

# MEDICATION ADMINISTRATION

## PRACTICE GUIDELINE<sup>®</sup>

### DOCUMENT SUMMARY/KEY POINTS

This document covers the general principles of medication administration within SCHN for most routes of delivery including oral, enteral, rectal, vaginal, and topical, by injection or by infusion.

This document is to be read in conjunction with:

- Medication Handling in NSW Health Public Health Facilities PD2013\_043
- Medication delivered by inhalation: Inhaled Medication: Administration - SCHN
- Cytotoxic and Hazardous Drugs – SCHN
- User Applied Labelling of Injectable Medicines, Fluids and Lines PD2016\_058
- National standard for user applied labelling of injectable medicines, fluids and lines (Australian Commission on Safety and Quality in Healthcare)

All intravenous medications must be administered in accordance with either:

1. The SCH paediatric injectable guidelines, or
2. Meds4kids dosing guide and CHW paediatric injectable medicines handbook

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

<b>Approved by:</b>	SCHN Policy, Procedure and Guideline Committee	
<b>Date Effective:</b>	1 <sup>st</sup> April 2020	<b>Review Period:</b> 3 years
<b>Team Leader:</b>	Director of Nursing	<b>Area/Dept:</b> Nursing

## CHANGE SUMMARY

- This document replaces Medication Management and Handling Practice Guideline CHW (1/C/06:8232-01:09) and Medication: Administration and Handling (Non-Cytotoxic) – SCH Practice Guideline (1/C/15:7011-01:01)
- **21/02/20:** minor review to update education requirements and to focus on the 5 rights (as described by MoH Policy Directive PD2013\_043) and identify 3 other rights for consideration. The date effective has changed to April 1 to enable adequate communications to be sent to staff.
- **10/3/20:** minor review to update Right Patient information to check against eMM.

## READ ACKNOWLEDGEMENT

- **Training/Assessment Required** – All Registered Nurses and Enrolled Nurses, employed by the SCHN (including those employed on the casual pool) must successfully complete the Mandatory eLearning– ‘Fundamentals of paediatric medication safety’ found in My Health Learning before they can check or administer medications. This assessment will then re occur as a biennially.

All nursing staff working in clinical areas are required to successfully complete the Clinical Skills Assessment (CSA) Administration of IV Therapy biennially

- All nursing staff working in clinical areas should read and acknowledge NSW Health Policy - Medication Handling in NSW Public Health Facilities [PD2013\\_043](#).
- Medical staff and Pharmacists should read this document and NSW Health Policy - Medication Handling in NSW Public Health Facilities PD2013\_043

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

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# TABLE OF CONTENTS

<b>1</b>	<b>Introduction</b> .....	<b>4</b>
<b>2</b>	<b>Definitions</b> .....	<b>4</b>
	<i>Principals of safe medication administration</i> .....	<i>5</i>
<b>3</b>	<b>Nursing Grade – Checks and administration guide</b> .....	<b>7</b>
<b>4</b>	<b>Intravenous medications to be administered by a medical officer</b> .....	<b>8</b>
<b>5</b>	<b>Routes of Administration</b> .....	<b>8</b>
5.1	Oral Administration .....	8
5.2	Gastrostomy & nasogastric or naso/gastro/jejunal tubes .....	9
5.3	Rectal Medications .....	10
	<i>Administration of Suppositories</i> .....	<i>10</i>
5.4	Vaginal Medication .....	12
5.5	Intravenous Medications (non-Hazardous).....	12
	<i>Administration of an Intravenous medication via burette or syringe pump driver</i> .....	<i>13</i>
	<i>Slow-Push Intravenous Medication Administration</i> .....	<i>14</i>
5.6	Intramuscular (IM) Medication .....	15
	<i>Sites for injections</i> .....	<i>16</i>
5.7	Subcutaneous Medication Administration .....	19
	<i>Procedure (Subcutaneous Medication)</i> .....	<i>20</i>
	<i>Subcutaneous Injection via an Indwelling Subcutaneous Catheter</i> .....	<i>21</i>
	<i>Procedure (Insertion of Indwelling Subcutaneous Catheter)</i> .....	<i>22</i>
	<i>Procedure for Removal of Subcutaneous Catheter (e.g. Insuflon™)</i> .....	<i>25</i>
<b>6</b>	<b>References and other Reading</b> .....	<b>26</b>

## 1 Introduction

The Sydney Children's Hospital network (SCHN) prioritises the safe management, monitoring and administration of medication by ensuring the following:

- Correct **prescribing** of medication.
- Administration of the **correct medication**.
- The **correct patient** receives the prescribed medication
- Administration of the **prescribed dose**.
- Administration of the medication dose by the **correct route**.
- Administration of each dose of medication at the **correct time**
- Administration of parenteral medication in the **correct dilution** and at the **correct rate**.
- **Safe storage** of medication.
- **Patient safety** is maintained and monitored.
- Implementation and adherence to legislative provision of the **Poisons Act** and **NSW Health guidelines**.
- Ensure an effective independent double check is part of the medication administration procedure

Guidelines produced by the Australian Pharmaceutical Advisory Council (2005) identify principles on which these standards of practice have been broadly based.

This is a practice guideline for use within the network. It is based on the NSW health policy Medication Handling in NSW Public Health Facilities. PD2013\_043

Please refer to page 72 of the policy document as to which persons are qualified to administer medications.

## 2 Definitions

### Aseptic Non-Touch Technique - ANTT®<sup>2</sup>

ANTT® is a technique used to prevent contamination of key parts and key sites by microorganisms that could cause infection. In ANTT®, asepsis is ensured by identifying and then protecting key parts and key sites by hand hygiene, non-touch technique, using new sterilised equipment and/or cleaning existing key parts to a standard that renders them aseptic prior to use<sup>2</sup>. Principles of ANTT® must be adhered to whenever the CVAD is accessed.

- Essential components of ANTT® include:
  - i. Identifying and protecting key parts and sites:  
**Key part:** is the part of the equipment that must remain sterile, such as a syringe hub, and must only contact other key parts or key sites.

- Key site:** is the area on the patient such as a wound, or IV insertion site that must be protected from microorganisms.
- ii. Use hand hygiene, non-touch technique, a defined aseptic field, sterile equipment and clean existing key parts prior to use.
  - iii. Attempt not to touch key parts/sites directly, **WEAR STERILE GLOVES** during procedures where touch of key parts/sites may occur to reduce contamination risk.
  - iv. Utilise a defined aseptic field to provide a controlled working space that ensures and promotes asepsis.
  - v. Sequence your practice to ensure efficient, logical and safe order of tasks.
- **CVAD: A Central Venous Access Device:** is an intravascular device whose catheter tip is situated in the superior vena cava, inferior vena cava or right atrium. **PICC: Peripherally Inserted Central Catheter** are inserted in the cephalic or basilic vein in the antecubital region and advanced through to the central circulation.

### ***Principals of safe medication administration***

- **Independent Second Person Checks** - are an important medication safety strategy. To be effective, a second person check must be conducted independently by the second person to reduce the risk of bias that occurs when the person preparing and checking the medication is likely to see what they expect to see, even if an error has occurred. An independent second person check requires two people to separately check each component of selecting, preparing and administering a medication. Two people are unlikely to make the same mistake if they work independently. If they work together or influence the checking procedure by suggesting what the checker should find, both could follow the same path to error. When performed correctly, independent second person checks have been found to detect 95% of errors (ISMP, 2013).  
When conducting an independent second person check, each person must independently follow the procedure steps below:
  - Product selection:
    - Confirm the selection of the correct medication and fluid
  - Preparation:
    - Confirm that the dose is appropriate and the calculations are correct.
    - Confirm that the dose is being administered using the correct route and at the correct time.
    - When in use, check that the rate limiting device, for example, infusion pump, is correctly set.
  - Administration:
    - Confirm the identity of the patient prior to administration (at the bedside or with the patient present) and in accordance with facility procedures.
  - Documentation:
    - Document the administration, preferably in the same record, in accordance with facility procedures.

All staff must refer to the medical officer's prescription when administering medication therapy. Staff do not have a role in administration of medication to anyone other than patients of the SCHN. Clinicians administering medication are responsible for ensuring that they are aware of any drug sensitivities or allergies, drug actions and interactions as well as the appropriate manner in which to safely administer the medication.

- To administer a prescribed medication safely and effectively at a minimum the 5 principles of 'medication rights' must be ensured:
- **Right Medication:** The prescription must be reviewed prior to the administration of each medication. This should ensure that the prescribed medication is consistent with the patient's condition, no therapeutic duplications have been prescribed and/or administered, and allergies and/or drug reactions to the medication have been considered. Check the name of the drug, that it is the correct form and has not expired.
- **Right Patient:** Check the patient's name and MRN on the identification arm bands against the electronic Medical Management (eMM) system or medication chart (during downtime procedure). In an outpatient area check with the parent and confirm the child's date of birth. In mental health unit check against photo. Check for any allergies or previous drug reactions.
- **Right Dose:** Check the appropriate dose has been prescribed, using an approved resource. Calculate the correct dose; ensuring independent double checking occurs where two people are required.
- **Right Route:** Ensure the route of administration prescribed is correct and meets the needs of the patient (for example, Nasogastric, PEG, Oral, etc). Make sure you have chosen the correct dose form for that route. Ensure oral liquid doses are drawn up in an oral syringe.
- **Right Time:** Check that the prescription is current and valid; ensure the drug has not been given or ceased, check the dates, times and that the medication concurs with the prescribed frequency. This is particularly important if a patient is transferred from another ward, ED or Operating Theatres.

Additional medication rights to be followed are:

- **Right Documentation:** Ensure that the medication order is signed for post administration of the medication.
- **Right Reason:** Confirm why the patient is taking this medication.
- **Right Response:** There is an appropriate response to the medication and adverse events are monitored

It is important to remember that patient safety is paramount during any medication administration procedure. Therefore ensure all items of equipment taken to the bedside are taken away at the end of the procedure and discarded appropriately (including cannula caps).

**MEDICATION DOSES ARE NEVER TO BE LEFT AT THE BEDSIDE FOR ADMINISTRATION LATER.**

### 3 Nursing Grade – Checks and administration guide

The following table constitutes who can check with whom after completion of their “Fundamentals of paediatric medication safety” in My Health Learning.

All Registered and Enrolled nurses employed by the network are required to undergo a biannual Medication safety competency assessment as well as completing Fundamentals of paediatric medication safety on My Health Learning to administer any medication.

Nurse grade	Can they check?	Check with whom	Can they administer?
AIN/Undergraduate	No	N/A	No
Nursing students	Yes Via all routes (ward dependant) Under the direct supervision of 2 RNs (excludes S8 medications)	2 authorised SCHN RNs Not with: <ul style="list-style-type: none"> <li>New graduates</li> <li>ENs</li> <li>Alone</li> </ul>	Yes – Under the direct supervision of 2 RNs for all medication routes
Trainee Enrolled nurse	Yes Under the direct supervision of 2 RNs	2 authorised SCHN RNs	Yes – Under the direct supervision of 2 RNs
Enrolled nurse	Yes In accordance to SCHN Enrolled Nurse (EN): Scope of Practice policy	An authorised RN from SCHN Not with: <ul style="list-style-type: none"> <li>New graduates</li> <li>ENs</li> </ul>	Yes Cannot administer: <ul style="list-style-type: none"> <li>Nurse initiated medication without confirmation of the supervising nurse</li> <li>Standing orders</li> <li>Inotropes</li> <li>IV additives to IV fluids</li> <li>Cytotoxic/hazardous drugs</li> <li>High dose Potassium</li> </ul>
Agency RNs	Yes	An authorised SCHN RN	No
Pool RN	Yes	An authorised SCHN RN	Yes
New graduate RN	Yes Can check S8/S4D including opioids and epidurals when deemed competent by the ward.	An authorised SCHN RN For the first 6 months of employment cannot check with: <ul style="list-style-type: none"> <li>EN</li> <li>New graduate nurse</li> </ul>	Yes Cannot administer S8/4D including opioid infusions until completion of relevant CSA. Cannot administer nurse initiated medications within first 6 months
Registered nurse (RN)	Yes	All nursing grades	Yes

## 4 Intravenous medications to be administered by a medical officer

The following is a list of intravenous medications which must be administered by a medical officer. They include:

- Anaesthetic agents
- Antiarrhythmics
- Anti-venoms
- Beta Blockers
- Ketamine Bolus
- Contrast Mediums
- Neuromuscular Blocking agents
- Cytotoxic or hazardous medication
- Biologicals

## 5 Routes of Administration

### 5.1 Oral Administration

#### Standard

- All oral medications must be administered in accordance with policies, procedures and guidelines for administration of medication within SCHN, including Ministry of Health and SCHN documents.
- Oral/enteral medications, given by syringe, may only be administered using purpose specific oral syringes.
- Where an individual patient needs require the administration of medication to children via an oral syringe and this is unsuccessful, alternatives include: a medication cup; or plastic spoon. The medication is first measured in an oral syringe and transferred to the medication cup or spoon for administration.

#### Procedure

2. Perform hand hygiene.
3. Review medication order and ensure 5 rights of medication administration.
4. Use a dedicated oral use only syringe to withdraw required amount of liquid OR dispense required tablet.
5. Ensure the child or infant is in a comfortable and upright position prior to administration of medication.
6. Perform hand hygiene.
7. Document administration.

**Tips:**

Administration of oral medications prior to feeding may reduce the risk of vomiting medication; however some medications should be given with food.

When administering oral medications with a syringe, care should be taken to gently deliver the medication into the inner aspect of the cheek slowly, allowing the child or infant to swallow small amounts.

When administering liquid oral medications, an oral syringe should be used to measure the calculated volume of liquid for administration. If the child is unable to swallow tablets refer to pharmacy to clarify if the medication can be crushed and mixed with water, or an alternative product is available. Medications are not to be mixed with large quantities of food or formula, e.g. a whole meal, as if the food/formula is not completely consumed, the dose administered will be inaccurate.

Some resources that may be useful include MIMS – Don't rush to crush online resource

## 5.2 Gastrostomy & nasogastric or naso/gastro/jejunal tubes

### Procedure

1. Perform hand hygiene.
2. Review medication order and ensure 5 rights of medication administration.
3. Draw up medication in a dedicated oral syringe.

Each medication should be drawn up and administered in separate syringes.

Ensure that tube placement is confirmed prior to administration and is flushed prior to and following each medication. The amount of water used will depend on the age of the child and if they are on a fluid restriction.

- Infants 3-5mL
- Children 5-15mL
- Adolescents 10-30mL

Medications should not come in contact with formula.

For children who have a Gastrostomy, medications should always be given through attached feeding tube. Do not syringe medications directly into the gastrostomy as it damages the device.

4. Perform hand hygiene.
5. Document administration.

## 5.3 Rectal Medications

**NOTE:** The rectal route of medication administration may be used for some medications when the enteral route is difficult or contraindicated.

### **Limitations of Rectal Route of Administration**

- Variable absorption.
- Evacuation/expulsion of the medication.
- Acceptance of administration via this route may be culturally influenced.
- Generally disliked by children.
- Neutropenic children should NEVER receive rectal medications – due to the increased risk of infection.

### **Procedure**

**NOTE:** Assistance may be required to immobilise young children during the insertion of the drug, rectal administration must always occur with two health practitioners present.

### ***Administration of Suppositories***

1. Perform hand hygiene.
2. Explain procedure to child (if age appropriate) and significant others.
3. Check if the child needs to empty bowels prior to medication administration.
4. Gather equipment required:
  - Medication order
  - Medication (suppository)
  - Lubricant (water gel)
  - Non-sterile gloves
5. Review medication order and ensure 5 rights of medication administration.
6. Assistant to check medication order and assist in positioning the child to prevent the risk of injury to the health care worker and/or the patient.
7. Perform hand hygiene and don *non-sterile* gloves.
8. Ensure adequate privacy and safety for child - involve parent, where appropriate
9. Position child in left lateral position.
10. Prepare the medication: remove wrapping from suppository.
11. Lubricate with water soluble lubricant.
12. Gently insert the suppository into the rectum as directed by product information.
13. After procedure comfort child.
14. Remove gloves and perform hand hygiene.
15. Record administration of medication.

## **Procedure**

1. Perform hand hygiene.
2. Explain procedure to child (if age appropriate) and significant others.
3. Check if the child needs to empty bowels prior to drug administration.
4. Gather equipment required:
  - o Rectal tube and syringe adaptor of appropriate size or
  - o 8 FG feeding tube.

Note: a size 8 feeding tube may be too large for some neonates particularly premature and low birth weight infants – size 6 may be more appropriate for this patient population. **DO NOT** cut feeding tube

- o Syringe.
  - o Medication.
  - o Non-sterile gloves.
  - o Lubricant (water soluble gel).
5. Review medication order and ensure 5 rights of medication administration.
  6. Assistant to help check medication order and help position the child to prevent the risk of injury to the health care worker and/or the patient.
  7. Perform hand hygiene and don *non-sterile* gloves.
  8. Ensure adequate privacy and safety for child - involve parent, where appropriate.
  9. Position child in left lateral position.
  10. Prime tube with medication to be administered.
  11. Draw up the amount of medication to be administered into the syringe and connect to the tube.
  12. Lubricate end of tube with water soluble lubricant.
  13. Insert tube into rectum and inject contents of syringe, slowly.
  14. Hold cheeks of bottom together for 30 seconds.  
**Do not flush tube**
  15. Remove tube and dispose of equipment.
  16. After procedure comfort child.
  17. Remove gloves and Perform hand hygiene.
  18. Record administration of medication.

## 5.4 Vaginal Medication

When a vaginal medication is given, 2 nurses must be present to ensure the child or young person and staff are not left vulnerable particularly in relation to child protection issues. The following principles will ensure patient dignity and safety:

- Ensure privacy and comfort whenever a vaginal medication is given.
- Explain clearly what is happening to the child, parent or caregiver.
- Always use a water soluble lubricant on the suppository, or tip of a catheter etc.
- Slowly introduce the medication into the vagina; it should not be forced.

## 5.5 Intravenous Medications (non-Hazardous)

### Standard

All intravenous medications must be administered in accordance with this And NSW Health Policy PD2013\_043

- Nurses who have demonstrated competency of medication calculations, medication administration and intravenous medication administration, may check and administer non-hazardous intravenous medications.
- All powdered intravenous antibiotics must be reconstituted in accordance with the appropriate sites guidelines **SCH** - Paediatric Injectable Guidelines **CHW** – Paediatric Injectable Handbook
- Intravenous medication should be prepared immediately prior to administration using ANTT.
- All intravenous medications must be administered in accordance with the **SCH** - Paediatric Injectable Guidelines or **CHW** – Paediatric injectable handbook. In particular, the compatibility of the intravenous solution to which the intravenous medication is to be added, the volume in which the intravenous medication is to be infused, and the time and rate required to administer the medication must be checked independently by both persons involved in the medication administration process.

Independent double checking of the preparation and administration of a medication must occur by:-

- Confirming the identity of the patient, and
- Confirming the selection of the correct medication and fluid, and
- Confirming that the dose is appropriate and the calculations are correct, and
- Confirming the route e.g. SC, IM, IV
- Confirming that a rate limiting device such as an infusion pump has been correctly set, and
- Countersigning the administration on the medication chart against that of the administering person.

All medicines and fluids removed from the original packaging are identifiable using the NSW Health label set. (PD2016\_058). All intravenous solutions to which medications have been added must be accurately and adequately labelled with:

- the patient name, date of birth and medical record number,
- name and volume of intravenous fluid,
- name and dose of medication,
- date and time of addition,
- signatures of the persons checking and administering.

When intravenous medications are administered by an accredited nurse in the community, it is acknowledged that a second person may not be available at the point of administration to check the medication and its preparation immediately prior to administration. In this instance, a check of the medication, administration fluid, and dosage calculation should be made by a second accredited nurse, medical practitioner or pharmacist before leaving to visit the client.

### ***Administration of an Intravenous medication via burette or syringe pump driver***

#### **Procedure**

Preparation of medication must occur immediately before administration. The second person must be present throughout all the steps for preparation and administration of the medication

1. Perform hand hygiene.
2. Adhere to ANTT principles throughout procedure
3. Clean tray/trolley with 70% alcohol wipes/antiseptic wipes.
4. Gather equipment required:
  - Medication order
  - Medication tray
  - Medication and diluent if required
  - Syringe and needle (Blunt drawing up needle)
  - Appropriate IV cap for end of syringe
  - A 2% chlorhexidine in 70% alcohol containing swab
  - Sharps disposal container
  - Assistant to check medication order
  - Medication label
  - 0.9% Sodium chloride flush (or compatible fluid)
5. Review medication order and ensure 5 rights of medication administration.
6. Perform hand hygiene.
7. Open equipment and prepare the syringe with drawing up needle using ANTT  
Reconstitute with diluent if necessary and draw up the required amount of medication.

8. Remove the drawing up needle, discard in sharps container and expel any air and excess medication until the correct volume of medication has been reached.
9. Apply a cap to the end of the syringe so the tip is not exposed and is protected.
10. Take medication to patient in the medication tray.
11. Identify the patient and prepare the child and family for the procedure.
12. Re-check the prepared medication against the medication order.
13. Select and prepare the appropriate injection port/hub for the medication as per ANTT guidelines.
14. Clean key parts vigorously for 15-20 seconds with 2% chlorhexidine in 70% alcohol.
15. Allow port/hub to dry.
16. Connect IV medication **or** inject IV medication into burette.
17. Flush injection hub of burette with 0.9% sodium chloride or compatible fluid.  
(If medication is being infused via a burette – apply medication label to burette and fill burette to required amount of solution to infuse).
18. Perform hand hygiene.
19. Program pump **or** syringe driver.
20. Perform hand hygiene after touching patient surroundings.
21. Discard waste appropriately and clean tray/trolley with 70% alcohol wipes.
22. Perform hand hygiene.
23. Document administration.
24. Burette to be flushed after medication completed.

### ***Slow-Push Intravenous Medication Administration***

#### **Standard**

- Nurses administering drugs as a slow intravenous push must adhere to the **SCH - Paediatric Injectable Guidelines** or **CHW – Paediatric Injectable Handbook**.

#### **Procedure - Slow-Push IV**

1. Perform hand hygiene.
2. Clean tray/trolley with antiseptic wipes Gather equipment required:
  - Medication order
  - Medication tray
  - Medication and diluent if appropriate
  - Syringe and needle (blunt drawing up needle)

- Appropriate IV cap for end of syringe
  - A 2% chlorhexidine in 70% alcohol containing swab
  - Point of use Sharps disposal container
  - Assistant to check medication order.
  - 0.9% sodium chloride flush (One for before and one for after administration)
3. Review medication order and ensure 5 rights of medication administration.
  4. Perform hand hygiene.
  5. Open equipment and prepare the syringe with drawing up needle using aseptic technique.
  6. Reconstitute medication with diluent if necessary and draw up the required amount of medication.
  7. Remove the drawing up needle, discard in sharps container and expel any air and excess medication from the syringe until the correct volume of medication has been reached.
  8. Place a cap on syringe to protect tip.
  9. Take medication to patient in the medication tray.
  10. Identify the patient and prepare the child and family for the procedure.
  11. Re-check the prepared medication against the medication order.
  12. Select and prepare the appropriate injection port/hub for the injection.
  13. Clean key parts vigorously for 15-20 seconds with and 2% chlorhexidine 70% alcohol swab.
  14. Allow port/hub to dry.
  15. Flush with compatible solution to ensure patency of line.
  16. Connect syringe and administer IV medication slowly.
  17. Flush with compatible solution to ensure medication has been completely administered.
  18. Perform hand hygiene.
  19. Discard waste appropriately and clean tray/trolley Perform hand hygiene.
  20. Document administration.

## **5.6 Intramuscular (IM) Medication**

### **Standard**

It is recognised that the administration of intramuscular (IM) medications may be an unpleasant procedure for children and their families. Wherever possible, the use of the IM route for administration of medication should be avoided. To avoid the risk of local neural, vascular or tissue injury the IM injection should be given deep into the muscle mass. The

needle used for IM injections should be long enough to reach the substance of the muscle. The following principles apply for IM injections:

- Do not use the same needle the solution has been drawn up with – change needles prior to administration.
- Use needles no longer than 2.5cm

**Table.** Recommended needle size, length and angle for administering vaccines

Age or size of person to be vaccinated	Needle type	Angle of needle insertion
Infant, child or adult for intramuscular vaccines	22–25 gauge, 25 mm long	90° to skin plane
Preterm infant (<37 weeks gestation) up to 2 months of age, and/or very small infant	23–25 gauge, 16 mm long	90° to skin plane

*Australian Immunisation Handbook, Australian Government Department of Health, Canberra, 2018*

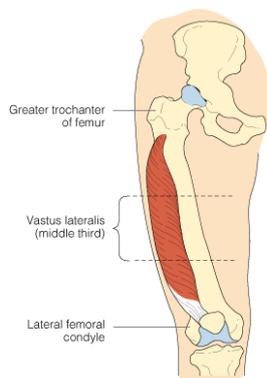
### Sites for injections

- Clearly identify the site of injection – the dorsogluteal site should be avoided in children less than 2 years because of immature anatomical structures which may lead to complications.

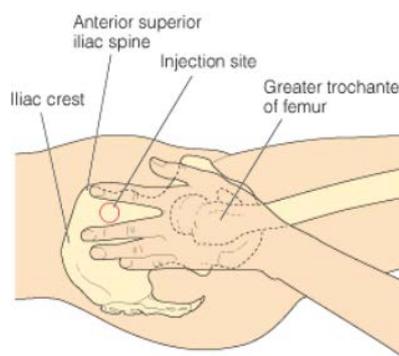
### Recommended injection sites

*Infants <12 months of age:*

- The vastus lateralis muscle in the anterolateral thigh is the routinely recommended site.
- The ventrogluteal area is an alternative site only to be used by providers who are familiar with the landmarks used to identify this site.
- The deltoid muscle is not recommended for IM injections in this age group



**Figure 1** Vastus Lateralis site

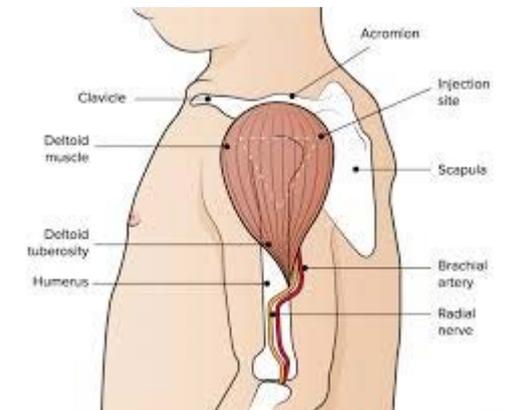


**Figure 2** Ventrogluteal site

*Children >12 months/adolescents and adults:*

- The deltoid muscle is the recommended site for IM injection
- The ventrogluteal area is an alternative site only to be used by providers who are familiar with the landmarks used to identify this site

- The vastus lateralis muscle in the anterolateral thigh may also be used for this age group, however, if this site is used, the less locally reactogenic vaccines (e.g. MMR, hepatitis B) should be given in the thigh.



**Figure 3.** Deltoid site

### **Procedure**

1. Perform hand hygiene.
2. Adhere to ANTT principles throughout procedure
3. Explain procedure to child (if age appropriate) and significant others.
4. Gather equipment required:
  - Medication order
  - Medication and diluent if appropriate
  - Syringe and needles (blunt drawing up needle and needle to administer (23-25 gauge))
  - Cotton wool ball
  - Medication tray (cleaned with antiseptic wipes) Sharps disposal container
  - Non-sterile gloves
  - Assistant to help check medication order and position patient to prevent the risk of injury to the health care worker and/or the uncooperative patient.
5. Review medication order and ensure 5 rights of medication administration.
6. Perform hand hygiene.
7. Prepare the syringe with drawing up needle using ANTT Draw up the required amount of medication.
8. Change the drawing up needle for the administration needle, and expel any air and excess medication from the syringe until the correct volume of medication has been reached.
9. Perform hand hygiene.

- 10.** Take medication to patient in the medication tray.
- 11.** Identify the patient and prepare the child and family for the procedure.
- 12.** Re-check the prepared medication against the medication order.
- 13.** Select and prepare the appropriate site for the injection. If the skin is visibly clean, there is no need to wipe it with an antiseptic (such as an alcohol wipe).  
  
If you use alcohol or other disinfecting agents to clean skin that is visibly dirty, or the child is immunocompromised, the skin must be allowed to dry before injecting the medication. This prevents inactivation of live vaccines and reduces the likelihood of irritation at the injection site.
- 14.** Using Child Life Therapist when available and distraction techniques, position and immobilise the patient/injection site as appropriate.
- 15.** Perform hand hygiene.
- 16.** Insert the needle at a 90 degree angle
- 17.** If administering a vaccine, it is not necessary aspirate the syringe.<sup>14</sup> However if you have done this and a flash of blood appears in the needle hub, withdraw the needle and select a new site for injection.<sup>8</sup> For medications other than vaccines, as long as the recommended sites are used, aspiration may also not be necessary as there are no large vessels at these sites<sup>9</sup>
- 18.** Inject the medication slowly.
- 19.** Place a dry cotton wool swab over the site and gently remove the needle, then apply gentle pressure to the site. It is recommended that an alcohol swab is not used as it may cause stinging.
- 20.** Do not re-sheath the needle. Place the used needle in the nearest sharp disposal bin as soon as possible, preferably at point of use.
- 21.** Comfort the child and family.
- 22.** Perform hand hygiene.
- 23.** Discard waste appropriately and clean tray/trolley with antiseptic wipes Perform hand hygiene.
- 24.** Document administration.

## 5.7 Subcutaneous Medication Administration

Medications can be administered subcutaneously by SC injection (intermittent) (figure a) or via SC injection via indwelling subcutaneous catheter (ISC) (intermittent or continuous) (figure b)

Figure 4:

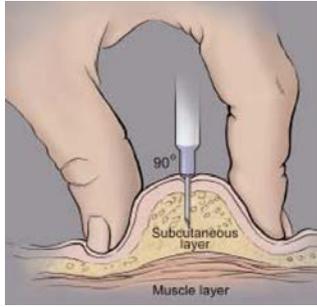


Figure 5:



### **Standard**

- Sites suitable for subcutaneous injections in children are:
  - PREFERABLY upper and lower abdomen, avoiding the umbilical area by 5cm
  - all areas of the buttocks (not for indwelling SC catheters)
  - anterior, lateral and posterior aspect of the thighs
- Injections SHOULD NOT be given where there is:
  - altered skin integrity, abrasions, lacerations
  - contusions, lesions, bruising or rashes
  - insufficient subcutaneous tissue
  - another injection has recently been given at the site.

The following factors need to be considered when determining the most appropriate site for injection:

- The volume of medication to be injected
- Amount of subcutaneous tissue available and skin integrity of the site chosen
- Frequency and number of injections previously given at that site

Subcutaneous injections are inserted the full depth of the needle and given at a 90 degree angle, unless there is insufficient subcutaneous tissue, when a 45 degree angle should be used.

Needles used should be either:

- 30 gauge needle 8mm in length
- Injection device for administration of insulin (e.g. insulin pen using 8mm needle)
- Pre-packaged syringe with medication

Children who receive frequent injections (such as insulin, growth hormone or granulocyte colony stimulating factor), must have:

- the injection site changed at each injection
- the injection areas rotated frequently as this helps to prevent lipohypertrophy and therefore maximises absorption.

Do not swab skin if administering:

i. Insulin injection

ii. Immunisation in healthy people by SC injection in the outpatients department or as part of an immunisation campaign, unless the skin is visibly dirty.

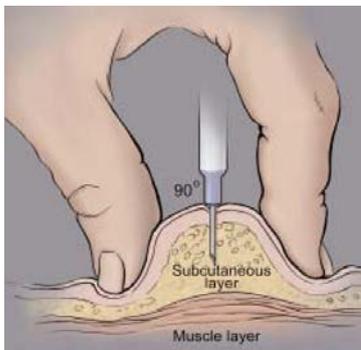
### ***Procedure (Subcutaneous Medication)***

1. Perform hand hygiene.
2. Explain procedure to child (if age appropriate) and significant others.
3. Gather the equipment required:
  - Medication order
  - Medication tray
  - Medication and diluent if required
  - Syringe and needles (blunt drawing up needle and administration needle)
  - Cotton wool ball
  - Sharps disposal container
  - Assistant to check medication order and help prevent the risk of injury to the health care worker and/or the uncooperative patient.
4. Review medication order and ensure 5 rights of medication administration.
5. Perform hand hygiene.
6. Prepare the drawing up needle and syringe using ANTT.
7. If the syringe is not an insulin syringe, injection device, or pre-packaged syringe with medication prepare the blunt drawing up needle and syringe.
8. Draw up the required amount of medication.
9. If the syringe is not an insulin syringe, injection device, or pre-packaged syringe with medication, change the drawing up needle for the administration needle.
10. Expel any air and excess medication from the syringe until the correct volume of medication has been reached.
11. Perform hand hygiene.
12. Re-check the prepared medication against the medication order.
13. Take medication to patient in medication tray.
14. Identify the patient and prepare the child and family for the procedure.
15. Perform hand hygiene.

16. If using an indwelling Subcutaneous Catheter: Inspect the Indwelling Subcutaneous Catheter (ISC) insertion site for signs of redness, pain, swelling, exudate, or bleeding and **DO NOT use catheter** if any of these sign exist. Consult the procedure for removal of Insuflon™ Catheter and notify medical team.
17. Select and thoroughly clean the injection site or ISC self-sealing membrane with 2% chlorhexidine & 70% alcohol swab and allow the solution to dry (Do not swab skin if giving insulin injection).
18. Pinch up a skin fold between thumb and forefinger then insert the needle at a 90 degree angle (It is important that a correct pinch-up is performed as shown in Figure 6, to prevent an intramuscular injection).

OR

**If using an Indwelling Subcutaneous Catheter:** Insert the needle into the self-sealing membrane, rotating the needle gently as it is advanced. Insert the needle through the membrane by not less than 3mm, and not more than 10mm. **DO NOT USE EXCESSIVE FORCE.**



**Figure 6.** Subcutaneous injection

19. Inject the medication slowly.
20. Place a dry cotton wool swab over the site and gently remove the needle, then apply gentle pressure to the site. Alcohol swabs are not recommended as they may cause stinging.
21. Do not re-sheath the needle. Place the used needle in a point of use sharps disposal container.
22. Remove gloves and perform hand hygiene.
23. Comfort the child and family.
24. Perform hand hygiene after touching patient surroundings.
25. Discard waste appropriately and clean tray/trolley with 70% alcohol wipes.
26. Perform hand hygiene.
27. Document administration and location of site.

### ***Subcutaneous Injection via an Indwelling Subcutaneous Catheter***

This may include medicines that are administered via intermittent SC injection or via continuous SC infusion

Indwelling Subcutaneous Catheters (e.g. Insuflon™) This section is based on the guidelines for the insertion, use, and removal of Insuflon™ indwelling subcutaneous catheters (ISC). If another brand of subcutaneous catheter is used then its manufacturer's instructions need to be followed.

It is recognised some children require daily or continuous medications which can be only given via the subcutaneous route. In an attempt to reduce a child's anxiety and pain an ISC may be inserted.

The ISC is inserted subcutaneously at a 30-45 degree angle. The steel needle, which is used as an introducer is removed. Leaving a soft catheter in place, which can remain insitu for up to 7 days. The Indwelling Subcutaneous Catheter has a self-sealing membrane, in which medication can be injected painlessly.

An ISC can be used to deliver: Granulocyte Colony Stimulating Factor (GCSF – Filgrastim), Heparin, Low Molecular Weight Heparin, Desmopressin Acetate (DDAVP), Interferon, Opioids.

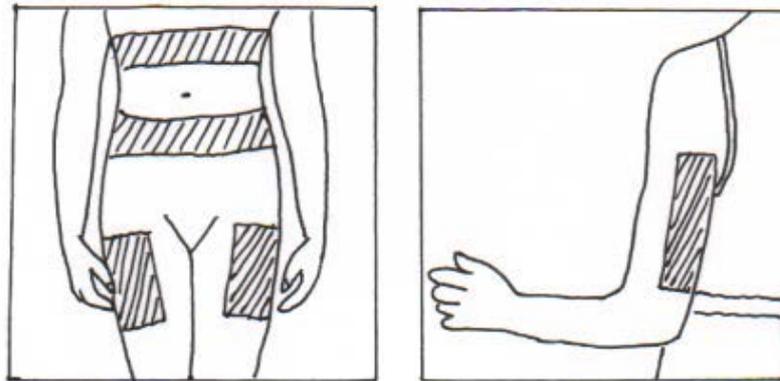
In SCHN these catheters are currently being used in: palliative care patients; oncology patients, Opioids administration and for long-term enoxaparin (Clexane) administration.

### **Standard**

- Only one type of medication can be given in one indwelling subcutaneous catheter.
- The dead space of Indwelling Subcutaneous Catheters is negligible; therefore it is unnecessary to flush the catheter pre or post medication delivery. For example an Insuflon™ Catheter is 0.0075mL.
- The catheter site needs to be changed after a maximum of 7 days or sooner if there are any signs of redness, pain, swelling, exudate, bleeding, or difficulty injecting.
- Always place the new ISC before removing the old one to ensure rotation of the sites.
- For administering medication through an ISC see procedure below.

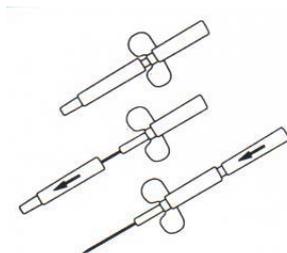
### ***Procedure (Insertion of Indwelling Subcutaneous Catheter)***

1. Perform hand hygiene.
2. Explain procedure to child (if age appropriate) and significant others.
3. Select an insertion site. Avoid skin folds and areas where clothes sit tightly against the skin. The abdomen, anterior lateral thigh, and posterior upper arm are appropriate sites, preferably the abdomen (See Figure 7)



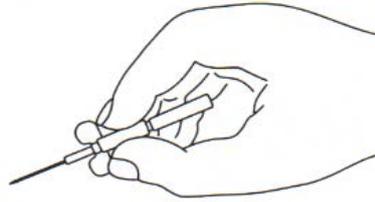
**Figure 7.** Sites for subcutaneous catheters.

4. In children older than 12 months apply local anaesthetic cream and transparent occlusive dressing or an anaesthetic patch at least 30 minute prior to procedure depending on patient preference.
5. Perform hand hygiene.
6. Clean trolley/tray with 70% alcohol.
7. Gather equipment.
  - A 2 %chlorhexidine in 70% alcohol containing solution or swab
  - One indwelling Subcutaneous Catheter with dressing supplied (this procedure uses *the principles for the insertion of Insuflon™ indwelling subcutaneous catheters* if other brands are used then follow their manufactures instructions)
  - Ensure there is a sharps disposal container where the injection is to take place. It should be positioned so there is only one motion when the sharp is ready for disposal
  - Assistant is required to help check medication order and assist position the patient to prevent the risk of injury to the health care worker and/or the patient
8. Perform hand hygiene
9. Open the package containing the indwelling subcutaneous catheter and dressing
10. Clean the selected site with a 2 %chlorhexidine in 70% alcohol containing swab (as above) and allow to dry.



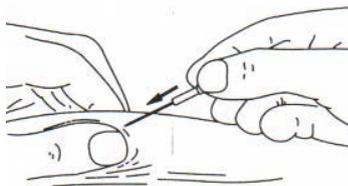
**Figure 8.** Removing cap from hub

11. Hold the indwelling subcutaneous catheter hub and remove the protection cap



**Figure 9.** Holding subcutaneous catheter.

12. Place the cap in the rear of the grip.
13. Pinch the skin at the site of insertion.
14. Insert the Indwelling Subcutaneous Catheter bevel up and as far as possible at a 20-40 degree angle in one quick, smooth movement.



**Figure 10.** Insertion of subcutaneous catheter needle.

15. Remove the needle by holding the catheter hub firmly and pulling the needle out slowly.



**Figure 11.** Removing needle from catheter hub.

16. Dispose of the needle in a point of use sharps disposal container.

17. Secure the Indwelling Subcutaneous Catheter by applying the dressing supplied, ensuring the insertion site is visible through the plastic window and the hub is open to the air.
18. Write date of insertion on the dressing.
19. Perform hand hygiene.
20. Comfort the child and family.
21. Perform hand hygiene after touching patient surroundings.
22. Discard waste appropriately and clean tray/trolley with 70% alcohol wipes.
23. Perform hand hygiene.
24. Document insertion of Indwelling Subcutaneous Catheter and location of site.

***Procedure for Removal of Subcutaneous Catheter (e.g. Insuflon™)***

1. Perform hand hygiene.
2. Explain procedure to child (if age appropriate) and significant others.
3. Perform hand hygiene and gather equipment.
  - Tray for collecting non-sharps waste (if any).
  - Point of use sharps container
  - Adhesive dressing.
4. Perform hand hygiene.
5. Carefully peel off the adhesive dressing beginning at the catheter end.
6. Remove the catheter by applying traction to the catheter hub pulling in the direction opposite the skin puncture site.
7. Dispose of in a point of use sharps container.
8. Inspect puncture site for redness, exudate or other signs of infection. If signs of infection present take swab for pathology and request review.
9. Cleanse wound site and apply adhesive dressing if necessary.
10. Perform hand hygiene.
11. Discard residual waste and clean tray or trolley with 70% alcohol
12. Perform hand hygiene
13. Document removal of Indwelling Subcutaneous Catheter and condition of puncture site in continuation notes.

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