Aim

- To gain peripheral venous access to administer fluids, blood products, medication and/or parenteral nutrition.
- To minimise the risk of complications of PIVC and intravenous therapy.

Key Points

- Review indication for IV cannula before re-inserting. Is there still an indication for the IV?
  - If the infant is on more than 100mls/kg/day they may not need an IV in, but continue to grade up feeds as planned.
- Aseptic technique is to be used in all aspects of PIVC insertion and ongoing management.
- Consideration should be given to the use of a PICC line with sterile insertion after the initial use of umbilical lines. This will be particularly relevant if it is felt the infant will require a PIVC for more than several days.
- Discussion of PIVC length of use is to occur at each medical ward round and nursing handover.
- If PIVC is in situ for greater than 72 hours, a medical review and decision to keep, replace the PIVC or insert a long line must be documented in the patient’s progress notes.
- Avoid multiple attempts.
- Provide pain relief - sucrose +/- pacifier.
- Secure carefully, ensuring visualisation of cannula insertion site at all times.
**Peripheral Intravenous Cannula (PIVC) Insertion and Management**

### Site Selection
- Take time to choose site carefully.
- Veins in the hands and feet are preferable.
- Avoid sites near previous access, areas of bruising, erythema or loss of skin integrity.
- Avoid areas with flexion where possible as difficult to splint and increases the risk of extravasation.
- Avoid veins that may be used for percutaneous central venous catheters (PICC).
- Choose veins that run straight, fill and empty and easy to splint.

### Equipment
- Sterile dressing pack
- Sterile gloves
- Skin preparation: Chlorhexidine 1% Alcohol/ 70% Swab > 27 weeks gestation or Povidone-iodine 10% Swab < 27 weeks gestation.
- 1 mL and 2 mL syringes and blunt drawing up needles
- Normal saline or prefilled normal saline syringe
- 24G cannula
- Needleless system/short extension
- Sterile transparent occlusive dressing (not < 27 weeks)
- Leukostrips
- Arm-board and leukoplast tape (backed with cotton wool)
Procedure (Aseptic Technique)

1. Check correct patient for procedure.
2. Explain procedure to parents’ if/when present.
3. Give oral sucrose and/or swaddle as clinically appropriate.
4. Perform hand hygiene.
5. Prepare equipment. Note: 0.9% Sodium Chloride is to be drawn up direct from ampule (not to be squirted into tray and drawn up from tray).
6. Perform hand hygiene and don sterile gloves.
7. Clean selected site with appropriate skin prep for gestation and allow skin prep to dry before proceeding with the procedure:
   - Chlorhexidine 1% Alcohol 70% Swab (> 27 weeks gestation) - wait at least 30 seconds.
   - Povidone-iodine 10% Swab (< 27 weeks gestation) - wait at least 60 seconds, wipe Povidone-iodine off with sterile saline or sterile water prior to cannulation.
8. Inspect the cannula to ensure the needle is fully inserted into the plastic cannula and the tip is not damaged.
9. Ensue the bevel of the needle is facing upwards.
10. Insert the needle into the vein at an angle of 10-15°.
11. When blood return/flashback is seen partially withdraw the needle and advance the cannula.
12. Dispose of needle immediately into sharps container.
13. Apply slight occlusive pressure to the vein above the end of the cannula while attaching extension set.
14. Flush to ensure patency with 1 mL syringe and attach primed needless extension system.
15. Secure the hub with sterile leukostrips taking care not to contaminate site.
16. Cover site with sterile transparent occlusive dressing, taking care not to contaminate the adhesive surface.
17. Use appropriate size splint to immobilise the limb. Ensure taping dose not inhibit visualisation of the insertion site.
18. PIVC is to be labelled with – Date and Time of insertion on the splint by person inserting the cannula.
19. Dispose of equipment safely.
20. Perform hand hygiene.
Securement and Dressing Management

<table>
<thead>
<tr>
<th>Taping for infants &lt; 27 weeks</th>
<th>Taping for infants &gt; 27 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 3 small Leukostrips 6.4mm x 76mm</td>
<td>• 3 small Leukostrips 6.4mm x 76mm</td>
</tr>
<tr>
<td>• Appropriately sized splint</td>
<td>• Appropriately sized splint</td>
</tr>
<tr>
<td>• 3 large Leukostrips 13mm x 102mm to secure splint - do not back with cotton wool</td>
<td>• Sterile transparent occlusive dressing</td>
</tr>
<tr>
<td></td>
<td>• Leukoplast tape - backed with cotton wool if in direct contact with skin. Review need for cotton wool for Term or older infants.</td>
</tr>
</tbody>
</table>

Do Not Use Tegaderm

<table>
<thead>
<tr>
<th>Use &lt; 27 guide if poor skin integrity</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Secure the leukostrips and dressing taking care not to contaminate the adhesive surfaces and the insertion site.</td>
</tr>
<tr>
<td>• When securing the splint, ensure it is positioned and strapped with the limb and digits in a neutral position and the taping is not occluding or restricting circulation.</td>
</tr>
<tr>
<td>• Ensure the site is visible when placing the tapes.</td>
</tr>
<tr>
<td>• The dressing is to be replaced if it becomes wet, soiled or loose using an aseptic technique.</td>
</tr>
<tr>
<td>• If the PIVC becomes accidentally or inadvertently partially withdrawn or dislodged, the PIVC is to be removed and a new PIVC inserted.</td>
</tr>
<tr>
<td>• Inspect the splint each shift and replace if soiled or wet.</td>
</tr>
</tbody>
</table>

Commencement of Infusions

- Connect all infusion lines using aseptic technique.
- All infusions are to be infused via a pressure sensitive pump.
- Pressure limits are to be set at 50-100mmHg on commencement of all infusions.
- Pressure limits are to be checked at the commencement of each shift.
- Pump pressures are to be documented hourly on the MR489 or 491.
- Infusion rate is to be check by 2 staff members at the commencement of the infusion and when a rate adjustment is required.

Management of Administration Sets

- Administration sets, including all tubing, connections, extension sets and needless valves are to be changed when the PIVC is re-sited.
- Administration sets are to be changed at least every 96 hours.
- Administration sets and fluids are to be changed more frequently if contaminated or with any accidental disconnection.
- Administration sets are to be changed utilising an aseptic technique.
Peripheral Intravenous Cannula (PIVC) Insertion and Management

- All administration set changes are to be documented on the MR489 or 491 with date and time change.
- All administration sets are to be labelled with an intravenous line label, with date and time administration set commenced.

### Flushing

- Use aseptic technique for all care and maintenance of PIVC.
- PIVC are to be flushed with a minimum of 0.5mL of sterile 0.9% sodium chloride for injection using a 2 mL Leur-lock syringe or pre-filled 3 mL syringe.
- Flush the PIVC using a pulsatile motion (push-pause):
  - After the PIVC is inserted and prior to use to confirm placement.
  - Before each medication or infusion is given to ensure PIVC is still patent.
  - After each medication or infusion.
  - Between multiple infusions or medications to prevent interactions and incompatibilities.
- PIVC without a continuous infusion is to be flushed 4 hourly using an aseptic technique.
- Disconnecting the flush syringe can allow reflux of blood into the hub of the cannula and into the extension set. To prevent this source of occlusion, clamp the extension set prior to removing the syringe.

### Assessment

- Inspect the PIVC insertion site and the limb above and below the site:
  - At least hourly when a continuous infusion is in progress.
  - With each intermittent medication.
  - With each flushing episode.
- Use the PIVAS tool to perform checks. The score is to be documented with each inspection on the MR489 or 491 and 8hourly on the MR820 Peripheral Intravenous Cannula insertion record form.
- Document pump pressure and volume infused hourly with PIVAS score.
- Any adverse findings and action plan are to be documented in the patient’s medical record.
- PIVC’s are not routinely replaced in neonates, however should be removed at the earliest indication of phlebitis or infiltration.
- **Extravasation** should have immediate medical review as treatment via the IVC may be required.

### Removal of PIVC

- Perform hand hygiene.
- Remove tapes and dressing with care to prevent dermal stripping.
- Use adhesive remover as required. Clean skin of adhesive remover with sterile water post procedure.
- Use sterile cotton ball or sterile gauze over the site and slowly withdraw the cannula.
Peripheral Intravenous Cannula (PIVC) Insertion and Management

- Maintain slight pressure over the insertion site until blood flow or ooze has ceased.
- Avoid covering the site with adhesives in the preterm infant as there is a risk of dermal stripping upon removal.
- Document removal and reason for removal on the MR820 Peripheral Intravenous Cannula insertion record.
- The PIV site is to monitored for a further 48 hours post removal and to be documented on the MR820 Peripheral Intravenous Cannula insertion record.

### Complications

<table>
<thead>
<tr>
<th>Complication</th>
<th>Definition</th>
<th>Signs and Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phlebitis</td>
<td>Local inflammation of the vein at or near the cannula site.</td>
<td>Erythema/redness around site or long the vein.</td>
</tr>
<tr>
<td></td>
<td><strong>Mechanical</strong> - irritation to the vein at or near the cannula site.</td>
<td>Tenderness on palpation.</td>
</tr>
<tr>
<td></td>
<td><strong>Chemical</strong> - irritation from drug infusion.</td>
<td>May feel warm to touch.</td>
</tr>
<tr>
<td></td>
<td><strong>Bacterial</strong> - inflammation from microorganism.</td>
<td>Palpable venous cord - usually present at an advanced stage.</td>
</tr>
<tr>
<td>Infiltration (Tissued)</td>
<td>Non vesicant fluid infused into the tissues surrounding the site.</td>
<td>Leakage around site.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Swelling/tightness of skin.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cool to touch.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blanching.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Discomfort.</td>
</tr>
<tr>
<td>Extravasation</td>
<td>Infiltration of vesicant fluids or chemotherapeutic drugs into the surrounding tissues.</td>
<td>Leakage around site.</td>
</tr>
<tr>
<td>See Extravasation Injuries</td>
<td></td>
<td>Painful on palpation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Erythema/redness.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Swelling/redness.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blanching.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blistering.</td>
</tr>
<tr>
<td>Blocked cannula</td>
<td>Clot formation in cannula.</td>
<td>Leakage around site.</td>
</tr>
<tr>
<td></td>
<td>Kink in cannula.</td>
<td>Can be red or painful if thrombus formation</td>
</tr>
<tr>
<td></td>
<td>Restrictive taping.</td>
<td>Increase in pump pressures.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unable to flush PIV bung.</td>
</tr>
</tbody>
</table>

Extravasation Injuries
# Neonatal Peripheral Intravenous Assessment Score (PIVAS)

<table>
<thead>
<tr>
<th>Signs and Symptoms</th>
<th>Score</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy Looking PIV Site</td>
<td>0</td>
<td>Observe</td>
</tr>
<tr>
<td><strong>One</strong> of the following</td>
<td>1</td>
<td>Possible first signs phlebitis</td>
</tr>
<tr>
<td>• Slight pain near IV site</td>
<td></td>
<td>Observe closely</td>
</tr>
<tr>
<td>• Slight redness near IV site</td>
<td></td>
<td>Immediate medical review</td>
</tr>
<tr>
<td>• Increase in pump pressure</td>
<td></td>
<td>Remove PIVC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Document action and plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Continue to observe site for at least 48 hours</td>
</tr>
<tr>
<td><strong>Two</strong> of the following</td>
<td>2</td>
<td>Immediate medical review</td>
</tr>
<tr>
<td>• Pain on flushing</td>
<td></td>
<td>Remove PIVC</td>
</tr>
<tr>
<td>• Redness</td>
<td></td>
<td>Document action and plan</td>
</tr>
<tr>
<td>• Swelling</td>
<td></td>
<td>Continue to observe site for at least 48 hours</td>
</tr>
<tr>
<td>• Increase in pump pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>All</strong> of the following</td>
<td>3</td>
<td>Immediate medical review</td>
</tr>
<tr>
<td>• Pain on flushing</td>
<td></td>
<td>Remove PIVC</td>
</tr>
<tr>
<td>• Redness</td>
<td></td>
<td>Document action and plan</td>
</tr>
<tr>
<td>• Swelling</td>
<td></td>
<td>Complete incident form</td>
</tr>
<tr>
<td>• Increase in pump pressure</td>
<td></td>
<td>Observe site until healed</td>
</tr>
</tbody>
</table>

**Extravasation**

Stop infusion immediately - Do not remove cannula.
Notify Medical Staff and Shift Coordinator.
See **Extravasation** Guideline for further management.
Peripheral Intravenous Cannula (PIVC) Insertion and Management

Related CAHS internal policies, procedures and guidelines

Infection Prevention and Control - Aseptic Technique
Neonatal Clinical Guidelines - Extravasation Injuries

References and related external legislation, policies, and guidelines

MP 0038/16 Insertion and Management of Peripheral Intravenous Cannulae in Western Australian Healthcare Facilities


This document can be made available in alternative formats on request for a person with a disability.

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