



## CLINICAL PRACTICE GUIDELINE

Guideline coverage includes NICU KEMH, NICU PMH and NETS WA

# Extravasation Injuries

This document should be read in conjunction with the [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. In up to 70% of neonates infiltration of fluid occurs although tissue damage is less likely, about 4% of infants leave neonatal intensive care with scarring related to extravasation injuries.

## Key Points

- Infants under 27 weeks and infants receiving TPN, highly concentrated glucose (i.e. 15-20%), calcium, sodium bicarbonate or inotropes through peripheral IV cannula are most at risk. Therefore glucose > 12%, calcium, sodium bicarbonate or inotropes should go 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 locating 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 or face.
- Observe the IV site at least hourly and pay attention to pump pressures. 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

- Medical staff should be informed immediately of any extravasation injury.
- Consultants or SR should be informed as soon as possible within the hour of all extravasation injuries.
- The need to 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.
- Where possible 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.

“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.
- Medical officer may administer 1 mL Hyaluronidase (concentration 15 units/mL) through the existing IV cannula **and/or**
- May choose to 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. Modified by some to only include Normal Saline irrigation.

- Under aseptic techniques, the discoloured area and surrounding skin are cleaned and infiltrated with local anaesthetic.
- Inject around and through the extravasation injury a total of 5 lots of 0.2 mL aliquots of Hyaluronidase (concentration 1000 units/mL) (see medication protocol for Hyaluronidase).
- 4 small punctures are made in the tissue plane with a scalpel blade or 19 gauge needle around the edge of the extravasation.
- Irrigate with normal saline through these punctures using a 19g needle or blunt Verres 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 (50-100 would be a typical starting point).
- It is not necessary to warm the irrigation fluid but keep in mind that LBW infants need to be kept in a NTE.
- After irrigating leave the puncture wounds open and apply a wound dressing such as Jelonet.

### **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 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.
- Observe closely for hypotension. Monitor BP continuously if possible, or 5 minutely for 1 hour after administration of. Hypotension is the most noted side-effect.

## References

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## Related WNHS policies, procedures and guidelines

[Neonatal Medication Protocols - Hyaluronidase](#)

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