

INSERTION AND MANAGEMENT OF PERIPHERAL CANNULAE IN NEONATES - GCNC - CHW PROCEDURE[®]

DOCUMENT SUMMARY/KEY POINTS

- This document outlines the procedures of inserting, securing and monitoring an intravenous cannula in neonatal patients by medical and nursing staff.
- This document outlines the accreditation process for RN's as an advance practice skill.
- Daily review and assessment is required for all neonates with an IV cannula, this includes documenting the necessity for the cannula to remain in place and remove if no longer required.
- The primary aims of intravenous cannulation are to provide venous access for drugs, blood products and fluid administration.
- Nurses performing intravenous cannulation must hold current accreditation or be participating in the accreditation program.
- Intravenous cannulation in neonates is a skill which needs to be assessed on an annual basis to ensure competence if the opportunity to perform the task on a regular basis has not occurred.
- No more than three attempts by an individual staff member to insert an intravenous cannula into a patient shall be undertaken. This includes any puncture of the skin irrespective of whether the vein has been punctured.
- All intermittent medications and medication infusions are connected to the closed system using a Split septum Luer activated valve (valve).
- When administering medications the valve is swabbed with 2% Chlorhexidine and 70% Alcohol before connecting the tubing or syringe and prior to disconnection of the tubing

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

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| Approved by: | CHW Policy and Procedure Committee | CHW Neonatal Council |
| Date Effective: | 1 st April 2017 | Review Period: 3 years |
| Team Leader: | CNC Neonatology | Area/Dept: GCNC |

or syringe.

- The insertion site of the peripheral intravenous cannula must be visible at all times.
- All infusions are given via an infusion pump with pressures set and recorded.
- Total fluid requirement (TFR) and fluid rates are checked at commencement of each shift with the oncoming RN.
- All IV fluids have a reconstitution sticker attached that has been correctly labelled with the relevant details.
- All infusion bags and lines are changed every 48 hours.
- All infusions containing drugs are changed every 48 hours or 24 hours depending on the stability of the re-constituted drug.

CHANGE SUMMARY

- This guideline is now includes the management and assessment of peripherally inserted IV cannulae in neonates and is consistent with the CHW Procedure for Paediatric patients.

READ ACKNOWLEDGEMENT

- Training Required – demonstration and supervision for junior medical officers and registered nurses working in the NICU and HDU of GCNC.
- Accreditation – completion of education work package and competency for registered nurses
- Read Acknowledge Only – All GCNC clinical staff should read and be familiar with the procedure according to this document.

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This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

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The need for an intravenous cannula is based on clinical assessment of patient need and can be made by nursing and/or medical staff.

Inserting and securing peripheral venous cannulae

Insertion of an intravenous cannula is a necessary and potentially painful procedure for the infant. Preparation of the infant and the skill of the clinician can assist in minimising the distress. Infants requiring cannulation using a peripheral vein need to have the cannula taped securely to allow for observation of the site to enable early detection of an extravasation.

The placement of an intravenous cannula and the ongoing management is based on the principles of best practice. An appropriate and consistent accreditation is maintained for the insertion of the cannula in neonates, the technique is instructed and supervised by experienced neonatal fellows, nurse practitioners or designated RN who have demonstrated excellent procedural and teaching skills. Before undertaking the program staff should consider their suitability in terms of their availability to fulfil the accreditation requirements and on-going skill maintenance.

Infant/Carer safety^{1,2,3}

When the infant's parents are present explain the procedure to them.

Sucrose¹ and non-nutritive sucking should be provided prior to and during the procedure.

The attending nurse should be present during the cannulation and taping of the cannula to assist in the procedure and support the infant.

Support the infant by wrapping and containment to reduce movement. This will also assist the clinician who is inserting the cannula.

The veins in the limbs are used for cannula placement in preference to the scalp, with the upper limbs preferred to the lower limbs.

Transparent film dressing and non-stretchable tape (Leucoplast) are used to secure all cannulas.

T-connectors are not changed daily with routine IV tubing changes. IV tubing is reconnected at the distal end of the T-connector tubing.

The site of all IV cannulas should be observed carefully (check hourly) for secure placement and changes at the cannula site, such as swelling, blanching and pain. Any changes should be recorded on the vital signs chart of the CCIS.

A default pressure alarm limit on the infusion pump is set to 50mmHg as a safety precaution.

The actual pressure on the infusion pump is recorded hourly in the electronic medical record.

The limbs and cannula site should not be covered with clothing or blankets to allow for observation of cannula site.

Limb restraints (arm or leg boards) are used to prevent the infant from bending their wrist, elbow or ankle. Choose an appropriate size board which will still enable the infant's limb to be positioned in a supportive way with fingers flexed over tip of board and the foot taped in an anatomically correct position.

All infants have their own rolls of Leucoplast (1.2 cm and 2.5 cm widths) stored in a zip plastic bag in their bedside locker. The rolls are discarded when the infant is discharged or offered to the parents. The plastic bag can be used for the baby's mementos.

Supporting the Infant During the Procedure

- It is best to undertake the procedure when the infant is in a drowsy state rather than an active alert state when activity can make it difficult to undertake the procedure.
- Approach the infant in a quiet manner.
- The infant must be supported by a second person (nurse or parent) during the procedure.

- Sucrose is administered (as per guideline) two minutes prior to the procedure and throughout as required.
- Place the infant on a bed or warmer of a suitable height for the proceduralist who may also choose to sit on a stool.

Documentation

Documentation by nurses or medical staff performing the procedure shall be recorded in the patient progress notes on the Electronic Medical Record under the heading PROCEDURE and should include:

- Size and type of cannula
- Insertion point including limb used
- Date and time
- Number of insertion attempts
- If a padded splint was used
- The dose of sucrose
- Any blood tests/samples obtained
- Any adverse events during procedure
- How the infant was supported during the procedure
- Clinician's details, name and professional designation

General Principles – IV Cannulation

- Accredited nurses are approved to insert an intravenous cannula into the peripheral veins of the upper and lower limbs. It is not recommended to use the scalp veins unless directed by the neonatologist.
- Sucrose is administered prior to any attempt at cannulation or venepuncture.
- **No more than 3 attempts** to insert an intravenous cannula shall be undertaken by any staff member (medical or nursing). This includes any puncture of the skin irrespective of whether the vein has been punctured.
- Medical staff and accredited nurses must exercise professional judgement and may elect not to attempt to insert an intravenous cannula if in their opinion they are unlikely to be successful.
- When the insertion of an intravenous cannula has been unsuccessful or it is deemed unlikely to succeed, the Neonatal Fellow or Neonatologist on-call shall be notified and asked to assess the child and formulate a plan which could include inserting the peripheral intravenous cannula or a peripherally placed central venous catheter.
- Should any untoward event occur during the procedure of insertion of an intravenous cannula, the Neonatal Fellow or Neonatologist responsible for the child's medical care shall be notified immediately and the event entered into IMMS by the staff who attempted the cannulation.
- A medical order for intravenous fluids, blood products, serial blood sample collection or the administration of drugs will constitute a medical order for the insertion of an intravenous cannula if the neonate does not currently have one in place.

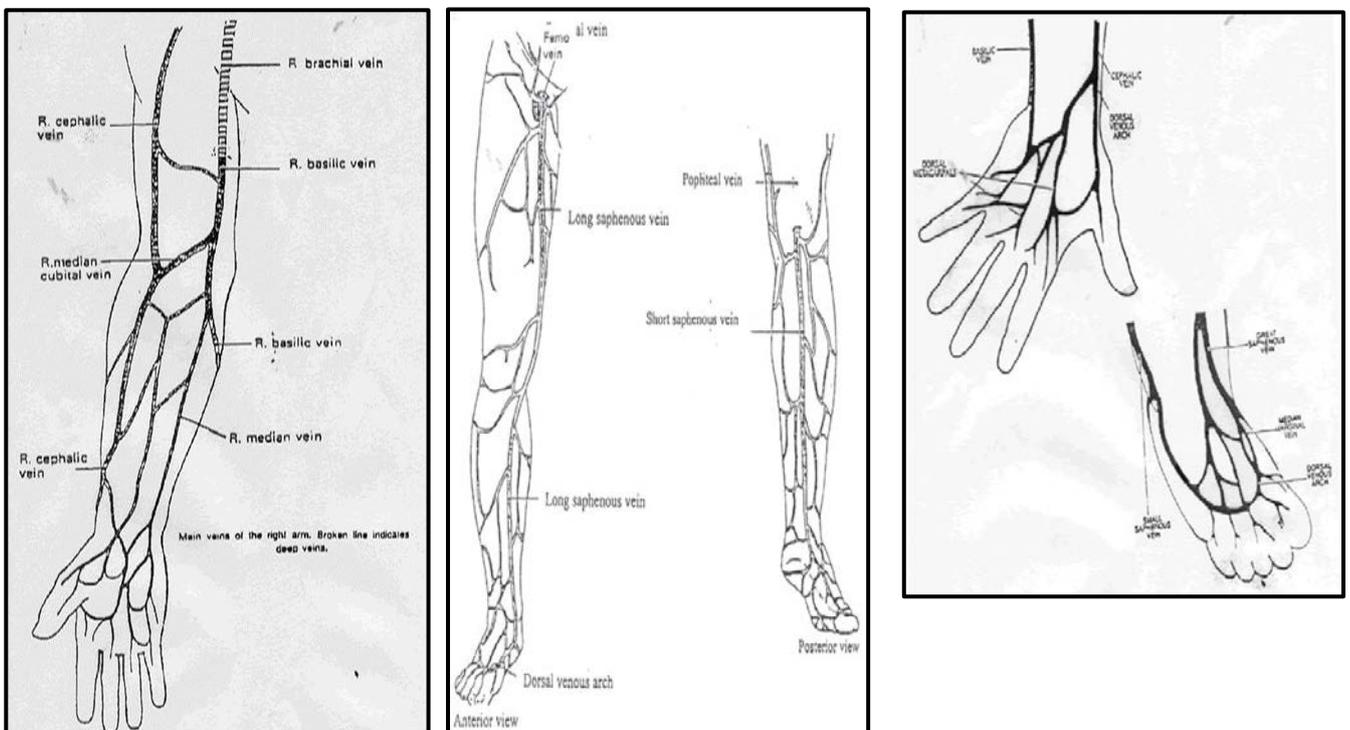
- Small neonates or those likely to require TPN are more likely to have a PICC line inserted. In these instances the veins need to be preserved and no attempt at peripheral cannulation should be made without first informing the Neonatal Fellow or Neonatologist.

Intravenous Cannulation

Equipment

- Personal Protective Equipment
- IV cannulation pack
- Small tourniquet
- Appropriate sized cannula
- 3mL syringe and T-piece extension primed with sodium chloride 0.9%
- Appropriate sized padded single use splint as required
- Sodium chloride 0.9% for injection
- Tape for securing limb to splint
- Steri-strips for securing cannulae
- Clear occlusive dressing (Tegaderm Advance™) Luer lock syringes and blood collecting tubes if taking a blood sample

Sites suitable for peripheral cannulation



Tips for Successful IV Cannulation

- Choose a visible, straight vein that is easily compressed and not over a joint (avoid sclerosed, tortuous or tender veins²).
- If possible position the extremity below the level of the heart to enhance venous filling
- If the limb is cold with associated vasoconstriction, warm the infant and re-try once warm.
- If no vein is visible use veins that have a relatively fixed position (the long saphenous vein near the medial malleolus if not designated for a PICC, the metacarpal vein on the dorsum of the hand between the 3rd and 4th fingers).
- Go through the skin first and wait until the infant has quietened again before trying to enter the vein (rather than attempting both in the one movement).
- There is not always a flashback when the vein is entered (especially with the smaller cannulas, in new babies or in very dehydrated infants). If you are sure you are in the vein but don't get a flashback (a 'give' is often felt as you go through the vein wall) try and feed the cannula anyway²
- If there is difficulty feeding the cannula, try rotating it or using saline to flush it into the vein.
- Never let go of the limb until the cannula is secured.
- Use a second person to support the limb if the infant is active.

Procedure for cannula insertion

| | ACTION | RATIONALE |
|---|---|--|
| 1 | <ul style="list-style-type: none"> • Formally identify patient and introduce yourself to the parents if present. • Explain procedure to the parents if present. | <ul style="list-style-type: none"> • To ensure correct patient • To aid in minimising anxiety about the procedure. |
| 2 | <ul style="list-style-type: none"> • Identify suitable veins for cannulation, (if no suitable veins identified, contact Neonatal Fellow or Neonatologist) • Gently occlude venous flow • Use a 24 gauge cannula • Selection of size should take into account: <ol style="list-style-type: none"> 1. Use of distal veins with subsequent cannulation proximal to previous use. 2. Possible need for future PICC – do not use long saphenous or cephalic veins 3. If surgical procedure is required on limb. 4. Cannula use when inserted. | <ul style="list-style-type: none"> • Assessing all potential sites for cannulation and use a vein that is easy to secure the cannula. This will ensure that if the first attempt is unsuccessful, subsequent attempts may be undertaken immediately. • To select the most appropriate vein that meets the clinical need. • To minimise trauma and potential thrombus development. • Small cannula minimise damage to intima of vein. |
| 3 | <ul style="list-style-type: none"> • Palpate selected site aiming to choose | <ul style="list-style-type: none"> • For patient safety, comfort and optimum |

| | | |
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| | <p>straight, bouncy vein if possible. Sites to avoid if possible include:</p> <ol style="list-style-type: none"> 1. Areas of Joint flexion 2. Small, impalpable superficial veins 3. Veins irritated by previous use 4. Veins in feet 5. Antecubital fossa <ul style="list-style-type: none"> • Remove tourniquet | <p>infusion flow.</p> <ul style="list-style-type: none"> • Use of these sites should be avoided to minimise risks of venous reaction and phlebitis occurring. • It is strongly recommended that the ante-cubital fossa should be avoided if at all possible and should only be used in an emergency situation or if IV access is required and no other site is possible. • If any of these sites are used then the nurse/doctor should be able to justify the rationale and ensure that this is clearly documented. |
| 4 | <ul style="list-style-type: none"> • In infants less than 6 months, oral sucrose is given 2 minutes prior to cannula insertion. | <ul style="list-style-type: none"> • To ensure adequate pain relief prior to procedure |
| 5 | <ul style="list-style-type: none"> • Clean trolley with neutral detergent and collect equipment for the procedure. | |
| 6 | <ul style="list-style-type: none"> • Wash hands for one minute with appropriate hand wash solution. | <ul style="list-style-type: none"> • To minimise risk of infection |
| 7 | <ul style="list-style-type: none"> • Open IV pack onto surgically clean field. • Ensure blood tubes are available if required. • Draw up normal saline and prime T-piece if appropriate | <ul style="list-style-type: none"> • T-piece is used to avoid tension being placed upon the cannula and allows easy access for connection to IV administration set. |
| 8 | <ul style="list-style-type: none"> • Instruct parent / carer/ staff member in appropriate supporting technique for the infant during cannulation. • If appropriate use a dummy to assist the infant with self-regulation | <ul style="list-style-type: none"> • To aid in minimising movement of limb and therefore increase chance of successful cannulation. |
| 9 | <ul style="list-style-type: none"> • Wash hands for one minute. • Apply personal protective equipment (gloves & goggles as a minimum) | <ul style="list-style-type: none"> • To minimise risk of infection and provide protection for the staff and the patient if blood spillage occurs. |
| 10 | <ul style="list-style-type: none"> • If necessary apply a small strip of rubber glove to act as a tourniquet to appropriate limb to engorge vein. (personalised tourniquet) • Swab skin over the proposed vein with Aqueous Chlorhexidine impregnated onto a swab and allow to dry • Swab area firmly but do not rub the skin excessively • Do not palpate vein after cleaning | <ul style="list-style-type: none"> • To minimise microbial contamination. • To minimise 'shearing' of the skin surface • To minimise the risk of re-contamination |
| 11 | <ul style="list-style-type: none"> • Ensure cannula is in bevel up position. • Support the limb with your hand • Hold the skin and vein slightly taut and enter the skin just below or to the back of the vein in one smooth motion at the selected angle for the depth of the vein. | <ul style="list-style-type: none"> • To prevent damage to the vein and subsequent haematoma and to ensure a successful, pain-free cannulation. |

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| |  | |
| <p>12</p> | <ul style="list-style-type: none"> • A 'pop' may be felt as the needle enters the vein and resistance ceases. A 'flash-back' of blood into the cannula should be seen after entering the vein.  <ul style="list-style-type: none"> • The vein may just disappear as you enter with the needle | <ul style="list-style-type: none"> • Indicates that the cannula is in the vein |
| <p>13</p> | <ul style="list-style-type: none"> • Advance the cannula slightly. • Level the device by decreasing the angle between the cannula and the skin and holding the needle hub firmly, thread the cannula slowly over the needle into the vein. • If the needle has been withdrawn from the cannula, it should NEVER be re-inserted whilst still in the vein. | <ul style="list-style-type: none"> • Ensures the cannula is within the lumen of the vein completely. • Avoids advancing too far through the vein wall and reduces the risk of 'through puncture'. • The tip of the cannula can be dislodged by the needle and enter the blood stream. |
| <p>14</p> | <ul style="list-style-type: none"> • Release 'tourniquet'. Apply pressure to the vein above the cannula tip and remove stylet. | <ul style="list-style-type: none"> • To reinstate blood flow to the area. |
| <p>16</p> | <ul style="list-style-type: none"> • Connect T-piece and flush the cannula with Sodium Chloride, checking for: <ol style="list-style-type: none"> 1. Resistance to flow 2. Pain at site 3. Swelling at site 4. Leakage 5. Connect IV Infusion or apply luer-lock cap (cap not required if using needle-free IV cap with extension T-piece)  <ul style="list-style-type: none"> • Use steri-strip taped in a 'butterfly' style to secure cannula (included in package) • Apply a second steri-strip using the | <ul style="list-style-type: none"> • To ensure Cannula is within the lumen of the vein and is patent. |

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| | <p>same technique (included in package)</p> <ul style="list-style-type: none"> Apply a third steri-strip (included in package) to support the hub of the cannula | |
| 17 | <ul style="list-style-type: none"> Apply sterile occlusive dressing ensuring that the insertion site can be visualised at all times. Thicker brown taping with cotton wool padding to secure and stabilise the limb board. Depending on the insertion site stabilise the limb with appropriate sized single use padded arm board if required, ensuring that the fingers / toes remain exposed⁴. Loop the extension tube to ensure there is no pull on the cannula  |  <ul style="list-style-type: none"> Recommended by the CDC³ to cover the intravascular site and provide a defence against infection To reduce the risk of intrinsic infection and ensure that the site can be visualised with no disturbance to the dressing. To ensure stability of the cannula site. To ensure assessment of limb circulation following arm board application. |
| 18 | <ul style="list-style-type: none"> If the first cannulation attempt is unsuccessful, a further 2 attempts only may be made before referring to Neonatal Fellow | <ul style="list-style-type: none"> To minimise trauma to the infant To ensure patent vein is available for further attempts |
| 19 | <ul style="list-style-type: none"> Dispose of all equipment appropriately according to hospital policy. | <ul style="list-style-type: none"> To minimise risk of needle stick injury. To minimise contamination with blood products. |
| 20 | <ul style="list-style-type: none"> Remove gloves and wash hands. | <ul style="list-style-type: none"> To minimise infection |
| 21 | <p>Document procedure in clinical progress notes under PROCEDURE:</p> <ul style="list-style-type: none"> Size & type of cannula Insertion point Date and time Number of attempts Use of padded arm boards Use of sucrose, topical anaesthetic cream and/or administration of nitrous gas Any blood tests/samples obtained Any adverse events during procedure | <ul style="list-style-type: none"> Accurate record of intervention Provide evidence of number of cannulations child has had. Record of difficulty in cannulation which will provide evidence if considering other access routes for child. Record of prescribed drugs used Record of supportive holding technique |

| | | |
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| | <ul style="list-style-type: none">• How the child was held or if restraint was required• Clinician's details | |
|--|---|--|

Taping technique for peripheral cannula ²

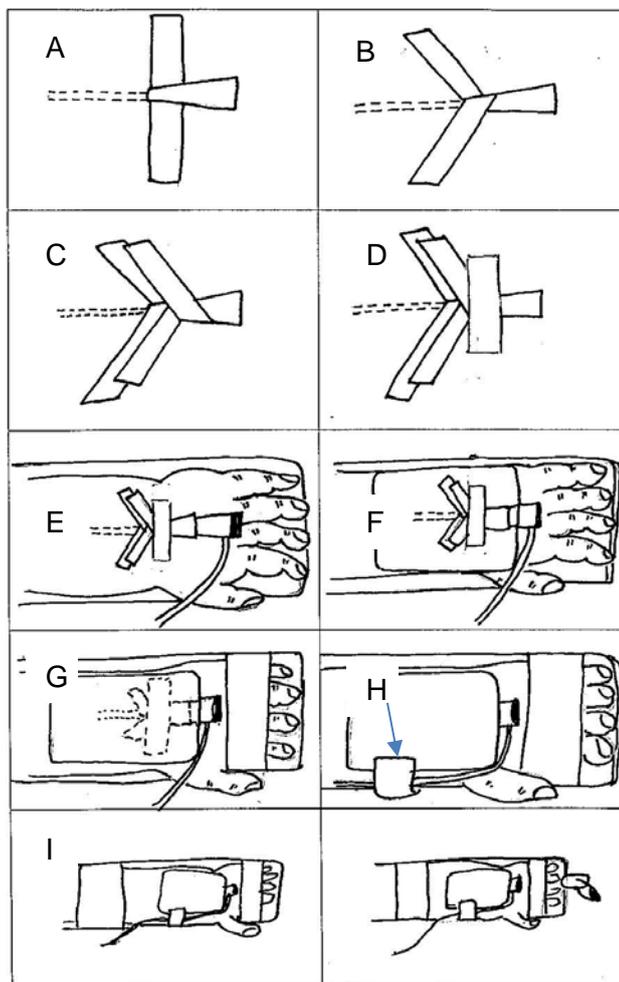
The tapes are prepared prior to the insertion of the cannula.

Cut two pieces of Leucoplast approximately 0.6 cm wide by 5 cm long.

One piece 1.2 cm (width of tape) by 3 cm long

Two pieces 2.5 cm wide (width of wide tape) by 10 cm

Small transparent film dressing



Step by step technique

1. **[A]** Place a steri-strip under the body of the cannula with the adhesive surface facing up.
2. **[B]** Fold the tape at 45 degrees to secure the body of the cannula to the skin
3. **[C]** Repeat **[B]** with a second tape.
4. **[D]** The body of the cannula should be secured with the larger steri-strip ensuring the area of skin over the tip of the cannula is not covered.
5. **[E]** The 'T-Connector' which has been primed with normal saline should be connected to the end of the cannula and the flushing syringe moved to the opposite end of the T-Connector.
6. **[F]** A square of transparent IV adhesive dressing is placed over the cannula site, covering the cannula and T-connector connection.
7. **[G]** Place a length of 2.5 cm Leucoplast over the hand or fingers (or foot) with the proximal edge of the tape as close as practical to the cannula entry point. This tape secures the hand (or foot) to the splint board.
8. **[H]** A piece of tape is placed over the tubing of the T-connector to avoid unnecessary traction on the cannula.
9. **[I]** a length of tape which is an appropriate size for the infant's limb should be laid across the proximal forearm (or leg) to secure the limb to the splint-board. Ensure that the tape does not cover the skin overlying the tip of the cannula. Use cotton wool to take the adhesion off the section in contact with the infant's skin.
10. **[J]** If the infant is particularly active, the splint may be secured to the infant to ensure the limb is well supported.

Peripheral cannula site checks

- All infusions are given via an infusion pump⁵.
- Hourly site checks of the skin area overlying the tip of cannula and direction of the infusion (up the arm or leg) for redness, swelling, blanching and pain are recorded on the vital signs chart of the electronic medical record according to staging criteria⁶.
- Pressure readings on the infusion pump are recorded hourly on the electronic medical record. Set pressure alarm limit to all infusion pumps. NB. Pressure alarms are unreliable indicators of extravasation – visual checks are most important⁵.
- Limbs with a cannula in situ near a joint are splinted and secured to the bed or infant to prevent joint flexion and to avoid accidental removal in active infants¹.
- The person who inserts the cannula is responsible for securing the cannula and documenting the procedure in the electronic medical record.
- Necrotic areas resulting from extravasation should be reported to the medical staff and an incident report completed. The infant may be referred to the plastics team for assessment and advice concerning management.
- The cannula site must be observed for signs of extravasation before, during and on completion of any bolus or intermittent drug administration.

- Scrupulous hygiene and site management will minimise the risks of catheter associated infections⁷.

Staging severity of IV infiltration⁴

| Clinical symptoms | | Actions |
|-------------------|--|--|
| Stage I | Painful IV site No erythema No swelling | For all stages Stop the infusion Establish alternate IV site Determine infusate Elevate extremity Continue assessment of site and surrounding tissue / pain |
| Stage II | Painful IV site Slight swelling (> 1cm in any direction) No blanching Good pulse below infiltration site Brisk capillary refill below infiltration site | |
| Stage III | Painful IV site Marked swelling (> 2 cm in any direction) Blanching Skin cool to touch Good pulse below infiltration site Brisk capillary refill below infiltration site | As above Notify neonatologist |
| Stage IV | Painful IV site Very marked swelling (> 3 cm in any direction) Blanching Skin cool to touch Decreased or absent pulse* Capillary refill > 4 seconds* Skin breakdown or necrosis* * the presence of any one of these signs constitutes a stage IV infiltration | As above Notify neonatologist Plastic's Team consulted |

Post Cannula Insertion Monitoring and Documentation

Documentation must be included within the clinical record which should include the following:

- Position of intravenous cannula (e.g. right dorsum of hand)
- Cannula site "checks" are required every hour– confirmation of site check is made by the staff member indicating on the flow chart of the electronic medical record⁸.
- Cannula site description – e.g. patent, not inflamed or swollen etc should be documented in the clinical record.

- All neonates with an intravenous cannula with or without fluids, is to have documentation notated in the clinical record for every shift (that is 2 or 3 times per day depending on routine shift times). Documentation should include:
 - Position of cannula (e.g. left cubital fossa)
 - Any intravenous fluids or medication administered
 - Condition of the cannula insertion site to include:
 1. Erythema
 2. Tenderness
 3. Swelling
 - Any adverse outcomes e.g. extravasation of IV fluids
 - Day number of cannula life – e.g. inserted __/__/__ now day 4.
 - Record medical review of need for IV cannula to remain in place
 - Document date of removal and condition of IV insertion site.

Caveats to guidelines

1. If the dressing becomes moist or starts to lift, check the insertion site for leaking around the cannula and replace the dressing if necessary.
2. All 'tissued' peripheral cannulas are removed by the nursing staff after checking with NUM or CNS or doctor.
3. Necrotic areas or severely swollen and blanched areas resulting from infiltration should be reported immediately to the medical staff and an IMMS form completed.
4. 'T' pieces are flushed with normal saline. If continuous IV fluids are not in progress the cannula patency is maintained with normal saline flushes of 0.5 mL on insertion and then every six hours⁹.

Management of peripheral IV infusion

All maintenance fluids and tubing are changed every 48 hours. When the lines are disconnected the line becomes susceptible to contamination and infection. Avoiding unnecessary 'breaks' and maintaining the integrity of the line is best practice.

Infants may require additives of opioid or inotrope or electrolytes or antibiotics to IV fluids as part of their ongoing treatment. See chart below for frequency of line and infusion changes.

Every 24 Hours: When the following drugs are being infused.

| | | |
|-----------------------------|-----------------------------|---------|
| Alprostadil (Prostaglandin) | Ketamine | |
| Cyclosporin | Midazolam | |
| Frusemide | Milrinone | |
| Glyceral Trinitrate (GTN) | Sodium Nitroprusside (SNiP) | |
| Sodium Heparin | Triiodothyronine (T3) | Insulin |

Every 48 Hours: When the following drugs or solutions are being infused.

| | |
|----------------------------------|--------------------|
| Adrenaline | Morphine |
| Amiodarone | Noradrenaline |
| Calcium Chloride | Vasopressin |
| Clonidine | Vecuronium |
| Dobutamine | Potassium Chloride |
| Dopamine | Salbutamol |
| Fentanyl | Sodium Bicarbonate |
| Isoprenaline | |
| Heparinised Saline | |
| Normal Saline 0.9% | |
| NaCl 0.22% + 10% Dextrose | |

Light Sensitive (Brown Tubing and Foil Covered Syringe):

| |
|-----------------------------|
| Frusemide |
| Sodium Nitroprusside (SNiP) |

Adverse outcomes of peripheral IV therapy may include but are not limited to disconnection, extravasation, infection and thromboembolism⁹.

Infant safety

- Solutions with concentrations of Dextrose 10% or less are administered through peripheral IV lines. If higher Dextrose concentrations are being used they should be infused via a central venous line because of their high osmolality^{9,10}.
- All IV fluids and additives and pump infusion rates must be double checked by a second RN prior to commencement.
- Some drug infusions require that the second checker be a CNS. This information can be found above the dilution/administration instructions in the drug manual.
- All IV infusions are administered via an infusion pump. If a burette is used, only four hours of fluid should be in the burette and the pump should be set to only deliver a one hour volume of fluid before the need for resetting.
- Pump pressures and alarms are set and monitored as they may aid in the early detection of an occlusion.
- IV fluids are ordered by medical staff and are only valid for 24 hours.

Checking and documentation procedures for all intravenous fluids

All intravenous fluid bags must be labelled with the time and date of commencement with the signatures of two RNs.

At the commencement of each shift or when there is a new bag/syringe or rate change two registered nurses must double check and compare with the fluid orders and record:

- The infusion rate on the pump.
- The contents of the fluids in each bag and syringe.

When narcotic infusions are checked, two registered nurses must double check and record:

- The volume of fluid left in the new syringe after set up and purging is recorded on the IV fluid order chart.
- The volume of fluid left in the old syringe at the completion of the infusion is recorded on the previous day's IV fluid order sheet together with any preset bolus limit and the purging of bolus medication to the infant.
- All infusion pump volumes are cleared at midnight every 24 hours to ensure adequate measurement of fluids are infused for each 24 hour period.

The date and time of infusion changes, additives prescribed, and two registered nurses signatures must be documented:

- On the infusion orders which are updated every 24 hours.
- On a reconstitution sticker which is placed on the fluid bag or syringe.

Pump pressures for each line are set at the commencement of each infusion and are observed and recorded each hour.

Technique

Two registered nurses check the fluid orders including drug doses according to the drug manual.

Before commencing the infusion, two registered nurses check the infusate, the reconstitution and drawn-up drug dose.

Unless there are changes in dosage or type of additives in the maintenance fluids the giving set only requires changing every 48 hours. A piece of tape with a record of date of IV set change is placed on the burette to aid this process. T-connectors are left in-situ and are not changed daily with routine IV tubing changes.

If there are multiple infusion lines, label each line to identify what fluid/medication is being infused.

Accreditation Principles for Registered Nurses to Cannulate

- Nurses performing intravenous cannulation must hold current accreditation to do so or be participating in the accreditation program.
- Nurses eligible to undertake the accreditation program are nurses who, with approval from their Line Manager and upon accreditation, work in Grace Centre for Newborn Care.
- Any prospective candidate should have a valid reason for requiring the skill of IV cannulation.
- Practice under the supervision of a Neonatal Fellow, Nurse Practitioner or senior accredited nurse is required during the initial training process. A minimum of five successful cannulation procedures are required to obtain initial accreditation.
- To retain accreditation on an annual basis, the nurse must provide evidence of having undertaken venous cannulations on a regular basis with a minimum of five successful cannulations. One of which must be assessed by a senior accredited nurse, nurse practitioner or neonatal fellow.
- Nurses joining CHW with prior intravenous cannulation accreditation from another neonatal institution will be assessed on an individual basis for the requirements of CHW accreditation.
- The Nurse Educator is responsible for maintaining a register of nurses in the Pathlore database who are accredited to perform intravenous cannulation.

Key Performance Indicators (KPI)

1. Insertion of all IV cannulae are documented in Electronic Medical Record under 'procedure'
2. All IV cannula are taped with the distal site visible
3. No more than 3 attempts are made per insertion by nurses or doctors

Monitoring Effectiveness of Program

- A list of RN accredited will be held by the Nurse Educator
- Assessment of the individual's technique will occur on an annual basis or as deemed appropriate. On-going audits will be undertaken to check peripheral cannulae, involving inspection of securing and dressing, documentation of procedure and length of time cannula remains in-situ.

Consent

Intravenous cannulation is an invasive procedure. Written consent for cannulation is not required but it is the responsibility of the individual staff member (medical or nursing) intending to carry out the procedure to ensure that the patient's family fully understand what is proposed.

Related CHW Policies

- **Sucrose management for short duration procedural pain in infants:**
<http://intranet.kids/o/documents/policies/guidelines/2006-8241.pdf>
- **Developmentally supportive care for newborn infants:**
<http://intranet.kids/o/documents/policies/guidelines/2006-0027.pdf>
- **Transfusion of Blood and Blood Components:**
<http://intranet.kids/o/documents/policies/policies/2007-8092.pdf>
- **Minimum Documentation Standards:**
<http://intranet.kids/o/documents/policies/policies/2006-8252.pdf>
- **Incident Management:** <http://intranet.kids/o/documents/policies/policies/2006-8324.pdf>
- **Needle Stick and Blood Exposure Injuries: Healthcare Worker:**
<http://intranet.kids/o/documents/policies/procedures/2007-8033.pdf>
- **Occupational Health and Safety & Injury Management:**
<http://intranet.kids/o/documents/policies/policies/2006-8162.pdf>
- **Waste Management:** <http://intranet.kids/o/documents/policies/policies/2006-8228.pdf>

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Appendix 1

Peripheral Intravenous Cannulation For Initial / Continuing Accreditation (Neonates)

Assessment

NAME:

DATE

POSITION:

NAME OF ASSESSOR

Assessors must assess against the following criteria and sign overleaf to state that competence was achieved against the criteria. The following criteria must be demonstrated.

| | | COMPETENT | ASSESSORS FEEDBACK |
|---|--|-----------|--------------------|
| 1 | Knowledge of the patient's present condition and the relevant medical / nursing history | | |
| 2 | Knowledge of intravenous cannulation policy and associated policies and guidelines | | |
| 3 | Knowledge of anatomy & physiology of veins | | |
| 4 | Correct preparation of: <ul style="list-style-type: none"> • Equipment • Patient • Vein • Dressings • Flush | | |
| 5 | Knowledge of the equipment associated with peripheral cannulation | | |
| 6 | Risk management: <ul style="list-style-type: none"> • Understands potential complications of procedure • Understands hazards of contamination of blood • Knowledge of IMMS system for reporting adverse events related to cannulation • Knowledge of procedures when patient may be non-compliant | | |
| 7 | Procedure: <ul style="list-style-type: none"> • Knowledge of reason for undertaking cannulation • Identification of patient • Informs parents if present • Assessment of suitable site for cannulation • Aseptic technique and hand hygiene • Appropriate supporting technique for infant | | |

| | | | |
|---|--|---|--|
| | <ul style="list-style-type: none"> • Correct technique for undertaking cannulation • Securing cannula according to policy • Correct disposal of equipment • Ensures patient left comfortable | | |
| 8 | <p>Accurate documentation in clinical notes including:</p> <ul style="list-style-type: none"> • Size of cannula • Insertion point • Date and time • Number of attempts • Use of padded arm boards • Use of sucrose • Any blood tests/samples obtained • Any adverse events during procedure • How the infant was supported • Clinician's details | | |
| Assessment decision | | <p>Approved</p> <p>Not yet approved (working towards)</p> | |
| Action / further training required | | | |
| Details of feedback to candidate | | | |
| Details of feedback from candidate | | | |
| Assessors Signature | | | |
| Date: | | | |
| Candidates Signature | | | |
| Date: | | | |

Appendix 2

Record of Evidence of Supervised Practice

Name:

Position:

Date of Commencement:

Name of Trainer:

| Date | Infant details: weight, site | Observer | Comments |
|------|---------------------------------|----------|----------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

I, _____ hereby declare I feel confident to perform intravenous cannulation without further supervision. I am aware of the need for an annual review of my accreditation and will maintain written records of all intravenous cannulations to facilitate this review process.

(participant's signature)

I, _____, hereby declare that _____ has performed a minimum of five (5) intravenous cannulations to my satisfaction.

(supervisor's signature)

Appendix 3

Record of Practice – Continuing Assessment

The purpose of this record is to demonstrate maintenance of skill in performing intravenous cannulation on an annual basis. At least one of the cannulation procedures must be assessed by the NP, CNC, NE, Fellow or Neonatologist.

| Date | Patient's details, GA, Weight, site, cannula type | Patient ID | Signature (only 1 required) |
|------|---|------------|-----------------------------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

I, _____ hereby declare I feel confident to continue to perform intravenous cannulation. I am aware of the need for annual review of my accreditation and will maintain written records of intravenous cannulations to facilitate this review process.

Signature

ID number

Date

Position