



CLINICAL GUIDELINE	
Extravasation Injuries	
<b>Scope (Staff):</b>	Nursing and Medical Staff
<b>Scope (Area):</b>	NICU KEMH, NICU PCH, NETS WA

This document should be read in conjunction with this [DISCLAIMER](#)

Extravasation is the infiltration of vesicant solutions such as TPN, bicarbonate, vasopressors, calcium, antibiotics, phenytoin, potassium chloride, > 10% glucose containing solutions and blood into subcutaneous tissues. This can result in blistering and tissue necrosis and requires immediate attention to limit further injury.

### Key Points

- Infants under 27 weeks gestation and infants receiving TPN, highly concentrated glucose (i.e. 15-20%), calcium, sodium bicarbonate or inotropes through peripheral IV cannulae are most at risk. Therefore glucose > 12%, calcium, sodium bicarbonate or inotropes should be administered through a central line.
- Clinical assessment of extravasation may reveal:
  - Swelling, blistering or skin damage.
  - Skin discolouration or erythema.
  - An abnormal or hardened area.
- Avoid siting the tip of the cannula in an area of thin skin such as that over a joint. Always try to avoid positioning the tip of a cannula over the lateral malleolus.
- Observe the IV site at least hourly and pay attention to pump pressures. The Neonatal Peripheral Intravenous Assessment Score (PIVAS) should be recorded on the MR820. Infuse solutions using a pressure sensitive pump, and monitor the pressure closely. Set initial pressure limit at 50-100mmHg and monitor fluctuations closely.

### Management of Extravasation

- Senior medical staff should be informed immediately of any extravasation injury.
- The need treat or not to treat with Hyaluronidase or Phentolamine is the decision of the consultant or SR and should be documented accordingly in the Inpatient Progress Notes (MR420).
- Management will depend on the type of solution that has extravasated.
- Immediately stop all infusions running through the IV but leave the cannula in until reviewed. Early review and early treatment can lead to better cosmetic results.
- Examination of findings and treatment plan should be documented on Wound Assessment Form MR492.
- A CIMS form is to be completed for all extravasation injuries.
- Early referral of severe extravasation to plastic surgery should be considered.

- Commence wound management form MR492.
- Clinical photographs should be taken of the wound before and after treatment.

A “wait and see” approach & leaving the wound exposed is associated with high rates of scarring as extent of tissue damage may be greater than originally thought. This approach leaves the irritant solution in the subcutaneous tissue to continue tissue necrosis and results in scab formation.

There is also little evidence for applying occlusive dressings and this approach also leaves the irritant solution within the subcutaneous tissues, but does prevent scab formation.

### **Infiltration of Hyaluronidase without Normal Saline Irrigation**

Refer to Neonatal Medication Protocols - [Hyaluronidase](#) - (For extravasation injuries involving Dopamine or other vasoconstrictors see Phentolamine protocol below).

Problem with this approach is that it still leaves the irritant in the subcutaneous tissue.

- Stop the infusion but leave the cannula in-situ.
- Try and aspirate from the cannula.
- Administer 1 mL Hyaluronidase (concentration 15 units/mL) through the existing IV cannula **and/or**
- Inject a total of 5 lots of 0.2 mL aliquots of Hyaluronidase (concentration 300 units/mL) into the periphery of the extravasation injury.

### **Infiltration of Hyaluronidase Followed by Normal Saline Irrigation**

This method has the advantage of removing the irritant from the subcutaneous tissue.

Analysis of the returned irrigated fluid has shown that it contains the extravasated fluid.

Works best if used early, preferably within one hour but up to 24 hours has been reported.

- Under aseptic techniques, the discoloured area and surrounding skin are cleaned and infiltrated with local anaesthetic, as this is a painful procedure.
- Administer 1mL Hyaluronidase (concentration 15units/ml) through the existing IV cannula.
- Inject around and through the extravasation injury a total of 5 lots of 0.2 mL aliquots of Hyaluronidase (concentration 1000 units/mL).
- 4 small punctures are made in the tissue plane with a 19 gauge needle around the edge of the extravasation.
- Irrigate with normal saline through these punctures using a 19g needle. The limb may become swollen but the saline should be able to be massaged gently out through the holes by gentle manipulation. Suggested volumes for irrigation range from 50-500 mLs (although in smaller infants 20mL may be sufficient).
- After irrigating leave the puncture wounds open and apply an atraumatic wound dressing such as mepilex.

### **Phentolamine**

For extravasation injuries due to dopamine or other vasoconstrictors. Both low and high dosage dopamine have been reported to cause severe extravasation injuries.



- Phentolamine is injected into the IV cannula and or subcutaneously encircling the infiltrated site, 4-5 sites.
- A total of 1 mL/kg of a 1 mg/mL solution is injected.
- Often within 15-30 seconds there will be an improvement in colour and perfusion.

- Hypotension is the most noted side-effect. Monitor BP continuously if possible, or 5 minutely for 1 hour after administration.

Related CAHS internal policies, procedures and guidelines
<a href="#">Neonatal Medication Protocols</a> <ul style="list-style-type: none"> <li>• <a href="#">Hyaluronidase</a></li> </ul>

References and related external legislation, policies, and guidelines
<ol style="list-style-type: none"> <li>1. Bredemeyer, S. (2001). Department of Neonatal Medicine Protocol Book. Royal Prince Alfred Hospital.</li> <li>2. Casanova D, Bardot J, Magalon G. Emergency treatment of accidental infusion leakage in the newborn: report of 14 cases. Br J Plast Surg 2001;54(5):396-9.</li> <li>3. Harris PA, Bradley S, Moss AL. Limiting the damage of iatrogenic extravasation injury in neonates. Plast Reconstr Surg 2001;107(3):893--4.</li> <li>4. Hadaway L. Preventing and managing peripheral extravasation. Nursing 2009 Oct; 26-27.</li> <li>5. Subhani M, Sridhar S, DeCristofaro J. Phentolamine Use in a Neonate for the Prevention of Dermal Necrosis Caused by Dopamine: A case report J Perinatol 2001 Jul-Aug;21(5):324-6</li> <li>6. Wilkins CE, Emmerson AJ. Extravasation injuries on regional neonatal units. Arch Dis Child Fetal Neonatal Ed 2004;89(3):F274-5.</li> <li>7. Cochrane Database Syst Rev. Saline irrigation for the management of skin extravasation injury in neonates. 2017 Jul; 2017(7): CD008404.</li> </ol>

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