

**Royal Hospital for Women (RHW)**  
**NEONATAL BUSINESS RULE**  
**COVER SHEET**



**Health**  
South Eastern Sydney  
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<b>Key Words</b>	Extravasation; Neonatal Intensive Care; Infiltration, PIVC, PICC, Neonate



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Prevention and Management (Neonate)**

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## Extravasation and Infiltration Injuries – Prevention and Management (Neonate)

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*This Clinical Business Rule (CBR) is developed to guide safe clinical practice at the Royal Hospital for Women (RHW). Individual patient circumstances may mean that practice diverges from this Clinical Business Rule. Using this document outside RHW or its reproduction in whole or part, is subject to acknowledgement that it is the property of RHW and is valid and applicable for use at the time of publication. RHW is not responsible for consequences that may develop from the use of this document outside RHW.*

*Within this document we will use the term woman, this is not to exclude those who give birth and do not identify as female. It is crucial to use the preferred language and terminology as described and guided by each individual person when providing care.*

## 1 BACKGROUND

The inadvertent leakage of a solution from its intended vascular pathway can cause severe injury to the surrounding tissues. Early identification of injuries and timely intervention are critical for optimal outcomes.

## 2 RESPONSIBILITIES

### 2.1 Staff

- 2.1.1 Medical – to adhere to best practices with respect to insertion and maintenance of cannulas and catheters. To identify and manage injuries in a timely manner
- 2.1.2 Nursing – to adhere to best practices with respect to insertion and maintenance of cannulas and catheters. To identify and manage injuries in a timely manner

## 3 PROCEDURE

### 3.1 Equipment

Irrigation of extravasation injuries

- Blue incopads
- Dressing pack
- Sodium chloride 0.9%
- Chlorhexidine acetate aqueous solution 0.05% w/v (blue solution)
- 19 & 25G needles
- 2 mL & 10/20 mL intravenous syringes
- 1% lignocaine
- Hydrogel dressing such as Mepilex
- Sucrose 24%
- Systemic analgesia if required



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### 3.2 Clinical Practice

#### 3.2.1 Prevention of infiltration and/or extravasation – insertion

- Follow NCC Clinical Business Rules for insertion of cannulas and catheters.
  - See [Peripheral Intravenous Cannula \(PIVC\) Insertion and Dressing](#) and [PICC Line- Insertion and management](#)
- Avoid placing cannula and catheter tips in susceptible areas such as over bony prominences, the wrist, the dorsum of the foot and the scalp where possible.
- Apply any taping loosely to allow circulation.
- Do not obscure the site of insertion.
- Vesicant solutions should be administered by a central line where possible.
- Document insertion of PIVC or Peripherally Inserted Central Catheter (PICC) line on eRIC using the Initiation Record form.

#### 3.2.2 Prevention of infiltration and/or extravasation – maintenance

- Document all intravascular lines using eRIC.
  - PIVC cannula sites should be checked hourly:
    - Document site visual infusion phlebitis (VIP) score
    - Document current status of cannula using Ongoing Assessment form with cares
  - PICC catheters should be checked with all cares with particular attention to the expected tip position:
    - Document site VIP score
    - Check state of dressing after shift change and with cares
    - Document current status of catheter using Ongoing Assessment form
- Monitor site regularly as above for signs of infiltration or and/or extravasation.
- The following signs suggest potential infiltration:
  - Blanching at the insertion site or at the location of the tip
  - Swelling either around an insertion site, limb or along path of catheter and catheter tip area
  - Tenderness or discomfort
  - Tight or stretched skin
  - Leakage of fluid at the insertion site
- The following signs suggest potential extravasation:
  - Early – redness, pain or discomfort when using cannula or catheter
  - Late – blistering, ulceration, tissue necrosis
- Alert medical staff if:
  - Pump pressures are alarming high or any increase >50 mmHg above baseline
  - Difficulty with bolus administration of medication/infusion
  - VIP score >1 at any assessment
  - There are any signs of infiltration and/or extravasation

#### 3.2.3 Management of infiltration and/or extravasation

- Stop any infusions immediately and notify medical team.
- Disconnect the administration set from the cannula or catheter (maintain sterility).
- Estimate the severity of infiltration (see Appendix A).



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**Note:**

For Stage 4 infiltrations, it is an option to leave the cannula or catheter in situ as it may be used for medications or to flush the area.

- Remove cannula or catheter unless advised otherwise.
- Mark, measure and document any areas affected by extravasation in progress notes.
- Provide adequate analgesia, which may include a combination of oral sucrose, paracetamol and/or morphine.
- The affected area or limb should be elevated where possible.
- Inform neonatologist and parents.
- Consult plastic surgery team (page #44917 or call through switch) for all Stage 4 infiltrations.
  - Photographs of the injury should be made for the medical notes (permission from parents must be sought prior to taking photos).
- Document extravasation in eRIC.
- Notify incidents using the Incident Information Management System (IIMS+) for all Stage 4 infiltrations.

**Note:**

If treatment is initiated for an extravasation injury, document the injury and associated limb using Wound Manager on eRIC.

### 3.2.4 Irrigation of extravasation injuries

- Explain the procedure to the parents.
- Provide adequate analgesia, which may include a combination of oral sucrose, paracetamol and/or morphine.
- Do not use topical local anaesthetics.
- Do not rupture any formed blisters.
- Identify the neonate for the procedure. The proceduralist ensures that “Time Out” is performed before commencing.
  - This procedure must be performed under sterile Aseptic Non- Touch Technique principles.
- Collect necessary equipment.
- Perform hand hygiene.
- Wrap the neonate with the affected limb exposed.
- Place blue incopad under selected limb.
- Position the neonate comfortably.
- Ensure sharps disposal container is close to allow for direct disposal of sharps after use.
- Perform hand hygiene.
- Clean work surface for equipment with neutral detergent.
- Open packets of equipment for the procedure.
- Perform surgical hand wash and don sterile gloves.
- Clean the affected area with antiseptic solution (see Equipment List).
- Infiltrate the affected area with subcutaneous local anaesthetic (1% lignocaine maximum dose 0.3ml/kg) in four quadrants using a 25G needle.
- Irrigate the area using the puncture marks made when infiltrating the local anaesthetic. Use a 19G needle and 10-20mL of sodium chloride 0.9% each time.



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- Massage out any swelling towards the puncture marks.
- Aim to irrigate with 100-400 mL of sodium chloride 0.9%. Any coloured effluent, such as lipids, should become clear.
- Apply a hydrogel dressing, such as Mepilex, over the site.
  - Refer to wound product information, located in level 3 store room
- Keep the affected limb elevated. Do not apply hot or cold packs.
- Review the affected area with all cares and document using Wound Manager in eRIC
- If the injury requires ongoing wound care please use the wound assessment and management plan. If unsure of what dressing products to use please speak to a nurse educator/ clinical nurse educator or Sydney Children's Hospital wound clinical nurse consultant.

**Note:**

Optional: At the discretion of the neonatologist, inject 3-5mL of sodium chloride 0.9% through a cannula if still in situ, then remove.

### 3.3 Documentation

- eRIC

### 3.4 Education Notes

- Infiltration is the leakage of a non-vesicant solution from its intended vascular pathway into the surrounding tissue. Infiltration is generally benign but a large volume of infiltrate can cause a compartment syndrome, compressing nerves and compromising circulation.
- Extravasation is the leakage of a vesicant solution from its intended vascular pathway into the surrounding tissue. The degree of injury ranges from mild skin reaction to severe necrosis. This can lead to infection, complex regional pain syndrome, loss of function and amputation.
- A vesicant is any fluid with the potential to cause severe tissue injury or necrosis if it leaks from its intended vascular pathway. The severity of injury is related to the type, concentration and amount of vesicant extravasation.
- Common vesicants used in the NCC include:
  - Medications – vancomycin, gentamicin, cefotaxime, acyclovir, ganciclovir, phenytoin
  - Vasocompressors – dobutamine, dopamine, adrenaline, noradrenaline
  - Hyperosmolar solutions – TPN, >10% dextrose
  - Radiographic contrast media
  - Concentrated electrolyte solutions, particularly calcium and sodium bicarbonate
  - Blood
  - Cytotoxic agents

### 3.5 Abbreviations

PIVC	Peripheral Intravenous Catheter	PICC	Peripherally inserted central catheter
VIP	Visual Infusion Phlebitis	IIMS	Incident Information Management System
ANTT	Aseptic Non- Touch Technique	TPN	Total parenteral nutrition



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### 3.6 Related Policies/procedures

- RHW NCC Nursing- Peripheral Intravenous Cannula Insertion and Dressing
- RHW NCC Nursing- PICC Line - Insertion and management

### 3.7 References

1. Sydney Children's Hospital Network Practice Guideline- Intravenous extravasation - Management. Available at <https://resources.schn.health.nsw.gov.au/policies/policies/pdf/2016-9057.pdf>
2. Thigpen JL. Peripheral intravenous extravasation: nursing procedure for initial treatment. Neonatal Netw. 2007;26:379-84.

## 4 ABORIGINAL HEALTH IMPACT STATEMENT DOCUMENTATION

- Considerations for culturally safe and appropriate care provision have been made in the development of this Business Rule and will be accounted for in its implementation.
- When clinical risks are identified for an Aboriginal and/or Torres Strait Islander woman or family, they may require additional supports. This may include Aboriginal health professionals such as Aboriginal liaison officers, health workers or other culturally specific services

## 5 CULTURAL SUPPORT

- For a Culturally and Linguistically Diverse CALD woman, notify the nominated cross-cultural health worker during Monday to Friday business hours
- If the woman is from a non-English speaking background, call the interpreter service: NSW Ministry of Health Policy Directive PD2017 044-Interpreters Standard Procedures for Working with Health Care Interpreters.

## 6 NATIONAL STANDARDS

- Standard 1 Clinical Governance
- Standard 3 Preventing and Controlling Infections
- Standard 4 Medication Safety
- Standard 5 Comprehensive Care



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## **7 REVISION AND APPROVAL HISTORY**

<b>Date</b>	<b>Revision No.</b>	<b>Author and Approval</b>
13.09.2016	1	Tim Schindler (Staff Specialist), Joanne Sheils (Nurse Educator), Teena George (Clinical Nurse Educator); Approved by Neonatal Services Division Quality
19.09.2024 3.10.2024	2	Tim Schindler (Staff Specialist) Endorsed by NCC CBR Committee
21.10.24	3	Approved RHW BRGC



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**Appendix A**

Site assessment of severity (adapted from Thigpen 2007)

Site assessment	Stage 1	Stage 2	Stage 3	Stage 4 – Medical Emergency
Swelling	None	Slight/Mild	Moderate swelling above and or below the site of insertion or tip of catheter	Severe swelling above and or below the site of insertion or tip of catheter
Leakage	Yes/No	Yes/No	Yes	Yes
Blistering	No	No	Potential	Yes
Hardened areas	No	Possible	Yes	Yes
Skin colour	Unremarkable, may have discolouration at site	Mild blanching, may have discolouration at site	Blanching of the skin, redness and or discolouration that may be purple or black	Blanching of the skin, redness and or discolouration that may be purple or black
Site temperature	Warm	Warm	Cool to touch	Cool to touch or cold
Skin integrity	Intact	Intact	Altered	Altered
Palpable pulse	Good	Good	Good or weak	Weak or absent
Capillary refill	1-2 sec below site	1-2 sec below site	2-3 sec below site	>4 sec below site
Flush	With difficulty	With difficulty	Unable to flush	Unable to flush
Pain at site	Yes	Yes	Yes	Yes/No Degree of extravasation may mean there is altered sensation to limb resulting in no pain at site

**NB. Notify Sydney Children's Hospital Plastics Team and complete IIMS for all Stage 4 injuries**