

### IV Infusions are used in the Community:

- To maintain or restore fluid and electrolyte balance e.g. dehydration
- To administer medications

### Commonly used giving set in the community

#### Basic giving set

Has the following features:

- Burette set is used to enable control of administration
- Roller clamp
- Occlusion device
- Set of choice if giving fluids only and when fluids need to be rapidly infused.
- It is the set of choice when certain antibiotics need to be added and is used in conjunction with a 100ml bag of NaCl 0.9%.

### Infection control

A Tegaderm IV dressing (or similar product) is used to hold the cannula securely in place..

When add –on devices are used they should be changed with each cannula or administration set replacement or whenever the integrity of either product is compromised and according to manufacturer’s recommendations (RNS, 2010).

<b>Prescribing</b>	<p>IV fluids are prescribed by medical staff on a prescription form and must be signed and dated.</p> <ul style="list-style-type: none"> <li>▪ The prescription should clearly state:               <ul style="list-style-type: none"> <li>- Type of fluid</li> <li>- Volume</li> <li>- Time duration for fluid to be administered over</li> </ul> </li> </ul>
<b>Checking</b>	<p>The administering nurse must be a Registered nurse who has completed the TCHS certification process</p> <p>IV Fluids are checked by two people prior to administration:</p> <ul style="list-style-type: none"> <li>▪ The 2<sup>nd</sup> person is preferably a health professional. If this is not possible than the check should be done with the recipient of the medication or their care provider.</li> <li>▪ <b>Plus general principles for checking medications per page 3</b></li> </ul>

<b>Preparation of Fluids</b>	<p>Before administration the following is checked:</p> <ul style="list-style-type: none"> <li>● IV fluid name</li> <li>● Volume</li> <li>● Expiry date</li> <li>● Colour &amp; Clarity</li> <li>● Leaks/foreign particles</li> </ul>
<b>Administration</b>	<ul style="list-style-type: none"> <li>▪ Check the patient verbally and visually using the prescription to verify checking procedure</li> <li>▪ Explain purpose of IV fluids to the patient and obtain verbal consent. Supply additional information where necessary (Check that base-line recordings have been done including BP).</li> <li>▪ Maintain asepsis whilst connecting the bag and giving set.</li> <li>▪ Ensure the prescribed rate of flow is attained:</li> <li>▪ Adjust the flow rate accordingly to drip rate calculated by formula</li> </ul>
<b>Monitoring</b>	<p>The administering nurse will:</p> <ul style="list-style-type: none"> <li>- Assess infusion site for: <ul style="list-style-type: none"> <li>- Extravasation</li> <li>- Leaking</li> <li>- Disconnection</li> </ul> </li> <li>- Assess response of patient</li> <li>- Educate the patient / caregiver/ family member of the signs of adverse reaction: <ul style="list-style-type: none"> <li>- Redness at the site of insertion</li> <li>- Leaking</li> <li>- Disconnection</li> <li>- Swelling at site of insertion</li> <li>- pain</li> </ul> </li> <li>- Educate the patient / caregiver / family member of what action to take if adverse reaction occurs. <ul style="list-style-type: none"> <li>- Turn off the infusion, instruct them on how to do this and how to contact TCHS office to advise.</li> </ul> </li> </ul>
<b>Documentation</b>	<p>IV Fluids given must be signed in Health 365 patient clinical note, IV therapy chart with your</p> <ul style="list-style-type: none"> <li>● Full name,</li> <li>● time,</li> <li>● route,</li> <li>● batch,</li> <li>● Expiry date.</li> </ul> <p>For POAC patients also document in the POAC daily information.</p> <p>Verbal consent must be documented.</p> <ul style="list-style-type: none"> <li>- Baseline recordings on first visit must be documented.</li> </ul>

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## Factors Affecting/Altering IV Infusions Flow Rate

There are many factors which may affect/alter flow rate. These factors can be grouped into three main areas:

- Equipment
- Operator
- Patient

Should the flow rate be affected i.e. slow down or stop, systematically work from the top to bottom looking for any of the factors below:

- Height of the bag
- Non-perforation of the bag
- Patent air valve
- Empty container
- Position of either of the clamp controls
- Defective clamps
- Kinked tubing
- Position and movement of limb
- Tape or bandage too light or too tight
- Thrombus
- End of cannula against vessel wall

Other factors which may affect/alter the flow rate:

- Size and choice of equipment
- Changes in vascular pressure
- Viscosity/temperature of fluid
- Phlebitis
- Extravasation of fluids

## Potential Complications of Intravenous Infusions

As with any form of treatment, Intravenous Infusions have associated risks. Failure to follow the correct administration procedure accounts for the majority of medication incidents. To this end, it is vital that nursing staff maintain a **safe level of practice** at all times.

There are a wide variety of complications that can occur as the result of administering Intravenous Infusions.

## Potential Complications

Outlined below are some of the potential complications of Intravenous Infusions:

### EXTRAVASATION OF IV FLUID (TISSUING)

<b>EXTRAVASATION OF INTRAVENOUS FLUID (TISSUING)</b>	<b>Definition</b>	The escape of IV Fluid into the surrounding tissues following perforation of the cannulated vein.
	<b>Prevention / Detection</b>	<ul style="list-style-type: none"> <li>▪ Ensure IV cannulation site and tubing are securely anchored</li> <li>▪ Check site regularly</li> <li>▪ Site should be visible at all times</li> </ul>
	<b>Signs and Symptoms</b>	<ul style="list-style-type: none"> <li>▪ Patient may experience discomfort or pain at the site of administration</li> <li>▪ IV site is swollen, cool and hard on palpation</li> <li>▪ Drip rate may slow or stop</li> </ul>
	<b>Action</b>	<ul style="list-style-type: none"> <li>▪ Stop the infusion</li> <li>▪ Intravenous cannula must be removed and reinserted at a different site away from the extravasation and previous IVC site</li> <li>▪ Document in patient's clinical record</li> <li>▪ Educate the patient and/or caregiver on possible progression of the signs and symptoms of extravasation, changes that should be reported to the medical practitioner e.g changes in mobility and sensation, elevated temperature and other signs of infection.</li> <li>▪ The nurse should monitor clinical outcomes associated with infiltration which may include compartment syndrome (rapid surgical intervention required), and nerve injury from excessive compression producing neuropathies and complex regional pain syndrome</li> <li>▪ The nurse should monitor clinical outcomes associated with extravasation that may include formation of blisters over a prolonged period (e.g. 7-14 days), skin sloughing and tissue necrosis, functional and sensory loss in the injured area, disfigurement, and loss of limb.</li> </ul>

### PHLEBITIS

<b>PHLEBITIS</b>	<b>Definition</b>	Inflammation or irritation of veins, this occurs with IV lines as a result of the vein being irritated by the cannula.
	<b>Prevention / Detection</b>	<ul style="list-style-type: none"> <li>• Check IV site regularly for signs and symptoms</li> <li>• Site should be visible at all times</li> <li>• Educate the patient and/or caregiver about phlebitis and assessing site for signs and symptoms</li> </ul>

<b>Signs and Symptoms</b>	<ul style="list-style-type: none"> <li>• Patient may experience discomfort or tenderness or pain at the site of administration</li> <li>• IV site is red (erythema), warmth, swelling, induration, purulence or palpable venous cord</li> </ul>
	<ul style="list-style-type: none"> <li>• Assess for severity of phlebitis using the scale below.</li> <li>• Determine the possible etiology of the phlebitis- chemical, mechanical, bacterial or post-infusion.</li> <li>• Stop the infusion</li> <li>• Intravenous cannula must be removed and reinserted at another site, preferably the other arm</li> <li>• Document in the patient’s clinical note the signs and symptoms that have occurred, the interventions implemented and patient response to the treatment.</li> <li>• The site should be monitored by clinician, patient and/or caregiver to ensure signs and symptoms of phlebitis resolve</li> <li>• Treatment of phlebitis is dependant on severity.</li> </ul>

The nurse should use the following phlebitis scale to determine severity of phlebitis

### Phlebitis Scale (INS, 2011)

Grade	Clinical Criteria
0	No symptoms
1	Erythema at access site with or without pain
2	Pain at access site with erythema and/or oedema
3	Pain at access site with erythema; streak formation; palpable venous cord
4	Pain at access site with erythema; streak formation; palpable venous cord >2.5cm in length; purulent drainage

### AIR EMBOLISM

<b>AIR EMBOLISM</b>	<b>Definition</b>	The administration of air into patient’s circulation due to disconnection/ malfunction of equipment, technique
	<b>Prevention / Detection</b>	<ul style="list-style-type: none"> <li>▪ Prime all equipment with fluid prior to use</li> <li>▪ Check all connections are secure – use Luer lock attachments</li> <li>▪ Check equipment regularly</li> </ul>
	<b>Signs and Symptoms</b>	<ul style="list-style-type: none"> <li>▪ Hypotension</li> <li>▪ Tachycardia with low circulatory output</li> <li>▪ Cyanosis, dyspnoea, loss of consciousness, cardiac arrest</li> </ul>
	<b>Action</b>	<ul style="list-style-type: none"> <li>▪ Stop infusion and ring ambulance 111</li> <li>▪ Turn patient onto left side and head down</li> <li>▪ Monitor vital signs and stay with the patient</li> <li>▪ Have airway handy.</li> </ul>

		<ul style="list-style-type: none"> <li>▪ Change fluid and tubing or IV and keep vein open</li> <li>▪ Resuscitate as necessary</li> <li>▪ Document all signs and symptoms and interventions implemented and patient response to treatment</li> </ul>
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## CIRCULATORY OVERLOAD

<b>CIRCULATORY OVERLOAD</b>	<b>Definition</b>	Circulatory overload can result from an accidental delivery of fluid in excess of that planned for from an over-estimation of the patient’s circulatory capacity, ie. elderly, children or patients with pre-existing cardiac, renal or respiratory disease
	<b>Prevention / Detection</b>	<ul style="list-style-type: none"> <li>▪ Ensure IV fluids are administered at the correct rate</li> <li>▪ When using a chambered giving set for IV fluids, ensure the roller clamp above the chamber is closed</li> <li>▪ Be aware of the patient’s history and central venous status</li> </ul>
	<b>Signs and Symptoms</b>	<ul style="list-style-type: none"> <li>▪ Altered heart rate – tachycardia / bradycardia / irregular</li> <li>▪ Raised blood pressure</li> <li>▪ Wheezy, dyspnoea</li> <li>▪ Frothy pink sputum – pulmonary oedema</li> <li>▪ Distended neck veins (increased JVP)</li> <li>▪ Nausea and vomiting, headache, confusion in the elderly</li> <li>▪ Polyuria in healthy patients</li> <li>▪ Peripheral oedema</li> </ul>
	<b>Action</b>	<ul style="list-style-type: none"> <li>▪ Stop infusion and ring ambulance 111.</li> <li>▪ Raise patient’s head</li> <li>▪ Have airway handy and commence CPR if required</li> <li>▪ If an accidental administration of fluid volume has occurred in a short period of time, the Nurse Manager must be notified and an Incident Form completed</li> </ul>

## Use of Luer plugs

A peripheral vein cannula or butterfly may be luer plugged to:

- Reduce the amount of IV fluid administered to a patient
  - In order to maintain patency and immediate access to a vein
  - To administer STAT antibiotics
- \*Nurses are not permitted to give IV medication directly into the vein*

### Injection

The medication is injected in the prescribed volume and at the prescribed rate following normal checking procedures.

The injection of the medication is preceded by an injection of NAACL injection 0.9% to check patency and followed by NAACL injection 0.9%

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- Prepare syringes. Making sure to leave syringes containing NACL 0.9% connected to relevant plastic ampoule for identification
  - Prior to and following the administration of all fluids / medications catheters are flushed using the following procedure:
    - Clean the Luer with an alcohol swab
    - Allow to dry
    - Use a 10 ml syringe, filled with NACL injection 0.9%
    - Flush catheter via the Luer with 10 ml NACL injection 0.9% to clear catheter and check patency
    - Administer medication as a slow push
    - Flush catheter with the remaining 10ml NaCl injection 0.9%
    - If IV to be removed wait for 20 minutes after administration of medication if no adverse effects (refer to when to remove below)
  - Document in clinical note in the patient notes.

### When to remove IV Cannula

A cannula **should be removed**:

- Immediately if the cannula site shows signs of infection, phlebitis or infiltration
- Within **72 hours** of the cannula being inserted
- There is no further use for the cannula

### Recommended dwell times

Current best practice recommends a **maximum dwell time of 72 hours** provided that:

- The cannula site is clean, dry and patent AND
- The cannula is checked and flushed with 10mls of normal saline before each dose AND
- There is no history of previous or current IV drug use AND
- The cannula is still required for intravenous therapy

An IV cannula violates the skin normal defence mechanisms when inserted allowing microorganisms to enter. All actions must ensure that risk of infection is minimised. These risks need to be clearly explained to the patient and consent for this process documented in the clinical notes.

\*POAC and Total Care Health Services supports indwelling IV lines between IV doses in the community setting within the scope detailed above. If a butterfly is insitu it should be removed 20minutes after the medication has been delivered without adverse reaction.