG and 70% isopropyl alcohol) every 3 days to give 72 hours of antimicrobial cover before it is redressed with a transparent semi-permeable dressing (Tegaderm) and this must be documented on the RAID assessment on the ITU chart. Needle-free connectors are changed every three days and recorded in the same manner. Lines are assessed every day on the ward round to see if they are still required.

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-safety-standards.pdf>

UHL Safer Surgery Policy: B40/2010

UHL Patient Identification Band Policy B43/2007

UHL Antimicrobial Prescribing Policy B39/2006

UHL Central Lines UHL Children's Intensive Care Guideline C112/2016

UHL Vascular Access in Adults and Children Policy and Procedures B13/2010

UHL Central Line Infection UHL Children's Hospital Guideline C12/2019

UHL Analgesia and Sedation Guideline for Paediatric Intensive Care Unit C10/2009

UHL Hand Hygiene UHL Policy B32/2003

UHL Analgesia and Sedation Guideline for Paediatric Intensive Care Unit C10/2009

UHL Consent to Treatment or Examination Policy A16/2002

Shared decision making for doctors: [Decision making and consent \(gmc-uk.org\)](http://www.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 CVC / PICC /Midline/Central Arterial Line(s) Insertion Checklist

<p>STOP THE LINE</p> <p>Leicester Children's Hospital</p>		<p>Safer Surgery Checklist</p> <p>Invasive Procedure Safety Checklist</p> <p>CVC/PICC/Midline/Central Arterial Line(s) Insertion (Children's)</p>			
<p>Patient ID Label or write name and number</p> <p>Hospital No.: _____</p> <p>Name: _____</p> <p>D.O.B.: _____</p> <p>Sex: _____</p>		<p>Operator Grade: _____</p> <p>Operator: _____</p> <p>Supervisor: _____</p> <p>Assistant: _____</p>			
<p>Procedure date: _____</p> <p>Time: _____</p> <p>Site: GH <input type="checkbox"/> LRI <input type="checkbox"/></p>		<p>Clinical Area: _____</p>			
<p>SIGN IN BEFORE THE PROCEDURE</p>		<p>SIGN OUT</p>			
<p>Confirm patient's Name, DOB and Hospital number Yes <input type="checkbox"/> No <input type="checkbox"/></p>		<p>All guidewires accounted for and removed? Yes <input type="checkbox"/> No <input type="checkbox"/></p>			
<p>Appropriate patient consent Yes <input type="checkbox"/> No <input type="checkbox"/></p>		<p>Guidewire integrity and length checked? Yes <input type="checkbox"/> No <input type="checkbox"/></p>			
<p>Patient allergy status checked? (Consider if patient has allergies against antibiotic coated CVL) Yes <input type="checkbox"/> No <input type="checkbox"/></p>		<p>Blood aspirated from all lumens before flushing with 0.9% sodium chloride and clamping under positive pressure Yes <input type="checkbox"/> No <input type="checkbox"/></p>			
<p>Appropriate supervision (if needed) Yes <input type="checkbox"/> No <input type="checkbox"/></p>		<p>Bionnectors to all lumens except CVP measurement line Yes <input type="checkbox"/> No <input type="checkbox"/></p>			
<p>Consider avoiding brachial artery Yes <input type="checkbox"/> No <input type="checkbox"/></p>		<p>Secured with non-silk suture or adhesive device Yes <input type="checkbox"/> No <input type="checkbox"/></p>			
<p>Ultrasound used? (recommended with all line insertion) Yes <input type="checkbox"/> No <input type="checkbox"/></p>		<p>Transparent sterile dressing applied Yes <input type="checkbox"/> No <input type="checkbox"/></p>			
<p>Is all equipment available? Yes <input type="checkbox"/> No <input type="checkbox"/></p>		<p>Chest X-Ray required/ordered Yes <input type="checkbox"/> No <input type="checkbox"/></p>			
<p>Hand washed by operator and assistant? Yes <input type="checkbox"/> No <input type="checkbox"/></p>		<p>Any adverse events? (Documented in adverse events Log) Yes <input type="checkbox"/> No <input type="checkbox"/></p>			
<p>Parenteral nutrition required - adequate CVC length selected? Yes <input type="checkbox"/> No <input type="checkbox"/></p>		<p>MRSA decolonisation prophylaxis prescribed? Yes <input type="checkbox"/> No <input type="checkbox"/></p>			
<p>If No, document reason: _____</p>		<p>Nasal mupirocin 2% TDS/QDS and antibacterial bodywash (Steilsept/Octenisan) OD Yes <input type="checkbox"/> No <input type="checkbox"/></p>			
		<p>Signature of assistant completing the form: _____</p>			
		<p>Signature of operator inserting line: _____</p>			

Based on the WHO Surgical Safety Checklist, URL: <https://www.who.int/patientsafety/safesurgery/en>, © World Health Organization 2008. All rights reserved. PLEASE TURN OVER


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University Hospitals of Leicester
NHS Trust





Safer Surgery Checklist

Invasive Procedure Safety Checklist

CVC/PICC/Midline/Central Arterial Line(s) Insertion (Children's)

STOP THE LINE



NHS

University Hospitals of Leicester
NHS Trust

Patient ID Label or write name and number

Hospital No.: _____

Name: _____

D.O.B.: _____

Sex: _____

During the procedure (please tick)		Initial	Insertion Site For Arterial Lines	Insertion site for CVC/PICC line
Sterile gloves and gown worn by operator	Yes <input type="checkbox"/>			
Hat and mask worn by operator and assistants	Yes <input type="checkbox"/>			
Site sterilised with 2% chlorhexidine in 70% alcohol and allowed to dry	Yes <input type="checkbox"/>			
Large sterile drape used	Yes <input type="checkbox"/>			
Local anaesthetic or sedation used	Yes <input type="checkbox"/>			
Sterile field maintained throughout including sheath and gel for ultrasound probe	Yes <input type="checkbox"/>			
Cannula used to access vein	Yes <input type="checkbox"/>			
Consider transducing to confirm position	Yes <input type="checkbox"/>			
Dilator is not inserted fully	Yes <input type="checkbox"/>			
Number of attempts (skin puncture with needle)				
Procedure		Technique used		
Elective	Yes <input type="checkbox"/> No <input type="checkbox"/>		Real time U/S	Yes <input type="checkbox"/> No <input type="checkbox"/>
Emergency	Yes <input type="checkbox"/> No <input type="checkbox"/>		U/S assisted landmark	Yes <input type="checkbox"/> No <input type="checkbox"/>
			Landmark	Yes <input type="checkbox"/> No <input type="checkbox"/>
Complications				

Xray reviewed and line position confirmed as safe to use? Yes No

Signature: _____

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Appendix 2: Patient Information Leaflet for Procedure Available at: [Home \(leicestershospitals.nhs.uk\)](http://leicestershospitals.nhs.uk)

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