1. Introduction and who this guideline applies to

This document sets out University Hospitals of Leicester (UHL) NHS Trust procedure for the insertion, care of and removal of a peripheral cannula in Infants, Children and young people with the aim to provide safe, effective care and prevent micro-organism contamination.

This procedure uses the principles of Aseptic Non-Touch Technique (ANTT) and protecting the key parts

1.1 This procedure applies to all Health Professionals who insert, care for or remove cannulas in babies, children and young people at UHL Children’s Hospital Wards.

1.2 Whilst the principles of insertion, ANTT and infection prevention are universal within all areas of UHL treating Neonates, Infants, Children and Young People, due to practical departmental differences, please see separate guidance for patients being cared for in Paediatric Intensive Care Unit, Children’s Emergency Department and the Neonatal Unit.

1.3 All staff who undertake this procedure must be authorised by their line manager to carry out this activity as an integral part of the key responsibilities within their role and not considered outside their scope of professional practice.

1.4 UHL is a teaching hospital and provides placement or work based learning for Pre-registration students such as Medicine, Nursing, Midwifery, Paramedic, Radiography, Physiotherapy, Occupational Therapy and Pharmacy and Trainees in the workplace such as Assistant Practitioners and Nursing Associates. This Guideline applies to these learners in the following circumstances:

a) If peripheral cannulation is a specific competency requirement of their placement or programme then the pre-registration student / trainee is able to perform the skill under direct supervision of their mentor / supervisor once they have received the relevant underpinning theory and passed a simulated practice

b) If the pre-registration student/trainee has passed an LCAT/DOPS competency assessment in practice they may be able to perform the skill with indirect supervision at the discretion of their mentor/supervisor and the Registered Professional delegating the task.

c) If peripheral cannulation is not a specific competency requirement of their placement or programme then the pre-registration student/trainee must only participate in the process as an observer.
1.5 This procedure must be used in conjunction with:

- UHL Vascular Access in Adults and Children Policy (Trust reference number B13/2010) and all staff who undertake this procedure must be appropriately trained as detailed in section 4.4 of the policy.
- UHL consent policy (Trust reference number A16/2002) to ensure the child receives safe care and children and families are able to understand the reasons for care to facilitate cooperation.
- UHL Intravenous Medication Policy (Trust reference number B25/2010)
- UHL hand hygiene policy (Trust reference number B32/2003)
- UHL Patient ID Policy (Trust reference number B43/2007)
- UHL Sucrose Solution 24% for Procedural Pain Management (Trust ref C21/2016)

1.6 For cannulation in Adults please see the Procedure for the insertion, care of and removal of a peripheral cannula in Adults (Trust reference number B33/2010)

2. Standards and Procedures

2.1 Administration of the 0.9% Sodium Chloride Flush

a) 0.9% Sodium Chloride is a Prescription Only Medicine (POM) and must be prescribed prior to being administered as a flush.

b) Non-Registered Professionals must have the 0.9% Sodium Chloride Flush prescribed before it is administered and will be able to sign for its administration on the prescription chart.

2.3 Pre-Procedure

- As far as possible all venous access procedures should occur in the clean treatment room or within an area dedicated to undertaking this procedure.
- Approach the child or young person and family in a friendly and open manner.
- Depending on the age and development of the child or young person, explain the procedure to them and their parents or carers and obtain their verbal consent.
- (You may need to involve a play specialist in the explanation to gain a suitable level of understanding)

- Allow the child or young person and family to ask questions and discuss any problems, which have arisen previously. Check allergy status of patient, including skin preparation, dressings, latex, medications.
2.3.3 Depending on the age and preferences of the child or young person, consider applying local anaesthetic cream (Ametop®) to the potential cannulation site(s).

Ethyl Chloride spray can be used at the time of cannulation, however this is extremely cold and can cause undue distress in younger children.

(This must be prescribed by a Registered Practitioner and checked by two Registered Nurses or given via Children's Hospital PGD)

2.3.4 Clean hands, as per UHL hand hygiene policy. Check hands for any visibly broken skin and cover with a waterproof dressing.

Put on a plastic apron and clean gloves from a dedicated box – you only need to wash rather than use alcohol hand rub on your hands if you have been in contact with bodily fluids, an infected patient or your hands are visibly soiled.

2.3.5 Clean both sides of a large plastic tray with Clinell® wipes, starting on the inside and then the outside, the tray will be the aseptic field for the procedure.

Either allow to air-dry (for a minimum of three minutes) Alternatively dry the tray with paper towels and then disinfect using 70% Industrial Methylated Spirits

Remove gloves and apron, clean hands.

2.3.6 Assemble and prepare the individual items of equipment necessary for inserting the cannula, ensuring you have the correct cannula size (recommend the smallest size appropriate).

Check all packaging for any damage and expiry date before opening and preparing the equipment protecting key parts before the child comes into the room.

**Key Parts of the Cannulation Procedure:**

- Cannula,
- needle free hub / extension set
- 0.9% Sodium Chloride flush ampoule
- syringe
- needle
- Clear transparent dressing
2.3.7 **Equipment Required:**
- Large plastic tray
- Tourniquet or person to act as a tourniquet
- 24g-22g safety cannula
- Children’s sterile transparent semi-permeable dressing (with integrated tapes)
- Bonded extension with a T-connector with bonded needle free hub
- 0.5-5mls 0.9% sodium chloride flush (prescribed)
- Appropriate blood bottles & syringes if taking blood
- 2% Chlorhexidine in 70% alcohol wipes for cleaning ampoule/bottle tops
- Chloraprep® SEPP® applicator for cleaning the skin
- Sterile gauze and plaster
- Requisition forms if taking blood
- Clean gloves from a dedicated box (e.g. not from a box kept in the sluice) and sharps bin
- Needles and syringes
- Ethyl Chloride spray if Ametop® or Emia® has not been used
- Splints tubifast/tubinet to cover splint and cannula for immobilisation
- Cannulation care pathway & Orange Cannula Stickers

2.3.8 Unless taking blood you will need to prime the bonded extension-with a T and place carefully on clean surface protecting key parts.

2.3.9 The 0.9% sodium chloride flush must be checked by two members of staff, one of whom must be a registered practitioner who has been assessed as IV competent.

Wipe the neck of the ampoule with a 2% Chlorhexidine in 70% Alcohol Wipe and draw up the flush using a blunt filter needle and syringe.

Prime the needle free hub extension set and place carefully in your aseptic field protecting key parts.

Place the syringe back in its original packet or attach a blind end hub on the syringe tip and then place in the aseptic field.

2.3.10 Have someone available to distract and/or help to hold the child or young person such as a play specialist or another nurse / HCA

Consider Use of Sucrose Solution 24% for Procedural Pain Management, guidance can be found on INsite UHL ref C21/2016

2.3.11 Correctly identify the patient checking the name, date of birth and unit number against the requisition form (if taking blood) and identification band as per the UHL Patient ID Policy

2.3.12 Ensure that you have sufficient light and that the comfort and privacy of the child or young person and his family can be maintained.

2.3.13 Apply apron and clean hands

Remove the local anaesthetic cream from all sites and identify the appropriate vein and site for cannulation using visual inspection and palpation
2.3.14 Ensure that if the child is under 1yr they are securely wrapped with the appropriate limb exposed.
For older children the parent/carer can hold the child securely on their knee with the appropriate limb tucked behind the parents back play distraction can then take place from the front. *(For further information please see RCN Guidelines (2010) Restrictive physical intervention and therapeutic holding for children and young people [https://www.rcn.org.uk/professional-development/publications/pub-003573]*

2.3.15 If appropriate, support the arm leg or hand in the required position using a pillow or second practitioner.

2.3.16 Clean hands and put on clean gloves

### 2.4 During the Procedure

2.4.1 Apply the tourniquet (or person hold) 2-3ins above cannulation site making sure it does not obstruct arterial flow. *(To increase the prominence of the veins of the hand or arm some older children & young people can be encouraged to assist by clenching and unclenching a fist prior to the cannulation. The vein may also be massaged gently)*

2.4.2 If using Ethyl Chloride local anaesthetic, remind the child or young person how cold the spray becomes, hold hand up behind the chosen site to protect child’s face from the mist and spray onto the chosen site for approximately 7 seconds

2.4.3 Dab the patient’s skin carefully using SEPPS® and allow to dry naturally for at least 30 seconds without fanning, blotting or blowing the skin.
Do not re-palpate the vein or touch the skin

2.4.4 Anchor vein by applying manual traction to the skin a few centimeters below the proposed insertion site.

2.4.5 Insert the cannula smoothly at an angle of approx 30 degrees (depending on size and depth of vein)

2.4.6 Reduce the angle of descent and level off the cannula as soon as a flashback of blood is seen in the neck of the butterfly or when puncture of the vein is felt.

2.4.7 Advance the complete cannula into the veins a few millimeters more until a second flashback is seen at the end of the stylet (second flashback) this may be very slow in infants who have lower pressure in their veins.

2.4.8 Now advance the cannula into the vein 'over-the-stylet' whilst slowly withdrawing the stylet until the cannula is in place up to the hub.

2.4.9 **If unsuccessful after 2 attempts seek assistance** from experienced colleague or ST3 and above.
- a new cannula must be used for each attempt

2.4.10 Once the cannula has been secured with strips of tape integrated with the dressing and venous access has been achieved, the stylet is withdrawn and the bonded extension with-a- T attached.
2.4.11 If taking blood from the cannula you must do this before flushing, withdraw the amount of blood required into a syringe, maintaining stability of the cannula and extension-with-a-T throughout. Blood should be placed into tubes in the correct order:

- Blood Culture
- Coagulation
- Additive tubes such as – gel separator tubes (may contain clot activator or heparin)
  - Heparin tubes
  - EDTA
- All other tubes

(Care must be taken with small babies and children not to withdraw more than the recommended blood volumes on a single or multiple occasions)

<table>
<thead>
<tr>
<th>2.4.12</th>
<th>The amount of flush used will be dependent on the weight and size of the child/young person, other fluids being given and the treatment to be commenced (approx 0.5 ml for neonate to 5ml for older child)</th>
</tr>
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<tbody>
<tr>
<td>2.4.13</td>
<td>Release the tourniquet effect and cover the cannula site with the sterile transparent semi-permeable dressing. The dressing must be applied ensuring the entry site to the skin is clearly visible.</td>
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<tr>
<td>2.4.14</td>
<td>Apply suitable securing devices such as splints to prevent dislodging however if molded splints are being used, it is imperative that the correct size is applied and pressure points protected and inspected frequently. Cover with tubular bandage.</td>
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### 2.5 After the Procedure

<table>
<thead>
<tr>
<th>2.5.1</th>
<th>Dispose of all sharps into a sharps container at the point of use</th>
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</table>
| 2.5.2 | Ensure that the child and parents are comfortable after the procedure and not too upset

(Try to offer the child or young person a reward such as a sticker or certificate if appropriate and allow younger children to have some time in the playroom before leaving the department.) |
| 2.5.3 | Where bloods have been taken transfer the blood into appropriate specimen bottles as soon as possible, making sure that the correct quantity is placed in each container. It is critical in many tests that the correct volume is added to the bottles. |
| 2.5.4 | Gently invert tubes at least 6 times. |
| 2.5.5 | Label the bottles with the following details:

- Patients full surname
- Full forename
- Date of birth
- Hospital Number
- Ward or department

Samples must always be labelled at the Child’s side. They should never be removed from the Childs side unlabelled

Inadequately labelled samples will be rejected by the Laboratory and will need to be repeated

During this time ensure patients confidentiality by making sure that the patients details are not on display to the public. |
| 2.5.6 | Blood from children & young people who are carriers of blood borne viruses must be placed in a bio-hazard bag and a ‘danger of infection’ sticker applied to the request form. |
2.5.7 Remove gloves, apron and any other protective equipment, dispose in a clinical waste bag and then clean hands before leaving the child’s side.

2.5.8 Put on PPE, clean plastic tray as before.

2.5.9 Document the procedure in the child or young person’s notes noting if the child or their parents were particularly upset or if the procedure was traumatic or any marks or bruising was caused by holding the child still.
Commence a cannula care plan and add to nursing notes

### 2.6 Aftercare

#### 2.6.1 Maintaining patency
Peripheral cannula must be flushed with 0.9% Sodium Chloride:
- Before, between and after the administration of drugs or infusions
- At least every 12 hours if not accessed to administer drugs or fluids (consider whether the cannula is still required and should be removed as soon as no longer required)

#### 2.6.2 Ongoing Monitoring
All patients with an intravenous access device in place must have the IV site checked for signs of phlebitis.
- 2-3 times a day during routine flushing
- Each time bolus injections are administered
- IV flow rates are checked or altered (at least hourly)
- When solution containers are changed

### 2.7 Cannula Removal

#### 2.7.1 In children and young people peripheral cannula should only be removed when therapy has been discontinued or sooner if complications are suspected. In circumstances where venous access is limited e.g. neonates the removal must be discussed with medical staff
A peripheral cannula must be removed as soon as it is no longer required
Only in exceptional circumstances should a cannula remain in situ for more than 5 days at which stage a referral to the vascular access team is required and these circumstances must be clearly documented in medical and nursing notes.

#### 2.7.2 Non-registered staff are able to remove a cannula once they have been assessed as competent.

#### 2.7.3 Approach the child or young person and family in a friendly and open manner
Depending on the age and development of the child or young person, explain the procedure to them and their parents or carers and obtain their verbal consent.
(You may need to involve a play specialist to gain a suitable level of understanding and distraction during the procedure)

#### 2.7.4 Using a clean plastic tray (as detailed above in 1.5) collect equipment protecting key parts — clean gloves, apron, sharps bin, sterile gauze, plaster.

#### 2.7.5 Apply apron and clean hands

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Title: Peripheral Cannula UHL Childrens Hospital Guideline
V:3 Approved by Children’s Clinical Practice Group: July 2018, Trust PGC October 2019 Trust Ref: C77/2019
6 Months Review Date Extension Approved by Director of CLA as Document Remains Fit for Purpose & meets Legislative Requirements.

Next Review: March 2023 Trust Ref C77/2019 (Previously B34/2018)

NB: Paper copies of this document may not be most recent version. The definitive version is held in the Trust Policy and Guideline Library.
2.7.6 Reassure child and family and make sure they are in a comfortable and safe position.

2.7.7 Clean hands and apply clean gloves

2.7.8 Remove dressing from around the cannula allowing the child to help as appropriate and then using an aseptic non-touch technique pull back on the cannula to remove it from the vein.

2.7.9 Apply pressure to the insertion point using the sterile gauze until the bleeding has ceased.

2.7.10 After checking if the child is allergic to plasters cover the insertion site with a sterile dressing/plaster. Consider ingestion risk when applying plasters to infants and very young children.

2.7.11 Inspect the removed cannula to ensure it is complete. Any incomplete cannula should be reported to the Doctor or Nurse in charge immediately

2.7.12 Dispose of all sharps into a sharps container at the point of use.

2.7.13 Ensure that the child and parents are comfortable after the procedure and not too upset – give the child a reward such as a sticker or certificate if appropriate and allow them to have some time in the playroom before starting further treatment or discharge (if appropriate).

2.7.14 Remove gloves and apron and dispose as clinical waste, clean hands before leaving patients side, clean plastic tray as before.

2.7.15 Document the removal of the cannula and the anxiety levels of the child and family in the case

notes

3. Education and Training

3.1 Staff undertaking this procedure must have had the necessary training and assessment of competence using a suitable competency assessment tool such as Leicester Clinical Assessment Tool (LCAT) or Direct Observation of Supervised Practice (DOPS)

3.2 Training is provided by the Clinical Skills Unit and can be booked via HELM

3.3 Staff new to the Trust who have been trained elsewhere must:

a) Provide evidence of the training and assessment programme they have successfully completed

b) Comply with the relevant Trust policies and undertake additional training relating to equipment and documentation as required

c) Undertake a one off practical assessment by an appropriate assessor within own CMG/Ward/Unit if deemed necessary or insufficient evidence of previously competence provided

4. Monitoring Compliance

The Monitoring and Audit criteria for the procedure detailed in the guideline is described in Section 7 of the Venous Access in Adults and Childrens policy (Trust ref B13/2010)

5. Supporting References

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https://www.gosh.nhs.uk/health-professionals/clinical-guidelines/peripheral-venous-cannulation-children

6. Key Words

Cannulation, Cannula, Peripheral, IV

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<tr>
<th>CONTACT AND REVIEW DETAILS</th>
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<tr>
<td>Guideline Lead (Name and Title)</td>
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<tr>
<td>Michele Collins Deputy Ward Sister</td>
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</tbody>
</table>

Details of Changes made during review:

Removed reference to Adults in introduction
1.2 Added PICU, ED & NNU exclusion statement – changed from category B guideline to cat C Guideline
1.4 Added statement re- UHL teaching hospital
1.5 Updated related documents
2.1 Removed statement referring to sodium chloride flush being PGD
2.3.6 Added identification of key parts
2.3.7 Removed reference to non-ported cannula
2.3.7 Added reference to bonded needle free hub
2.3.9 Drawing up needle changed from blue/green to blunt filter
2.3.10 Added consider use of sucrose solution
2.3.14 Added website address of rcn.org.uk
2.4.5 & 6 Replaced Butterfly needle with cannula
2.4.9 Added seek assistance from experienced colleague or ST3 and above if unsuccessful after 2 attempts
2.4.13 Added dressing must be applied ensuring entry site is clearly visible
2.5.8 Removed reference to decontaminating tourniquet
2.6.1 Maintaining patency advice changed to flush every 12 hours in line with Trust guidance
2.6.2 Added check for signs of phlebitis 2-3 times a day
2.7.2 Added Only in exceptional circumstances should a cannula remain in situ for more than 5 days at which stage a referral to the vascular access team is required and these circumstances must be clearly documented in medical and nursing notes.
2.7.3 Added Non-registered staff can remove a cannula once they have been assessed as competent.
2.7.11 Added Consider ingestion risk when applying plasters to infants and very young children.

Removed appendix – Cannula care pathway as now available in Trust vascular access guideline