(LP:17:05)

Learning Package

Neonatal Peripheral Intravenous Cannulation and Venepuncture

Sites where package applies	All sites who provide care for neonates under 29 days old
Description	This cannulation package is an advanced skills training program which will allow accredited registered nurses (RN's) to provide timely and expert intravenous (IV) access in neonates within Hunter New England Local Health District (HNE LHD)
Target audience	Registered Nurses required to cannulate neonates in Neonatal Intensive Care Unit (NICU) or Special Care Nursery (SCN) settings
On completion of this package you will be better able to:	• Understand the theoretical background required to safely and efficiently insert an IV cannula in the neonatal patient. • Undertake supervised and supported clinical practice in order to become skilled in neonatal IV cannulation / venepuncture. • Complete advanced clinical skills accreditation in neonatal IV cannulation / venepuncture.

Keywords	Neonatal, cannulation, intravenous, cannula, IVC
Document registration number	LP2017:05
Replaces existing document?	Yes

Related Legislation, Australian Standard, NSW Ministry of Health Policy Directive or Guideline, National Safety and Quality Health Service Standard (NSQHSS) and/or other, HNE Health Document, Professional Guideline, Code of Practice or Ethics:

NSW Health *Infection Prevention and Control Policy* (PD2017_013)
NSW Health *Consent to Medical Treatment – Patient Information* (PD2005_406)
NSW Health *User applied labelling of Injectable Medicines, Fluids and Lines* (PD2012_007)
NSW Health *Clinical Handover - Standard Key Principles* (PD2009_060)
GNAH Local Procedure *Standard Aseptic Technique* (JHH_JHCH_BH_0193)
JHCH Local Procedure *Intravenous (IV) cannulation and care in NICU* (JHCH_NICU_10.01)
HNELHD Local Guideline and Procedure *Paediatric Intravenous Cannula Care* *HNELHD GandP 16_17*

My Health Learning code:	Neonatal: Intravenous Cannulation and Venepuncture, Theory (172053108) Neonatal: Intravenous Cannulation and Venepuncture, Assessment of Practice (173566425)
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Neonatal Intravenous Cannulation & Venepuncture

Learning Package

2017

NSW GOVERNMENT Health
Hunter New England
Local Health District

Learning Package Overview

Purpose: This learning package provides the theoretical underpinning required before a registered nurse can undertake an assessment of skill s in neonatal cannulation / venepuncture.

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Introduction

In the NICU or SCN, IV therapy plays an essential part in the care of a newborn (gestational age between 24-42 weeks). The need for indwelling IV catheters to provide therapy is considered a standard of care.

Peripheral intravenous cannulation (PIVC) and venepuncture are invasive procedures that can be responsible for serious immediate or delayed complications. Many of these complications are preventable. The purpose of this learning package is to provide a consistent standard to these procedures.

In Hunter New England Local Health District (HNELHD) medical officers and nurse practitioners (NP) are able to perform IV cannulation and venepuncture in the neonate. These procedures can also be an extension of practice for the experienced registered nurse (RN) or clinical nurse specialist (CNS).

For John Hunter Children's Hospital (JHCH) NICU nurses, nurse practitioners are responsible for training of staff in undertaking these procedures. You would be advised to discuss with one of the NPs to mentor and guide you through this. All other areas within HNELHD will have their own processes, and you should discuss this with your educator prior to completing the package.

Disclaimer

This learning package has been prepared by health professionals employed in HNELHD, NICU at JHCH. While all care has been taken to ensure that the information is accurate at the time of development, the authors recommend that all information is thoroughly checked before use if utilised by another unit, context or organisation.

Aim

To provide experienced RN's with the knowledge, skill and understanding to competently and confidently insert an IV cannula in the neonatal patient (up to 29 days old).

Learning Outcomes

Throughout the package there are readings and activities that you will need to complete. Readings can be accessed on-line through CIAP. When complete return the package to a NP who will review and provide feedback.
Completion of this package will provide 5 (CPD) hours and a certificate can be issued for your portfolio.

At the completion of the program it is expected that the RN will be able to:

- Discuss the implications of IV cannulation and venepuncture in relation to Scope of Professional Practice and legal requirements
- Describe the normal anatomy of the hand, arm, foot & leg and recognise veins suitable for IV cannulation/venepuncture in the neonate
- Explain the importance of aseptic technique and the principles of infection control and apply in practice
- Safely and proficiently carry out IV cannulation/venepuncture in a neonate
- Provide quality care to neonates requiring IV cannulation/venepuncture and reassurance to their family
- Recognise complications as they present and where appropriate treat, and seek medical advice

Pre-requisites

In order to complete all aspects of this learning package the registered nurse must have met the following requirement:

- Current experience working in a NICU or SCN, **and** practising at an advanced level
- Work in a SCN or where neonatal cannulation skills can be maintained
- Current mandatory training requirements have been met:
  My Health Learning
  Invasive Devices - 42364545
  Hand Hygiene - 42063430
  Aseptic Technique - 40027445

Learning Package Outline

The package is designed to be self-directed learning and guide you through the literature, clinical issues and experiences related to neonatal venepuncture / IV cannulation.

This package is developed within an adult learning framework so not all activities need to be documented but it is expected that you will complete them in order to facilitate your learning.

This learning package comprises 3 parts:

- Theoretical – gain knowledge through completing LP and readings
- Practical experience – undertake 5 IV cannulations and 5 venepunctures as supervised practice
- Credentialing – following completion of theoretical and practical components the RN/CNS will be assessed and credentialed. All cannulations/venepunctures must be supervised until this is achieved. The assessment will include anatomy, appropriate handling of the infant, documentation and care of the family as per the tool. The RN/CNS is responsible for arranging an appropriate time for the assessment.

Issues that need to be considered when performing IV cannulation / venepuncture:

- Understanding of legal issues, accountability and professional responsibilities
- Health/safety and risk management
- Infection prevention & control standards
- Understanding of the vascular system in the neonate
- Equipment required for IV cannulation/venepuncture
- Technique and procedure for intravenous cannulation/venepuncture
- Complications
- Relevant NICU procedures and guidelines

Problem based learning

This program is based on a problem-based approach to learning. This approach has been chosen to enhance critical thinking, and to create a body of knowledge that the RN can apply to practice. Problem based learning (PBL) is characterised by the use of patient specific problems or situations as a context for developing problem-solving skills and for acquiring clinical knowledge.

How to use this resource or Instructions for participants

- It is expected that this package, including supervised cannulation attempts, will require approx. 5 hours to complete. If you experience difficulty, please discuss this with your NP or educator.
- Completion of this package is equivalent to 5 CPD hours. Evidence of CPD can be generated using the reflection on learning page and completion of all aspects will be recorded in your learning record.
- This package can be used for nurses wishing to increase knowledge and skills in neonatal cannulation / venepuncture.
- At the completion of this learning package you are asked to complete questions or a problem based scenario related to the topic.
- There is a suggested reference list and it is by no means complete. Please read widely to facilitate your learning.
- This resource has been written from a Hunter New England Area Local Health District perspective so it is not specific to any one health facility. Throughout the package procedures from the JHCH have been mentioned as an example of practice only.
- Throughout this learning package there are readings and activities that you will need to complete. You can access the readings online (journal articles) through CIAP. The online readings are not provided within this document due to copyright law restrictions. You will be provided with information on how to access the online readings. If you have any difficulty locating the readings please seek assistance from your hospital / health facility library.

Assessment process

1: Complete and return learning package to NE/ NP who will provide feedback.

2: Perform 5 neonatal IV cannulations under supervision of a NP/MO. Keep record of practice.

3: Complete assessment of practice and submit your record to NE to enter in My Health Learning as evidence of credentialing.

4: Continue to self-assess and evaluate own performance. Provide self-assessment to your manager during annual PDR.

Understanding of legal issues, accountability and professional responsibilities of practice

Whilst insertion of a PIVC is a regular skill for RNs within adult contexts of practice, in the NICU/SCN this skill is considered an advanced practice, according to the scope of practice of a NICU/SCN RN. This is due to the heightened risk of any invasive device for the sick neonate.

It is important to be aware of your professional and individual scope of practice in the context in which you work, when undertaking a new role or when acquiring skills that give you greater responsibility. Information on the responsibilities of nurses, standards and codes is available at the nursing and midwifery board of Australia AHPRA. In addition to this you might wish to read the article by Scales (2009) which discusses all the issues to consider including consent from family, education, documentation in relation to PIV cannulation in clinical practice.

Further to this is the responsibility of the organisation and the professional to ensure that training is adequate and meets the requirements of the National Safety and Quality Health Service Standards.

The NSW Health Kids and Families guideline "Standards of Paediatric Intravenous Fluids" 2nd ed 2015 (GL2015_008) will also provide you with information on evidence-based practice of IV therapy in neonates.

Health/safety and risk management

All staff have a responsibility to abide by policy and procedures relating to:

- Sharp safety including disposal, prevention and management of sharps related injuries.
- Use of personal protective equipment (PPE)
- IIMS reporting of errors or incidences

Infection prevention & control standards

Adherence to evidence based hand washing technique and attending to hand hygiene using the 5 moments, along with adoption of aseptic technique for insertion of invasive devices has been shown to reduce risk of IV site infection.

Prior to undertaking this procedure you should aware of the requirements which are outlined in HNELHD infection prevention and control standards. These documents are available through HNELHD intranet site and PPG.

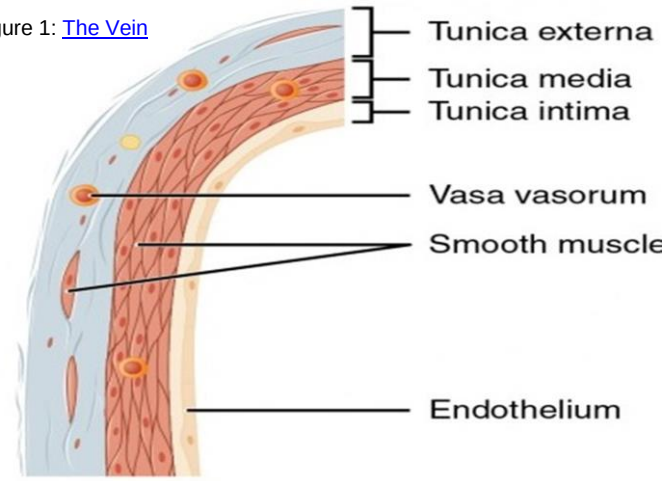
Understanding the vascular system of the neonate

The layers of the veins are:

- Tunica externa - the outer layer primarily loose connective tissue with a network of collagen and elastic fibres
- Tunica media – the middle layer of the vein is a thick layer of connective tissue composed of elastic and smooth muscle fibres; and,
- Tunica intima – the inner layer composed of a single layer of tightly configured endothelial cells – designed to prevent fluid from escaping the vein into the tissue.

  *To gain further understanding of the anatomy and physiology of the veins click the word vein in the Fig*1

Figure 1: The Vein



Learning Activity:
Take a moment to consider the similarities and differences between the veins of a neonate and those of an adult. What implications do these differences have to the practice of insertion of a PIVC and management of these devices in a NICU context? Write your answer down below:

_____

_____

_____

_____

_____

Venous anatomy of the hands and feet

The most common site for venepuncture/PIVC is the dorsum of the hand, a more proximal site in the arm, or in the foot. Cubital fossa and great saphenous sites are generally preserved for possible central line insertion although these sites may be used in the older, well infants. Cannulation of scalp veins is not included in this learning package. Remember to inspect the infant carefully prior to the procedure to select the appropriate and most distal site first that will give you the best chance of success.In the upper limb, veins of the dorsal venous arch are primarily used for both venepuncture and cannulation. Larger more proximal veins including the basilic, cephalic and median cubital vein are also suitable for cannulation as per the illustrations.In the lower limb venepuncture may be performed in a dorsal venous arch vessel but can be technically more difficult than vessels in the hand. Vessels for cannulation include medial and lateral dorsal venous arch, great saphenous, small saphenous, anterior tibial and popliteal veins.

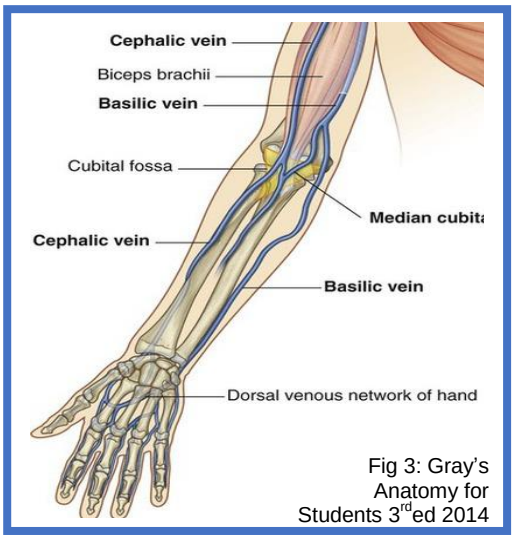
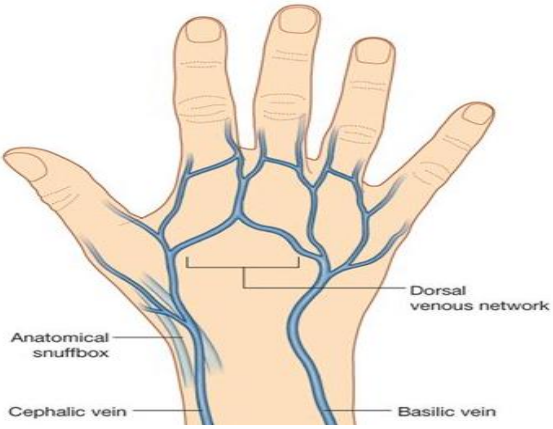


Fig 3: Gray's Anatomy for Students 3rd ed 2014

Figure 2 – Gray's Anatomy for Students, 3rd ed 2014



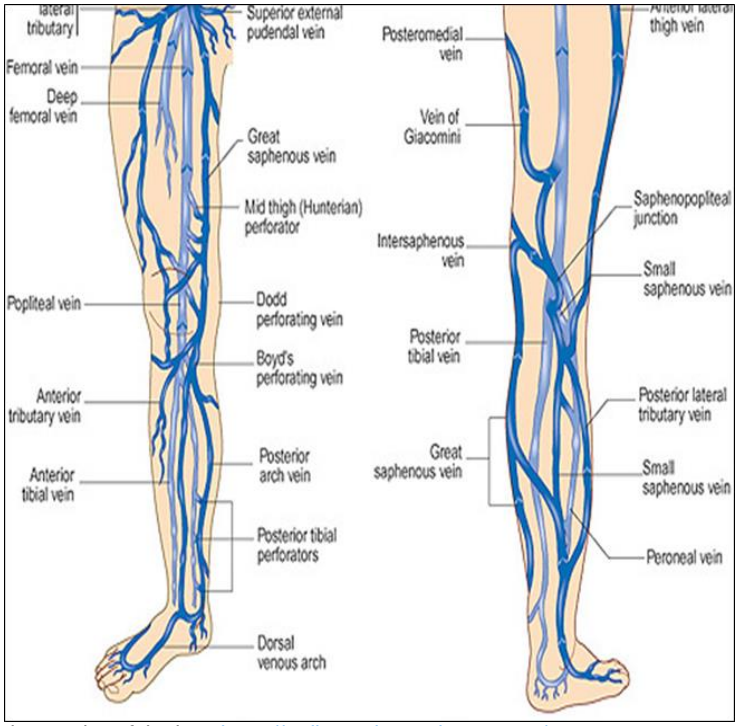


Fig 4: Veins of the legs https://redbacteria.wordpress.com/

Learning Activity: *Imagine you are about to insert a PIVC what factors would influence your site and vein choice? Write your answer down below:*

_____

_____

_____

_____

_____

_____

VENEPUNCTURE

Blood collection is an essential and frequent procedure in the NICU. Venepuncture is the preferred method of blood collection for multiple tests when there is no arterial access. Capillary blood collection by heel stick is adequate for blood gas analysis, blood sugar levels and Newborn Screening Test (NBST)

Venepuncture	
Advantages	**Disadvantages**
Reduced risk of haemolysed or clotted samples	The need for a skilled clinician to perform the procedure
Increased sample volume can be taken	Use of veins needed for cannulation
Less pain for the infant	

Indications for venepuncture

Venepuncture may be preferred when

- Arterial blood sample not possible or necessary
- Capillary sample not possible or necessary
- Volume of blood required is >1ml
- Blood cultures are needed
- It is preferred for certain investigations e.g. coagulation studies

The outcome of undertaking venepuncture is:

- The procedure is carried out safely and competently with the least pain and trauma to the infant, while providing a quality specimen of blood
- The correct blood tubes are used, appropriately labelled and an adequate volume of blood is placed in each blood tube
- All blood tests performed are documented on infant's flow chart

Recommended readings: *The following articles provide more information on venepuncture in neonates*

- Shah, V & Ohlsson, A. Venepuncture versus heel lance for blood sampling in term neonates (Cochrane review). In: The Cochrane Library, Issue 4, 2011, UK: John Wiley & Sons Ltd.
- Chapter 6: Paediatric and neonatal blood sampling in WHO Guidelines on Drawing Blood: Best Practice in Phlebotomy. 2010. Geneva

Equipment required for Venepuncture

- Personal protective equipment (PPE) i.e. safety glasses and gloves
- Alcohol wipes
- Vygon Neo Safe Fg23 blood sampling needle
- Sterile cotton wool ball
- Pathology request form completed and signed
- The correct blood tubes for investigations requested. Check with Pathology if you are unsure of the tube or volume of blood required. Below is a description of preservatives used in blood collection tubes.

Lithium Heparin: heparin is an anticoagulant commonly used in chemistry testing. It is the recommended anticoagulant for many determinations using whole blood or plasma specimens because of its minimal chelating properties, minimal effects on water shifts and relatively low cation concentration. There are currently three salts of heparin that are commonly used in blood collection devices: ammonium, lithium and sodium. Lithium heparin is the recommended form of heparin to be used because it is least likely to interfere when performing tests for other ions. Lithium heparin is essentially free of extraneous ions.

EDTA: ethylenediaminetetraacetic acid is added to blood collection tubes for analysis of haematology. It is the preferred anticoagulant for blood cell counts, haemoglobin electrophoresis, ESR and reticulocyte counts. EDTA prevents haemolysis by inhibiting complement binding.

Coagulation study (blue top) – contains a specific amount of anticoagulant, sodium citrate, and must be filled to the double line at top.

Routine Blood Testing Tubes and Volumes		
Tube	**Test**	**Volume**
Orange lithium heparin	EUC, Ca PO4 Mg triglyceride LFT TFT drug levels	EUC Ca PO4 0.5ml, Add LFT - total 0.75ml Drug level 0.5ml TFT 0.5ml
Red EDTA	FBC reticulocytes cross match	0.5ml
Blue – citrate tube	Coagulation profile	1ml – fill to double line
White clotted tube	Drug levels	0.5ml
Pink EDTA adult tube	Cross match – take care filling in patient information	0.5-1ml

Venepuncture technique and procedure

ALERT!
If the first venepuncture attempt is unsuccessful, only one more attempt is acceptable before referral to a more experienced clinician.

- Assemble equipment, check sterility and expiry dates of equipment
- Explain procedure to family if present

Ensure infant's nurse is available to assist

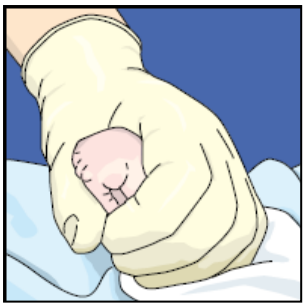
Assemble the required equipment and select site for venepuncture

Provide pain relief strategy e.g. pacifier, swaddling, sucrose

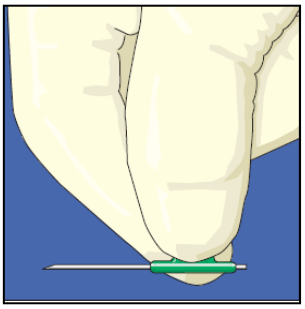
Attend hand hygiene and don gloves

Position the infant comfortably

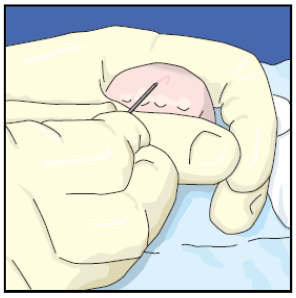
Immobilise the infant's hand, making a small fist using your non-dominant hand. Clean the skin with alcohol wipe and allow to dry.



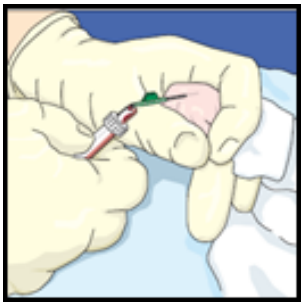
Hold the Vygon blood sampling needle by the wing. This will prevent touch contamination, especially important if taking a blood culture.



Insert the sampling needle into the vein using a very shallow angle, almost parallel to the skin. Use the wing as a guide to indicate the direction of the bevel.



When a flashback occurs hold the blood collection tube below the end of the needle and collect the sample. Blood will backtrack along the needle unless the blunt end is lower than the insertion level. Be sure to collect the sample for the EDTA tube last as it can easily contaminate the electrolyte sample



A gentle squeeze and release motion will aid blood flow. Excessive squeezing will cause pain and bruising to the infant and may haemolyse your sample
Apply a sterile cotton ball over puncture site and withdraw needle. Continue with gentle pressure until bleeding has ceased.
Place needle in sharps bin, separate and dispose of rubbish into the correct receptacles.
Reposition and settle infant
Label collection tubes, place in transport bag
Record date and time of collection on request form, transport to lab.

Venepuncture potential complications

There are a number of potential complications relating to venepuncture. It is important that you learn to recognise these to implement management and/or prevention strategies. These include:

- Haemorrhage
- Haematoma
- Infection
- Needle injury to adjacent structures
- Pain

Equipment required for PIVC & IV therapy

If you assemble your trolley consistently each time you prepare for a cannulation, you will be less likely to forget anything (see figure 5, and 6). Ensure sterility of equipment which includes:

- Basic dressing pack
- 24Fg cannula – 3 types are available – Angiocath, Insyte and Neoflon
- 2ml syringe
- Neo96 filter
- 10ml ampoule 0.9% normal saline
- Steristrips
- Transparent adhesive dressing

Non-sterile equipment required includes:

- Sucrose 24%
- 12.5mm Leukoplast tape x 2 pieces
- Line labels
- 2.5cm Leukoplast elastic tape x 2 pieces
- Appropriate sized arm board
- Chlorhexidine 2% in alcohol 10%. If infant is <27 weeks or <1000g use Povidone/Iodine Solution – this must be left on to dry and washed off with sterile water
- Depending on the infant and specific situation, extras may include blood specimen or culture bottles, gas tube, NBST card

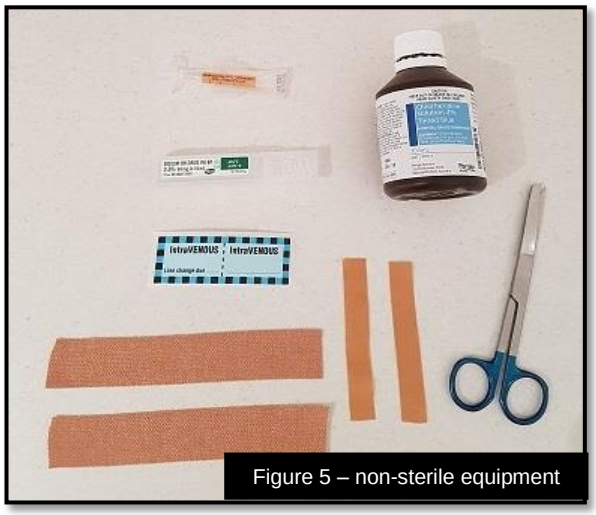


Figure 5 – non-sterile equipment

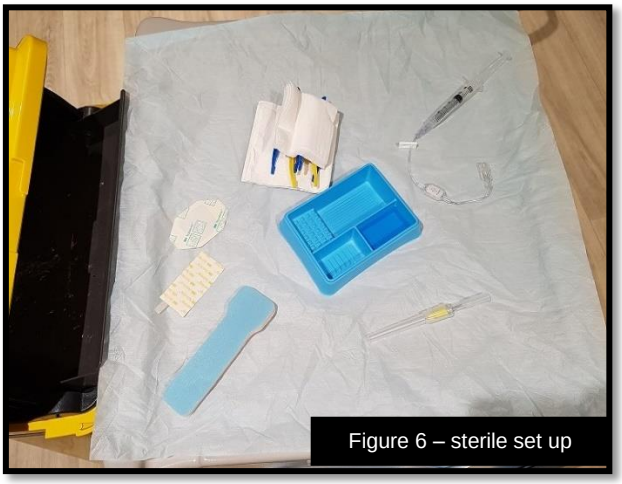


Figure 6 – sterile set up

Consideration of the following is essential before initiating IV therapy and selection of a site:

- Infant's comfort
- Position and extent of restraint
- Ability to maintain cannula in the vessel
- Type of solution or medication to be injected

Peripheral Intravenous Cannulation (PIVC)

Refer to the clinical guideline 'IV Cannulation and Care in the NICU' which is located on the HNELHD PPG

Recommended readings: *The following articles provide more information on PIVC in neonates*

Scales K. 2009. Intravenous therapy: the legal and professional aspects of practice. *Nursing Standard*. Vol 23 (33)
Driscoll,C; Langer,M; Burke,S; and El Metwally,D. 2015. Improving detection of IV Infiltrates in Neonates. *BMJ Open Quality*. Vol 4
Legemaat,M; Carr,P; van Rens,R; van Dijk,M; Poslawsky,I and van den Hoogen,A. 2016. Peripheral intravenous cannulation: complication rates in the neonatal population: a multicentre observational study. *The Journal of Vascular Access* Vol 17 (4)
Treadwell,T. 2012. The management of Intravenous Infiltration Injuries in Infants and Children. *Ostomy Wound Management,* Vol 58(7)
Colacchio,K; Deng,Y; Northrup,V and Bizzaro,M. 2012. Complications associated with central and non-central venous catheters in a neonatal intensive care unit. *Journal of Perinatology* Vol 32

Indications for Neonatal Cannulation

ALERT!
If the first cannulation attempt is unsuccessful, only one more attempt is acceptable before referral to a more experienced clinician.

The decision to initiate or re-site a neonatal PIVC **must** be made by a NP or MO who will be able to evaluate each situation individually. As insertion of a neonatal PIVC can be traumatic for the neonate and their parents, consideration should be given to the need and/or the urgency of cannula insertion.

Indications for neonatal IV cannulation include:

- Administration of IV antibiotics or other medications that may not be given orally
- Administration of IV fluids
- Administration of blood or blood products

Technique and procedure for insertion of a PIVC in a neonate

ALERT!
If the first cannulation attempt is unsuccessful, only one more attempt is acceptable before referral to a more experienced clinician.

- Select appropriate IV site, ensure you determine the direction of flow in the vessel. An ideal vein is unused and relatively straight. Several techniques can be employed to improve visibility of the vein
    - Gently tap with a finger
    - Use a cold light source to transilluminate
    - Pre-warm the selected area using warm linen only
- Ensure both you and the infant are comfortable
- Ensure infant's carer is available to assist
- Assemble equipment onto a sterile field and ensure correct PPE is prepared
- Flush extension set with Normal Saline and leave the syringe attached, choose skin antiseptic
- Initiate pain management strategy e.g. pacifier, swaddling, sucrose
- Attend hand hygiene and don sterile gloves
- Place tourniquet on limb
- Apply antiseptic to skin with friction and allow to dry up to 1 minute
- Ask your assistant to immobilise the limb. Stabilise the vein with your non-dominant hand applying slight traction to the skin, this will prevent superficial veins from rolling away from the needle
- Check the cannula can be separated from the stylet before use. Hold the cannula in your dominant hand with the bevel up to ensure the sharpest part of the needle penetrate the skin first
- The angle of entry to the skin will vary according to the depth of the vein. Small superficial veins are best accessed at a 10-25^{o} angle. Deeper veins may be accessed at a 30-45^{o} angle.

Figure 6

- Pierce the skin over the vein. Upon entry to the vein you may feel a 'giving way' or 'pop' sensation and blood will appear in the stylet chamber, a flashback (Figure 7).

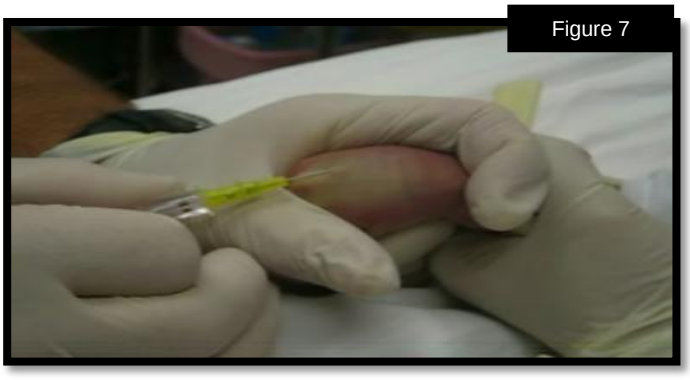


Figure 7

- Reduce your angle to prevent puncturing the posterior wall of the vein. Gently advance another 2-3mm. Hold the stylet between your thumb and middle finger and use your index finger to slide the cannula over the stylet needle and into the vein (figure 8). At times there may be no flashback but you are in the vein. It may be helpful to flush the cannula to determine patency.

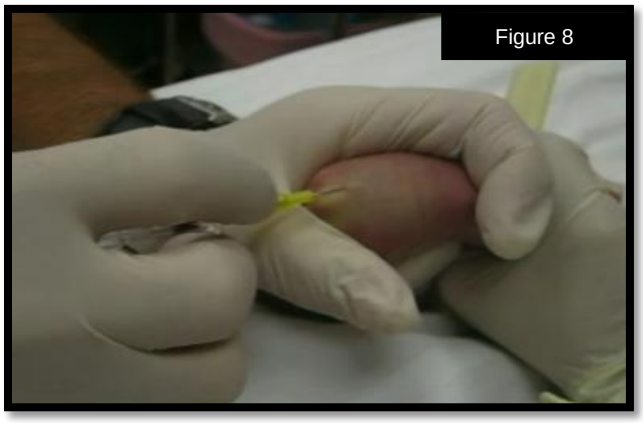


Figure 8

- If blood sampling is required you can drip directly into blood collection tubes. Release the tourniquet once blood samples have been taken
- Attach primed extension tubing and flush the cannula
- Ask your assistant to apply steri-strips and transparent dressing (figure 9)

Figure 9

- Immobilise the limb onto an arm board

Figure 10

- At the end of the procedure
    - The cannula should be secure
    - The tip should be visible
    - The limb should be immobilised in a way that is comfortable, prevents contractures, does not impede venous/lymphatic return and is unlikely to cause pressure areas
- Document on the HSMR90 – IV Cannula Care Plan, in the medical record and bedside flow chart.

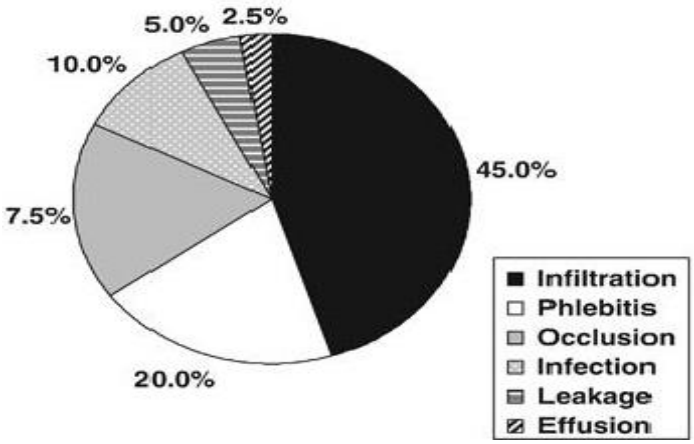
If the cannulation is unsuccessful:

- Flashback may stop if you have punctured the posterior wall of the vein or if the infant is extremely hypotensive. If swelling develops withdraw the device, release the tourniquet and apply direct pressure to prevent hematoma formation. Veins preserved this way are often reusable within 24 hours
- If no flashback is observed, withdraw the needle to just below skin level and attempt to re-cannulate the vein trying a different depth or angle. If the cannula comes out of the skin discard it and use a fresh one for the next attempt
- The stylet needle should never be reintroduced into the cannula as it can cause fragmentation and embolism
- After two **unsuccessful** attempts at inserting a PIVC escalate to a clinician more experienced in the procedure.
- Details of the insertion, successful or not, should be documented in the infant's progress notes.

Common complications associated with peripherally inserted non-central catheters
(Colacchio et al, 2012)

Insertion of PIVC can be associated with a range of complications:

- Haematoma or haemorrhage
- Infection
- Hypoxia or hypothermia related to handling
- Air or clot embolus
- Injury of extremity due to restraint
- Inadvertent arterial cannulation
- Pain
- Extravasation/infiltration



Infiltration and Extravasation

Neonates born prematurely are particularly vulnerable to iatrogenic tissue damage due to the immature structure of the skin. These undeveloped features increase the risk of skin damage as a result of infiltration or extravasation (Fox 2011) and may render the infant vulnerable to systemic complications.

Infiltration is the inadvertent leakage of a non-vesicant solution from its intended vascular pathway (vein) into the surrounding tissue (Doellman et al 2009)

Extravasation is the inadvertent leakage of a vesicant solution from its intended vascular pathway into the surrounding tissue. Extravasation injury can extend through the dermis to the hypodermis, muscle, or tendon tissues if not correctly managed **(**Gopalakrishan et al 2012).

Vesicant refers to any medication or fluid with the potential to cause blistering and severe tissue injury. Vesicant medications & solutions reported to cause extravasation injury:

- Antimicrobials
- Vasocompressive agents
- Concentrated electrolyte solutions
- Cytotoxic agents
- Hyperosmolar agent
- Others-Radiographic contrast media (Gopalakrishan et al 2012).

Recommended Reading:
The JHCH_NICU_10.02 ***Extravasation of IV in the NICU*** will provide you with information on treatment of an infiltrated or extravasated IV fluid or medication
http://intranet.hne.health.nsw.gov.au/__data/assets/pdf_file/0020/153290/Extravasation_May2013JHCH.pdf

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Problem Based Learning Activities

After you have finished the recommended readings, please complete the following:

Scenario 1

Leigh was born at 34 weeks gestation following a spontaneous vertex delivery, and he weighed 1760 grams. As a result of hypoglycaemia, he requires an IV infusion of 10% dextrose to be commenced.

1. Describe the issues you need to consider prior to inserting an IV cannula for Leigh?

2. Which veins should be avoided when performing IV cannulation?

3. What are the commonly selected sites for IV cannulation in newborns?

4. Outline how the risk of infection can be minimised before, during and after cannulation.

5. Describe your health and safety/risk management actions when performing PIVC?

6. When selecting a vein for cannulation, what techniques can improve visibility of the vein?

Scenario 2

Jackson is a four-week old infant who was born at 26 weeks gestation. He remains on HP CPAP in 30% oxygen. He is on full orogastric tube feeds of fortified EBM. On a routine weekly blood test he was found to be anaemic and now requires a top-up transfusion. You are the nurse caring for Jackson and have offered to collect blood for cross match and insert the IV cannula to be used to transfuse blood.

1. What precautions are required when performing venepuncture?

2. What are your responsibilities when performing venepuncture for blood collection?

3. Briefly discuss the complications of IV cannulation, IV therapy and venepuncture.

4. What documentation is required following IV cannulation and venepuncture?

5. How many attempts at cannulation and venepuncture is recommended?

6. Describe the treatment for infiltration. Describe the management of extravasation.

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NSW Health *Infection Prevention and Control Policy* (PD2017_013)

NSW Health *Consent to Medical Treatment – Patient Information* (PD2005_406)

NSW Health *User applied labelling of Injectable Medicines, Fluids and Lines* (PD2012_007)

NSW Health *Clinical Handover - Standard Key Principles* (PD2009_060)

GNAH Local Procedure *Standard Aseptic Technique* (JHH_JHCH_BH_0193)

JHCH Local Procedure *Intravenous (IV) cannulation and care in NICU* (JHCH_NICU_10.01)

HNELHD Local Guideline and Procedure *Paediatric Intravenous Cannula Care* *HNELHD GandP 16_17*

Learning Package: Reflection on Learning

This document guides your reflection on the extent to which the package meets your professional development needs, and how you plan to apply your learning into practice. This tool is not part of the assessment process, and has been included as a document that you may wish to include in your professional portfolio.

Time taken to complete learning package:_____

What was your purpose in completing this learning package?

Did you achieve this by completing the learning package?

Reflecting on the content, what key learning have you obtained?

What learning will you apply to your practice immediately? How will you do this?

What learning needs have you identified as a result of completing this learning package?

How do you plan to address these needs?

Signature:_____Date:_____

Learning Package Evaluation Form

Your feedback is important to ensure the package meets your learning needs. Please answer the following to facilitate change.

The learning outcomes of the learning package were clearly identified	Yes	No
The learning outcomes of the package were appropriate	Yes	No
The content provided enabled me to meet the learning outcomes?	Yes	No
The activities motivated my interest in the topic	Yes	No
The activities and questions supported my understanding of the topic	Yes	No
The package was presented in a logical manner	Yes	No
The assessment process related to this package was clearly outlined (if applicable)	Yes	No

My most relevant learning outcomes from this package were:

The key learning points from this package I can immediately apply to practice include::

The least relevant component(s) of this package were:

Some suggestions I would like made to improve the package would be:

Further comments:

Thank you for your time.

Return to:
Justine Parsons Nurse Educator, NICU, JHCH justine.parsons@hnehealth.nsw.gov.au

Appendix One

RECORD OF NEONATAL VENEPUNCTURE / CANNULATION

5 mandatory supervised

Date	Patient MRN	Venepuncture (V) or Cannulation (C)	Successful	Unsuccessful	Assessor Name / designation (Please Print)	Assessor Signature

I,_____, hereby declare I feel confident to perform neonatal intravenous cannulations without further supervision.

_____ _____

(Participant's signature) (Date)

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

_____ _____

(Supervisor's signature) (Date)

LP and competency entered into My Health Learning Online on _____ (Date)

Relevant Manager notified of competence on _____ (Date)

Appendix Two
Assessment of Practice

Clinician's Name: **Designation:**			**Employee Number:**		
Assessor's Name: **Designation:**			**Date of assessment:**		
Assessors signature:			**Participant's signature:**		
My Health Learning:		**Date Entered:**		**Entered by:**	

Background/ Risk Statement

Newborn intravenous cannulation / venepuncture is a high risk procedure associated with potential for body substance exposure, infection, infiltration, extravasation, haemorrhage and pain. This clinical procedure assessment process has been developed to set a minimum standard of practice and training for all clinicians who are performing cannulation / venepuncture in the newborn population. This process will ensure that all staff are adequately trained and assessed which will minimise adverse outcomes. Pre-requisites prior to undertaking assessment:

Complete *Neonatal Intravenous Cannulation and Venepuncture Learning Package*	
Completion of Record of supervised cannulations/Venepunctures	

AND knowledge of:

Aseptic Technique: Foundation skills (My Health Learning Code: 40027445)	
Invasive Device Protocols (My Health Learning Code: 42364545)	
Hand hygiene (My Health Learning Code: 42063430)	
Waste management (My Health Learning Code: 39966595)	
Infection Prevention & Control Practices	

Assessment process:

The achievement of the skill to a minimum standard (must score 3 or more) is demonstrated by performance of stated criteria in either a clinical or simulated environment, observed by a trained assessor. For the purposes of Neonatal Intravenous Cannulation and Venepuncture, a HNELHD trained assessor, is a clinician skilled in Neonatal Intravenous Cannulation and Venepuncture and considered to practice this skill at a proficient or excellent standard (must score 4 or 5) according to performance criteria within the assessment tool. It is recognised that some clinicians have expertise in this clinical skill and can have this acknowledged through RPL (recognition of prior learning).*It is the responsibility of the participant to identify any restriction that may have an impact on their demonstration of the practical procedure. The assessor is to document any reasonable adjustment taken.*Learning outcomes:

- Practices in accordance with HNLEHD policies and procedures and scope of practice
- Safely performs Neonatal Intravenous Cannulation and Venepuncture and demonstrates underpinning knowledge and skills
- Applies principles of compassionate, person centred, quality care whilst undertaking the procedure

Key: Performance standards

To achieve a score of 3 or above in any performance criteria, all listed elements of practice for that performance criteria must be demonstrated.

1 = Expected behaviours and practices not performed (Unsafe, requires constant verbal and physical guidance)	2 = Expected behaviours and practices performed below the acceptable/ satisfactory standard (Needs guidance to be safe, constant verbal cues)
3 = Expected behaviours and practices performed at a minimum/satisfactory standard (Safe, Independent with occasional supportive cues)	4 = Expected behaviours and practices performed at a proficient standard (Above minimum standard, infrequent cues)
5 = Expected behaviours and practices performed at an excellent standard (no supportive cues, displays excellence/sophistication in specific criterion, competently links theory to practise, displays appropriate reflection and insight)	N/A = Not assessed

Performance Criteria and Elements of practice	**Circle one number**					
1. Demonstrates effective communication with family and/or carer						
1.1 Performs HAIDET 1.2 Identifies potential barriers to communication and engages appropriate services as required 1.3 Explains procedure to family/carer and gains verbal consent 1.4 Checks for allergies	**1**	**2**	**3**	**4**	**5**	**N/A**
2. Demonstrates adherence to Infection Prevention and control policy						
2.1 Perform five moments of hand hygiene 2.2 Performs correct aseptic non-touch technique throughout procedure 2.3 Performs environmental cleaning before and after procedure 2.4 Disposes of contaminated waste and sharps appropriately	**1**	**2**	**3**	**4**	**5**	**N/A**
3. Demonstrates adherence to Work Health and Safety						
3.1 Dons Personal Protective Equipment (PPE) as per patient and environmental requirements 3.2 Follows correct manual handling principles throughout procedure 3.3 Positions the patient appropriately and comfortably	**1**	**2**	**3**	**4**	**5**	**N/A**
4. Demonstration of correct IV cannulation / venepuncture technique						
4.1 Assembles appropriate equipment 4.2 Selects appropriate site, gently taps with finger, or uses cold light source 4.3 Initiates pain management strategy 4.4 Applies tourniquet 4.5 Cleans site with appropriate solution for the procedure and the patient and allows to dry 4.6 Stabilises with non-dominant hand, holds cannula in dominant hand with bevel up 4.7 Enters vein at 10-25^{o} angle, gently advances 2-3mm 4.8 Holds stylet between thumb & middle finger, uses index finger to slide cannula over stylet into vein 4.9 Waits for flashback, then flushes cannula 4.10 Releases tourniquet 4.11 Collects blood if required 4.12 Attaches primed extension tubing 4.13 Asks assistant to apply steristrips and transparent dressing, 4.14 Immobilises limb onto armboard in comfortable position	**1**	**2**	**3**	**4**	**5**	**N/A**
5. Demonstrates correct legal documentation						
5.1 Records cannulation on HSMR90 – Peripheral IV Cannula Care Plan 5.2 Records cannulation, including unsuccessful attempts, in patient health care record and flow chart 5.3 Applies correct blue intravenous line label to extension set with date recorded	**1**	**2**	**3**	**4**	**5**	**N/A**

Overall assessment outcome:

In your opinion as an assessor of clinician performance, the overall performance of this person was:
(please circle one)

Unsafe practice **Requires reassessment** **Safe practice** **Proficient** **Excellent**

Comments:

Appendix Three

Peripheral IV and Subcutaneous Cannula Care Plan (Page 1 of HSMR90)

HUNTER NEW ENGLAND LOCAL HEALTH DISTRICT

Facility: _____

PERIPHERAL IV & SUBCUTANEOUS CANNULA CARE PLAN

FAMILY NAME	MRN
GIVEN NAME	☐ MALE ☐ FEMALE
D.O.B. ____/____/____	M.O.
ADDRESS	
LOCATION / WARD	
COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE	

HSMR90

HNE029200

BINDING MARGIN – DO NOT WRITE

Avoid Cubital Fossa Insertion, Replace cubital fossa and emergency cannula within 24hrs
MO to review & document condition of peripheral cannula site when undertaking patient assessment
Monitor patient's temperature TDS whilst cannula insitu. Report fevers >38 degrees

☐ ID verified ☐ Consented Date & Time:____/____/____ ___:___ _____ g Cannula Inserted into L R _____ site By _____ ☐ MO ☐ RN ☐ RM ☐ IVI Team ☐ Other Change due:____/____/____	☐ ID verified ☐ Consented Date & Time:____/____/____ ___:___ _____ g Cannula Inserted into L R _____ site By _____ ☐ MO ☐ RN ☐ RM ☐ IVI Team ☐ Other Change due:____/____/____	☐ ID verified ☐ Consented Date & Time:____/____/____ ___:___ _____ g Cannula Inserted into L R _____ site By _____ ☐ MO ☐ RN ☐ RM ☐ IVI Team ☐ Other Change due:____/____/____
☐ ID verified ☐ Consented Date & Time:____/____/____ ___:___ _____ g Cannula Inserted into L R _____ site By _____ ☐ MO ☐ RN ☐ RM ☐ IVI Team ☐ Other Change due:____/____/____	☐ ID verified ☐ Consented Date & Time:____/____/____ ___:___ _____ g Cannula Inserted into L R _____ site By _____ ☐ MO ☐ RN ☐ RM ☐ IVI Team ☐ Other Change due:____/____/____	☐ ID verified ☐ Consented Date & Time:____/____/____ ___:___ _____ g Cannula Inserted into L R _____ site By _____ ☐ MO ☐ RN ☐ RM ☐ IVI Team ☐ Other Change due:____/____/____

SAMPLE - DO NOT PRINT

Assessment of Peripheral IV or Subcutaneous Cannula Sites (old & new sites)

Inspect all sites each shift & initial below to confirm dressing intact, no signs of inflammation / infection

	AM	PM	Nocte	AM	PM	Nocte	AM	PM	Nocte	AM	PM	Nocte
Date												
Time												
Initial												
	AM	PM	Nocte	AM	PM	Nocte	AM	PM	Nocte	AM	PM	Nocte
Date												
Time												
Initial												
	AM	PM	Nocte	AM	PM	Nocte	AM	PM	Nocte	AM	PM	Nocte
Date												
Time												
Initial												

Removal Documentation

Date	Time	Removed by	Site

Reason for removal (tick reasons)

Routine / No longer needed	Blocked	Phlebitis	Purulent discharge	Extrava-sation	Fell out

110313

PTO for Central Access Device Care Plan

PERIPHERAL IV & SUBCUTANEOUS CANNULA CARE PLAN AND CENTRAL ACCESS DEVICE CARE PLAN

Nursing Notes